

**Acceptability, choice and preference of brands
and flavours of dairy fruit beverages by certain
black female consumers**

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of dairy fruit beverages by black female consumers**

by

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degree**

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ABSTRACT

Acceptability, choice and preference of brands and flavours of dairy fruit beverages by certain black female consumers

by

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for the Master's Degree in Consumer Science: Food Management

The purpose of this study was to determine, understand and describe the acceptability, choice and preference of dairy fruit beverages by a group of black South-African female consumers. Food choice, acceptability and preference are complex and dynamic processes, influenced by various interrelated factors. The study was conducted in two phases. During the first phase a quantitative research approach was followed to collect demographic, purchasing and consumption information of the participants and to determine their hedonic responses towards the dairy fruit beverages by means of standardised sensory evaluation tests. A qualitative research approach was followed during the second phase of the study where focus group discussions were conducted to obtain supportive information for the interpretation and explanation of the data obtained during the first phase of the study.

The target population for this study was black adult female consumers. They were chosen because of the high consumption and the popularity of dairy fruit beverages amongst them. The participants were selected from consumers who visited the School of Cookery at a large dairy company in Queensburgh in Kwa-Zulu Natal.

The participants all spoke *isiZulu* and the majority completed Grade 12 or had a tertiary education. The participants were from Durban and surrounding areas. The average age of the participants was 35 years. The purchasing and consumption information revealed that the participants purchased dairy fruit beverages on average once a week from a local supermarket. The dairy fruit beverages were consumed more often in summer and with special occasions (such as birthday parties). The majority of the participants indicated that they preferred to purchase and consume a specific brand. The flavour purchased the most was the pineapple flavour.

The results from the preference rating tests indicated that the main discriminating sensory attribute was taste and then flavour. The results from the preference ranking test indicated that the peach flavour was the most preferred fruit flavour. This was in contrast to the purchasing and consumption information which indicated that they mostly buy and consume the pineapple flavour.

It was evident from the focus group discussions that all the participants were familiar with dairy fruit beverages and consumed it regularly. This was also supported by the demographic, purchasing and consumption information. The results from the focus group discussions confirmed that taste and appearance are important sensory attributes during food choice. The participants emphasised that the appearance must represent “...*real fruit juice*...” (it must not look like a soft drink) and must also smell like “...*real fruit*...”. It was clear that a high price is associated with good quality. Brand loyalty and social status were associated with the dairy fruit beverage brands, and indicated the powerful impact of mass media and advertisements on the perception and choices of dairy fruit beverages. Children were also mentioned as a persuading factor that influenced the choice and purchase of certain brands of dairy fruit beverages.

This study contributed to understand and describe the consumer behaviour of the black female consumers in South Africa. The study added support to the implementation of strategic planning in the product development and marketing divisions of a food manufacturing company, to ensure that the consumer is satisfied and that expectations have been met. The quantitative and qualitative results supported and complemented another. Using both quantitative and qualitative research approaches are recommended when cross-cultural consumers in the South African context is the target population.

OPSOMMING

Aanvaarbaarheid, keuse en voorkeur van handelsmerke en geure van suiwelvrugtesappe deur sekere swart vroulike verbruikers

deur

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Die doel van die studie was om die aanvaarbaarheid, keuse en voorkeure van suiwelvrugtesappe deur 'n groep swart Suid-Afrikaanse vroulike verbruikers te bepaal en te verstaan. Voedselkeuse, -aanvaarbaarheid en -voorkeure is komplekse en dinamiese prosesse wat deur 'n verskeidenheid faktore beïnvloed word. Die studie is in twee fases uitgevoer. 'n Kwantitatiewe benadering is tydens die eerste fase gevolg, waar demografiese, aankoop- en verbruikersinligting van die respondente ingesamel is om ten einde die hedoniese respons van suiwelvrugtesappe te bepaal deur gestandaardiseerde sintuiglike evalueringstoetse. Gedurende die tweede fase van die studie is 'n kwalitatiewe benadering gevolg om sodoende ondersteunende inligting vir die interpretasie en verduideliking van die data wat tydens die eerste fase verkry is, te verskaf.

Die teikengroep vir hierdie studie was volwasse, vroulike swart verbruikers. Hierdie groep is gekies weens die hoë verbruik en gewildheid van suiwelvrugtesappe onder hierdie groep. Die respondente is geselekteer uit verbruikers wat die kookskool van 'n groot suiwelmaatskappy in Queensburgh in Kwa-Zulu Natal bygewoon het.

Die respondente was almal Zoeloe-sprekend en die meerderheid het oor 'n Graad 12 en/of 'n tersiêre kwalifikasie beskik. Die deelnemers was woonagtig in Durban en omliggende gebiede. Die gemiddelde ouderdom van die deelnemers was 35 jaar. Die aankoop- en verbruikersinligting het aangedui dat die respondente suiwelvrugtesappe gemiddeld een keer per week by 'n nabygeleë supermark koop. Suiwelvrugtesappe word meer dikwels in die somer verbruik asook met spesiale geleenthede soos verjaardagpartytjies. Die meerderheid van deelnemers het aangedui dat 'n spesifieke handelsmerk suiwelvrugtesappe aangekoop en verbruik word. Die pynappelgeur suiwelvrugtesappe word deur die meerderheid aangekoop.

Die resultate van die hedoniese aanvaarbaarheidstoets dui daarop dat die mees belangrikste sintuiglike eienskappe smaak en geur was. Die resultate van die voorkeurrangorde toets het aangedui dat die perskegeur die meeste verkies was. Dit is egter teenstrydig met die aankoop- en verbruikersinligting wat aangetoon het dat die deelnemers meestal die pynappelgeur aankoop.

Uit die fokusgroepbesprekings het dit duidelik geblyk dat die deelnemers bekend was met suiwelvrugtesappe en dit ook gereeld gebruik. Hierdie inligting was dan ook ondersteunend tot die demografiese, aankoop- en verbruikersinligting soos verkry uit die eerste fase. Die resultate van die fokusgroepbesprekings het bevestig dat smaak en voorkoms belangrike sintuiglike eienskappe tydens die keuse van 'n voedselprodukt is. Daar is ook aangedui dat die voorkoms van die suiwelvrugtesappe soos "...regte vrugtesap..." (nie soos aangemaakte vrugtesap) moet wees en dat die aroma soos "...regte vrugte..." moet wees. Dit was ook duidelik uit die fokusgroepbesprekings dat prys geassosieer word met goeie kwaliteit. Handelsmerklojaliteit en sosiale status word ook geassosieer met die verskillende handelsmerke van die suiwelvrugtesappe. Die impak van die massa media en advertensies op die persepsies en keuses van suiwelvrugtesappe het ook na vore gekom. Kinders blyk ook 'n oorredende invloed tydens die aankoop van sekere handelsmerke van suiwelvrugtesappe te hê.

Die studie het bygedra tot die beskrywing van die aankoop- en verbruikersgedrag van die vroulike swart verbruiker in Suid-Afrika. Die studie het ook die implementering van strategiese verbruikersnavorsing in produkontwikkeling en bemarking van die voedselvervaardiger ondersteun, om sodoende verbruikerstevredenheid te bewerkstellig en daardeur aan die verbruiker se verwagtinge te voldoen. Die kwantitatiewe en kwalitatiewe resultate het mekaar

ondersteun en het die doel om beide tegnieke te verduidelik en te beskryf bereik. Die gebruik van kwantitatiewe en kwalitatiewe meettegnieke word aanbeveel wanneer verbruikers met diverse kulture en vlakke van geletterheid in die Suid-Afrikaanse konteks gebruik word as 'n teikengroep.

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CHAPTER 1

BACKGROUND AND JUSTIFICATION FOR STUDY

1.1 Introduction

It is not always clear why consumers like one food product and dislike another, or why consumers make the food choices they do (Gains, 1994:53). Brand names and consistent quality is used by manufacturers of food products to guide consumer food choice (Marshall, 1995:6; Van Raaij, Strazzieri & Woodside, 2001:59). In order to get a larger market share, food manufacturers and retailers offer consumers a wide range of new products, and thereby increase the consumer's food choice. Today's consumer therefore has a larger "choice", is more informed, and is more selective when forced to make a choice between all the different brand names available in the market (Marshall, 1995:7). If a food manufacturer can understand why a consumer prefers the brand name chosen, and why a specific flavour is preferred, this information can be successfully applied in product development, marketing, and even the strategic positioning of the product, in order to have a competitive advantage. A large dairy manufacturing company in South Africa, who manufactures dairy fruit beverages with a well-known brand name, consisting of five different fruit flavours, required more information with regard to the brand names and flavours that consumers prefer, and the reasons for these choices. If this information is available, it can aid the manufacturer to possibly gain a larger market share, improve brand recognition and guide future research in the introduction of new flavours.

A dairy fruit beverage can be defined as a refreshing dairy-fruit-juice mixture with a slightly sweet taste, and a typical soft and round mouth-feel, with similar characteristics as a fruit juice, but without the acidity (Clover SA Ltd, 2005). Dairy fruit beverages consist of a mixture of skimmed milk and fruit juice. Different brand names and different fruit flavours, such as orange, pineapple, peach, tropical and granadilla are options that the South African consumer can choose from in the dairy fruit mix category. The well-known brand name manufactured by a large dairy company, was launched in 1983, and is currently the market leader in the dairy fruit mix category, with 60,7 % market share. It is also regarded as a dominant player in the overall fruit juice market where it represents a 20 % market share. The major competitors in the dairy

fruit mix category are two other dairy manufacturers of which the one has a 21,3 % market share and the other a 9,4 %.

Consumers are faced with food choices on a daily basis, and it is an advantage for the food manufacturer to know if consumers like or dislike their products and the reasons why consumers like or dislike certain food products (Marshall, 1995:3). Consumers must be understood in the context of their environment, where social and cultural factors amongst others play a role in the formation of food habits and food choices (Cassel, 1957:732; Krondl & Coleman, 1988:61; Rozin, 1996:84; Kittler & Sucher, 2004:5). Limited research has been done on the food choice behaviour of black consumers in South Africa and therefore the food choice behaviour of black consumers is not well documented. The consumers choice have an influence on the success or failure of a product, and the whole food production system, that includes farm production, processing, manufacturing and even the retailing thereof is eventually influenced (Marshall, 1995:7; Asp, 1999:287). Asp (1999:2) indicated that the introduction of a new product can cost approximately \$ 5 – 10 million, and that product development must therefore be based on the consumer's needs, preferences and uses of the product. Resurreccion (1998:2) also mentions that products are manufactured to fulfill consumer needs, but that approximately 90 % of new products disappear after a while. Product development is expensive, and can contribute to the failure or success of the food manufacturing company. This emphasizes the importance and necessity of consumer tests in product development (Resurreccion, 1998:1; Imram, 1999:224). The food manufacturer must know if consumers like their product, and why. This implies that a food manufacturing company must know the product's market, market positioning, and the characteristics of their product, in comparison to other competitors in the market (Gains, 1994:53).

One way of ensuring that a food manufacturing company's products are correctly targeted is by using strategic food marketing research for guidance and improvements in product development and marketing (Trijp & Meulenberg, 1996:286; Lawless & Heymann, 1998:603). Strategic food marketing research concerns all the research that is involved with the consumer's food related behaviour, and the performance and attributes of food products in comparison with the competitor's products. Strategic research has an essential role if new product opportunities and marketing ideas are considered. Consumer sensory evaluation (applying both quantitative and qualitative techniques) can be used as strategic research tools to improve the appearance, taste, flavour and texture of food products (Resurreccion, 1998:2; Lawless & Heymann,

1998:519). The increase in the application of qualitative research techniques in strategic consumer research is recognized and is now used more often (Lawless & Heymann, 1998:603). Limited attention has been given to the qualitative research approach in consumer food acceptability research although it is considered as a valuable method in strategic research (Lawless & Heymann, 1998:519). Determining acceptability and preferences of a food product, can thus be used to explain and understand food choice, and can assist in guiding product development, but does not provide a guarantee of success or failure thereof (Trijp & Meulenberg, 1996:272; Resurreccion, 1998:2).

The brand name from the dairy manufacturer with the largest market share in the dairy fruit mix category seems to be the popular and preferred beverage, although it is more expensive than the other brand names. Marketing figures* indicate that the black consumers in the Kwa-Zulu Natal region prefer to buy the brand name from the manufacturer with the largest market share, and more specifically the orange and pineapple flavours. This observation led to the question of why this brand is chosen above the other less expensive brands, and why does this consumer group particularly prefer the orange and pineapple flavours above the other flavours (namely peach, tropical and granadilla). Recently a new fruit flavour has been launched, and the question of how acceptable this new flavour is to this consumer group, and how it compares to the other flavours, is also relevant.

From the abovementioned, the following research aim was formulated for this study. The objective for this study was to determine, understand and describe the reasons for the acceptability, choice and preference of dairy fruit beverages by a group of black South-African female consumers

1.2 Structure and presentation of the study

From the preceding background and justification, the study will be presented according to the following outline.

*Marketing figures are confidential

CHAPTER 2: THE BLACK SOUTH AFRICAN CONSUMER

In this chapter the black female consumer from the Kwa-Zulu Natal region in South Africa will be discussed. Limited research is available on this specific target group, but generalised information can be applied.

CHAPTER 3: DAIRY FRUIT BEVERAGES

In this chapter the characteristics of dairy fruit beverages, as an unique South African beverage will be described.

CHAPTER 4: THEORETICAL FRAMEWORK FOR THE STUDY

To solve the questions posed in the background and justification for this study, a relevant theoretical framework has been chosen. The theoretical framework and the concepts relating to the framework are discussed in this chapter.

CHAPTER 5: RESEARCH DESIGN AND METHODOLOGY

It is essential to have a plan when conducting research. The research design refers to how the researcher conducted the research study in order to solve the research problem, and therefore reflects the methods, techniques and procedures that were used to conduct the study. The research goal and objectives that were relevant to the aim of this study including the methodology that was used in the collection and analysis of the data will be included in this chapter.

CHAPTER 6: DISCUSSION OF RESULTS

In this chapter the results will be presented and discussed. The presentation and discussion of the results will be according to the two phases in which the study was conducted.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

In this chapter the main findings and recommendations for this study will be presented according to the the theoretical framework used in this study.

CHAPTER 2

THE BLACK SOUTH AFRICAN CONSUMER

2.1 Introduction

In this chapter, background information on the black South African consumer will be given and discussed. The limited information available, however, is provided to gain a better understanding of the target group for this study, namely the black female consumer from Kwa-Zulu Natal. South Africa has recently undergone a major transformation and this is characterised by ongoing changes in the values and lifestyles of a multicultural, heterogenous society (Du Plessis & Rosseau, 2003:399). A transition in eating patterns of the black consumer has been noticed, from a traditional eating pattern, to that typical of a Western lifestyle (Viljoen & Gericke, 2001:100).

2.2 Characteristics of the black consumer in South Africa

South Africa has a complex and dynamic marketing milieu, with a majority of black consumers. Currently the black consumers constitute the largest racial majority of the South African population (Du Plessis & Rousseau, 2003:50). Du Plessis and Rousseau (2003:50) and Kleinhans (2003:1) indicate that the South African black market can be divided into a variety of market segments, according to its own distinctive needs and tastes. It is, therefore, important to understand the black consumer when cross-cultural research is planned. People with different cultural backgrounds might understand and interpret questions differently (Du Plessis & Rousseau, 2003:32). For example, people with a rural background might experience language problems with the inability to express themselves when answering questions in a second language. The black South African consumer will be briefly described in terms of culture and social class, age, education, income, the marketing mix and food preferences.

Culture and acculturation The process of acculturation has contributed to the development of a black consumer market that differs from the traditional black consumer culture. The black South African consumer of today has undergone a shift

in attitude and has a more ambitious outlook on life compared to the previous traditional lifestyle (Du Plessis & Rousseau, 2003:400). The urbanized black consumer can thus be regarded as more sophisticated and better educated than the older rural black consumers, due to the influences of an urban lifestyle. Some traditional values are now being replaced by modern Western ones that reflect a new value system where social status, self-expression and sharing experiences have become important (Du Plessis & Rousseau, 2003:405). As a result of Westernisation and socialisation, the black consumer has adopted certain values from others whom they admire. This can also be due to social pressures from people with whom they come in contact. Together with the adoption of new social values, the food habits of the black consumer have also undergone major changes. Acculturation has taken place, which is also reflected in their food consumption patterns because traditional food choices have now been extended with Western-type food items (Viljoen & Gericke, 2001:101; Kgaphola & Viljoen, 2004:16-25).

Social class Social reference groups fulfill an important role in the black South African market and there appears to be distinctive social classes (Cant & Brink, 1999:5; Du Plessis & Rousseau, 2003:390). Each class can be characterized by unique belief systems, dress codes and language patterns. These black consumers are also very conscious of their choice of products to reflect the “right” social class in which they would wish to be categorized by their friends and peers. Peer-group pressure, interdependence and cross-pollination of ideas are very strong in the rural and urban illiterate market (Du Plessis & Rosseau, 2003:390).

Gender There are more than two million black households headed by women in South Africa and, therefore, black women have become very prominent and important role-players in the buying decision (Cant & Brink, 1999:8). The black female consumer can be considered as the gatekeeper of the family as more responsibility for decision making is allocated to her. Traditionally, the extended family was the norm in African life but these extended families are becoming the exception in urban areas (Van der Reis & Mabaso in Cant & Brink, 1999:8). The family and kinship, therefore, no longer have such an important role anymore in urban living areas as opposed to the traditional rural lifestyle.

Age The age distribution of the South African population resembles the structure of a developing rather than a developed country (Du Plessis & Rosseau, 2003:54). The majority of the black population is under 20 years of age and this implies that the youth

will emerge as a major market segment in the country (Cant & Brink, 1999:8). Image is very important among the black youth and will have a significant influence on the buying power of the country in the future.

Education Recent research has also revealed that relatively few black South Africans attend a tertiary educational institution. The highest proportion of illiterates (26 %) are found amongst the 4.5 million African women aged 20 years or older living in rural areas (Du Plessis & Rosseau, 2003:95). Only about 20 % of the black population has received some high school education (Cant & Brink, 1999:9).

Income The buying and spending power of black consumers is expected to grow and almost double in future. The black population is responsible for approximately 52 % of the total consumer spending in South Africa (Cant & Brink, 1999:9).

Marketing mix The marketing mix refers to the four well-known elements namely product, price, distribution and marketing communication. These elements will be discussed in relation to the black South African consumer and the manner in which their food choice behaviour is described.

- **Product** Recent studies have found that one of the characteristics of the black consumer is that they are usually predisposed to popular or leading brands and brand loyalty and that they are unlikely to purchase private-label and generic products (Schiffman and Kanuk, 1997:449). The media has also realised that the habits of black consumers differ from the rest of the population. Therefore, the latest trend is to supplement marketing and advertising in magazines, newspapers and other media with a message specifically directed at black consumers (Schiffman & Kanuk, 1997:450; Du Plessis & Rousseau, 2003:390).
- **Pricing** The perception of the black consumer regarding price and quality is complex. Some black consumers are prepared to pay for quality, whereas some cannot afford quality. The black consumers in the lower income group are very price sensitive and price is of a major concern to this target group (Cant & Brink, 1999:9).
- **Distribution** The majority of black consumers do their monthly shopping at major supermarkets in the city centres. Day-to-day and weekly shopping is conducted within the townships at the local outlets (Cant & Brink, 1999:9; Du

Plessis & Rousseau, 2003:95, 391)

- **Marketing communication** Word-of-mouth communication is, according to Cant & Brink (1999:12), the most effective marketing method in black communities. However, the black youth do regard advertising as necessary as it informs people and gives details on special offers.

Food preferences Hughson (1995:31) mentioned that social and cultural factors are equally important influences on food choice as are food availability and economic factors. Food products chosen by the consumer are also those that are usually preferred and acceptable. Culture determines the boundaries of an individual's food choice and provides a sense of security through familiar foods and prescribes which foods are acceptable. An individual's cultural background, therefore, often dictates a person's taste preferences. Food chosen not only provides nourishment but also serves as a reflection of the symbolic meanings, values and lifestyles of the consumer. It is often found within a specific cultural or ethnic group that traditional food products still enjoy a loyal following (Hughson, 1995:31). Preferred food products are often also those that are acceptable in a specific cultural group. Traditional fermented milk products were core food items in the traditional Zulu diet (Bryant, 1967:265). Today, fermented dairy products are still a preferred food product by urbanised black consumers in South Africa (Hughson, 1995:31; Beukes, Bester & Mostert, 2000:189). Fresh milk and fermented dairy products were also rated as high preference food items by the black South African men in a study by Viljoen and Gericke (2001:114). Beverages such as dairy fruit beverages were found to be popular food items for the black consumers in South Africa.

2.3 Summary

Food choice and food behaviour make important contributions to the food habits and social structure of a particular cultural group. Various internal and external influences contribute to changes in food choices. The social structure in South Africa has changed and certain social values adapt to changes and provide the black consumer in South Africa with new meanings. It is important to understand that the black consumer in South Africa is continually exposed to new influences and will make food choices within this context.

CHAPTER 3

DAIRY FRUIT BEVERAGES

3.1 Introduction

The beverage sector represents one of the most important sectors in the food industry (Mann, 2003:35; Truman, 2004:23). Urbanisation is regarded as one of the largest driving forces of growth in the dairy industry, due to increased spending power and access to a greater variety of products (Hughson, 1995:31). Dairy-based beverages are increasing in popularity in the beverage sector, in spite of the increased competition from other products such as carbonated beverages and fresh fruit juices. Although the latest trends show a decline in the consumption of milk products, there is an increase in the fruit juice intake compared to soft drink consumption (Mann, 2003:35). One of the reasons is the increase in the consumption of skim milk and a decline in the consumption of full cream milk and full cream milk products. This contributes to the importance of the dairy fruit beverage category in the food sector. In this chapter, the characteristics of dairy fruit beverages as an unique South African beverage will be described.

3.2 Attributes and characteristics of dairy fruit beverages

The dairy fruit mix category was launched during 1983 and has become a well-known beverage to the South African consumer. Dairy fruit beverages are a mixture of skimmed milk, fruit juice, sugar, stabilizers, flavourants, colourants and preservatives. The colour of the dairy fruit beverages depends on the type of fruit flavour used and the appearance is similar to milk, due to the addition of skimmed milk that contributes to a smooth, silky and opaque appearance. The milk and sugar give it a sweet taste, without the acidity but with a soft and round mouth-feel. Dairy fruit beverages have a high-energy content (approximately 200 kJ per 100 ml) and, therefore, influence their satiety value.

3.3 Consumption of dairy fruit beverages

Dairy fruit beverages are popular amongst the black consumers in South Africa. The reason for this is unknown but various possibilities can be considered, the one reason being that milk was traditionally one of the dominant food items in the Zulu diet (Bryant, 1967:264). Milk was largely consumed in a fermented state (Bryant, 1967:264; Hughson, 1995:31; Beukes *et al*, 2000:189). Milk-based beverages can, therefore, be assumed to be acceptable within the cultural norms and standards. For this group, some of the food products preferred by most of the black soldiers in South Africa include food items such milk, fruit juice and sour tasting food (Viljoen & Gericke, 2001:114). This could possibly explain the popularity of dairy fruit beverages. Another possible reason offered is that some black consumers have a tendency to lactose intolerance and, therefore, a beverage containing fruit juice will be more acceptable than other dairy products (Hughson, 1995:35). Hughson (1995:31) also mentions that affordability, refrigeration and education are barriers that the food manufacturer in the dairy sector must still overcome in the black market. The lack of electricity and, consequently, refrigeration in rural areas could influence the purchasing and consumption of dairy products.

3.4 Summary

The growth of the dairy industry and the consumption of dairy products by black consumers are considered to have good growth potential due to the increase in the upcoming black consumer spending power (Hughson, 1995:31). Being one of the most important sectors in the food industry, the manufacturer of dairy fruit beverages has a responsibility to ascertain their consumers' likes and dislikes regarding their products.

CHAPTER 4

THEORETICAL FRAMEWORK FOR THE STUDY

4.1 Introduction

The theoretical framework for this study, is based on a model by Shepherd (1985 reviewed in Shepherd, 1989:4; Shepherd & Raats, 1996:347), and illustrates some of the factors that can influence food choice and preference. Various authors (Shepherd & Sparks,1994:202; Cardello,1994:253; Falk, Bisogni & Sobal, 1996:265; Asp, 1999:1) mention that food choice is influenced by many interrelating factors, and it can, therefore, be described as a complex human behaviour. The model of Shepherd (see Figure 1) represents three groups of the variables that have an influence on food choice. The variables are grouped into the food, the consumer and the economic and social environment.

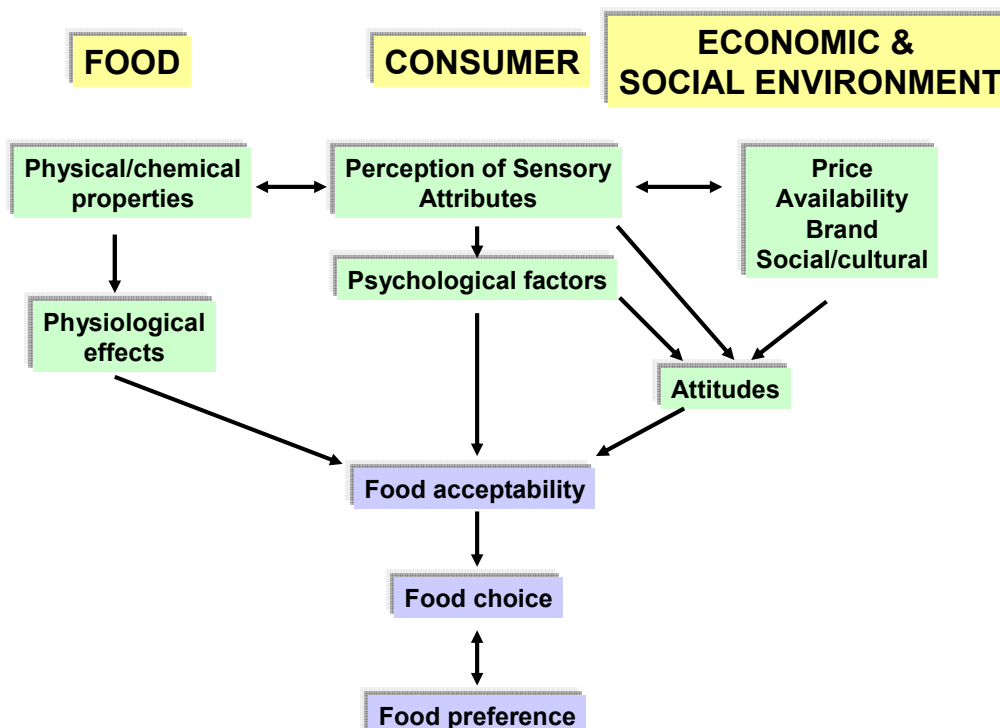


FIGURE 1: FACTORS INFLUENCING FOOD CHOICE (Adapted from Shepherd, 1985)

As the model indicates a variety of factors influence food choice. The different groups of factors that influence food choice will be discussed under the headings, as portrayed in the theoretical framework, namely **food**, the **consumer** and **economic**

and **social environment** (Figure 1). It is important to understand that all of these factors are interrelated, for example the physical and chemical properties of a food product not only have a physiological effect, but also influence the perception that the consumer has about the sensory attributes of that food product. The consumer's perception of the sensory attributes of the food product and the psychological characteristics of the consumer such as his/her personality, previous experiences and mood, together with the economic and social environment influences the attitude of the consumer. This attitude is a determining factor in food acceptability, preference and choice.

4.2 Food

The first group of variables that influence food choice is the food product itself, where the physical and chemical properties of the food product, as well as the physiological effect that the food product has on the human body is considered.

4.2.1 Physical and chemical properties

Food has chemical properties that give a food product its physical characteristics and these are represented by components such as the water, carbohydrate, fat and protein content (Bennion, 1995:83; Blades, 2001:72). Some of these chemical and physical properties can be perceived in terms of sensory attributes such as appearance, aroma, taste, flavour and texture of a food product (Shepherd & Sparks, 1994:204). The physical and chemical properties are unique to every individual food product. These properties help to create the consumer's perceptions of food products, and it is this perception that the consumer uses in making food choices. The experience of pleasantness or unpleasantness with regard to the physical and chemical properties of the food product can determine the degree of acceptability or preference of the sensory attributes (Kronl & Coleman, 1988:53; Shepherd & Sparks, 1994:204). Factors such as the presence of certain physical and chemical properties for example the temperature of a beverage, the viscosity, the mouth feel and the effect of preservatives if present, are all part of the aspects that can contribute to the choice of purchasing or consumption of a food product such as a dairy fruit beverage. The effect of the physical and chemical properties on the perception of the sensory attributes of a food product must, therefore, not be underestimated and is an important factor during food choice.

4.2.2 Physiological effects

The physiological effects refer to the biological or physiological influence of the physical and chemical properties of the food on the consumer, and these are reflected in various ways. Satiety, hunger, thirst and appetite are examples of physiological states that can all influence food choice, acceptability and preferences due to the effect of these physical and chemical properties on the human body (Shepherd & Sparks, 1994:204; Blades, 2001:72). A person can, for example, choose a food product with a high energy content simply to reduce hunger, or drink a beverage to quench thirst.

Shepherd and Sparks (1994:205) and Cardello (1994:253) also mention that the sensory attributes of a food product and its post-ingestional consequences contribute to the memory that the consumer will have about the food and this also contributes to the acceptability and/or the preference of a specific food product. The contribution of such a physiological experience on the psychology of the consumer is considered as very important. The physiological experience, therefore, leaves the consumer with a strong memory and associations with different kinds of foods. Previous experience will determine expectations, brand loyalty and attitudes towards food products (Du Plessis & Rousseau, 2003:231). Asp (1999:289) also mentions that preference is a result of physiological and psychological development, and that liked foods are familiar, considered as pleasant, usually the ones eaten, and can thus ultimately influence preferences, choice and consumption. Therefore drinking a cold and refreshing beverage when very thirsty will enhance the memory of the physical effects on the body. A person, therefore, builds up a memory of the physiological consequences of different food products (Kronl & Coleman, 1988:192; Shepherd & Raats, 1996:347). The relationship between the physical and/or chemical properties of the food product, its physiological effects on the consumer and its contribution to the perception of the sensory attributes by the consumer is, therefore, interrelated and it also influences each other as indicated by the linking arrow between these factors (see Figure 1).

4.3 Consumer

The second group of variables refers to the consumer who forms a perception of the sensory attributes of a food product and makes the food choice. Together with the specific chemical and physical properties that are related to the food product, the psychological factors that are unique to every individual can influence food choice

(Shepherd & Raats, 1996:347). Attitudes are also indirectly influenced by the perception of the sensory attributes and the psychological factors (see Figure 1). The contribution of these consumer-related variables on food choice, acceptability and preference will be discussed.

4.3.1 Perception of sensory attributes

The perception of sensory attributes refers to the way in which a person **perceives** a food product in terms of the sensory properties (such as colour, smell, taste, sound and mouthfeel) (Kronl & Coleman, 1988:73; Cardello, 1994:254; Assael, 1995:189). The consumer's perception of the sensory attributes of a food product can be determined by means of sensory evaluation tests (Shepherd & Sparks, 1994:204; Cardello, 1994:254). Sensory preference can be determined by sensory evaluation and is an "indicator of food acceptability which could or could not be a predictor of consumer's behaviour" (Raats, Shepherd & Sparks, 1995:484). The emotional or hedonic response to a food product that causes a pleasant/unpleasant or like/dislike response is referred to as the acceptability of a food product and is reflected by an individual's attitude (Cardello, 1994:254).

The perception of the stimuli that the consumer receives is a combination of the sensory attributes of a food product, cognitive elements and other variables (Cardello, 1994:254). It is important for the food manufacturer to understand how perception influences food choice because consumers make decisions and take actions based on what they perceive to be reality (Du Plessis & Rousseau, 2003:217). The sensory attributes of a food product, and the response of an individual to these attributes, are important determinants during the food choice process (Kronl & Coleman, 1988:54). The perception of the sensory attributes of a food product is a cognitive mechanism (Olson in Kronl & Coleman, 1988:54). Previous experience with a food product assigns meaning to eating it and this meaning is then stored in the memory of the consumer. When the consumer is faced with food choices the perception that was already stored in the memory is integrated with that specific situation. The consumer then evaluates different options or choices and then makes a selection. See Figure 2 for an illustration of how perceptions are formed in the food choice process.

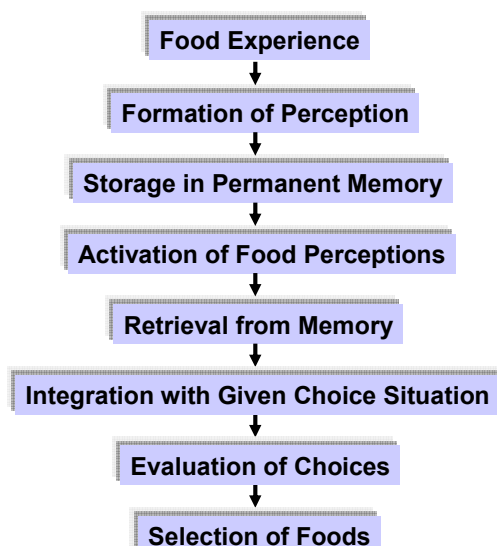


FIGURE 2: THE ROLE OF PERCEPTION IN FOOD CHOICE (Olsen, 1981 in Krondl & Coleman, 1988:54)

Garber, Hyat and Starr (2003:3) mention that preference and choice is based on the perception a person has of the sensory characteristics of a food product. Imram (1999:225) states that the sensory attributes of a food product interact with the consumer's physiological, behavioural and cognitive characteristics to form the consumer's perception about a food product.

Consumer perception is influenced by the sensory characteristics of a food product such as the taste, smell, flavour, texture, colour and other visual elements such as the packaging. For this reason sensory evaluation tests should be included when consumer research is performed (Garber *et al*, 2003:10). Various authors state that sensory evaluation tests are very important during the product development process (Stone & Sidel, 1993:13; Lawless & Heymann, 1998:5; Imram, 1999:225).

4.3.2 Psychological factors

Psychological factors also influence food choice. Apart from nourishment, people consume food for various reasons such as to meet their psychological needs, and to fulfill social needs and pressures (Fieldhouse, 1995:203). Psychological factors include factors such as personality, mood, beliefs and attitude of a person towards eating (Shepherd & Sparks, 1994:204; Blades, 2001:72). People have different lifestyles, and each has a unique personality and behaviour that distinguishes one person from another. The unique characteristics of every individual, therefore, also

influences the way in which a person behaves and the food choices made (Bareham, 1995:146). The influence of physical and emotional factors on the lives of people can result in specific moods (feelings of happiness, unhappiness, loneliness, sadness, etc) that can influence the type of foods that they choose. Certain food products such as chocolate can be seen as a food product that consumers might buy to relieve feelings of unhappiness or sadness in order to improve their mood or attitude (Fieldhouse, 1995:186).

The food practices of a cultural group are related to their value system, and it is also mentioned that beliefs about foods “represent an interpretation of the food values” (Parraga, 1990:661). The psychological reasoning behind choosing certain food products, and avoiding other food products, are sometimes rooted in the value system of the person. Attitudes towards food also reflect a person’s belief and value system, and includes the feelings and emotions a person has about food (Fieldhouse, 1995:15; Bryant, De Walt, Courtney & Schwartz, 2003:347). Hunger and appetite is not only seen as a physiological need, but is also associated with emotional needs. Food products are connected to circumstances, and familiar foods are therefore often valued in a crisis (Fieldhouse, 1995:191). Milk for example, is seen as a universal food that is connected with strong emotional attitudes. The feelings and emotions the consumer therefore has about food is closely linked with their attitude towards food products.

4.4 Economic and Social Environment

The economic and social environment is the third group of variables that have an influence on food choice. In the model of Shepherd (1985) the external economic and social environment within which food choices are made, is also considered and includes aspects such as price, availability and brand name of the food product, as well as the social and cultural influences that can determine food choices and preferences. Economic factors play a major role in the food choice of consumers due to the control of demand and supply as determined by government policy and food producers. The social environment, on the other hand, has a dynamic influence although constantly subject to change, due to the impact of factors such as urbanisation, migration, industrialisation, education and mass media communication (Rozin, 1996:84). A discussion follows on each of the above mentioned aspects as portrayed in the model namely price, availability, and brand of the product as well as social and cultural influences. The economic and social environment also contributes to the consumer’s attitudes towards the acceptability, choice and preference of food

products.

4.4.1 Price

The price of food is a determining factor in food choice, and is rated equal in importance to taste (Blaylock, Smallwood, Kassel, Variyam & Aldrich, 1999:271). Bareham (1995:39) also mentions that price and income are some of the main economic factors influencing food choice. Price affects food choice because it often relates to affordability or what the consumer believes they can afford to pay. If a consumer cannot afford the product, it can be considered as not available to that consumer. The price of food is therefore a major practical determinant of what is effectively available and what will be consumed (Ritson & Hutchins, 1995:21; Rozin, 1996:86; Bryant *et al*, 2003:13)

Less privileged consumers can be more sensitive to a price increase, and it is important to understand how crucial price is to the consumer. Krondl and Coleman (1988:62), Bareham (1995:39), Blaylock *et al* (1999:272) and Cant and Brink (1999:9) indicated that it is difficult to predict what the consumer will do if prices increase. Some may still buy the product, while others will buy the product but less of it, and some will buy a similar product of a brand that is less expensive, while others can even switch to something completely different such as a fresh fruit juice because it is perceived as an alternative substitute for a dairy fruit beverage. The relationship between price and quality is also a criteria in food choice. This must be kept in mind, due to the perception that a high price often creates the impression of a higher quality food product. Consumers therefore often evaluate price in relation to the food product's perceived quality or value for money and the prices of competitive substitute products (such as fresh fruit juice or flavoured milk) (Trijp & Meulenberg, 1996:274). Quality according to Ritson and Hutchins (1995:21), is a rather subjective feature of food consumption. According to them, the consumer always seeks for a balance between quality and price. The important role of price during the selection of a food product is thus important when product development and strategic positioning is considered.

4.4.2 Availability

Food choice is determined by what people can obtain from the environment (Fieldhouse, 1995:27; Rozin, 1996:86; Southgate, 1996:379; Bryant *et al*, 2003:10-14). Food availability is determined by influences from the external environment to the consumer such as the natural, physical, political and economic environment. Availability is further controlled either directly through food prices, determined by the food manufacturer or the government, or indirectly by the interplay of supply and demand (Southgate, 1996:380). Seasonality, urbanisation and geographical factors, can also influence the availability of food products. Seasonal influences and trends can be seen in food consumption patterns. However, this has been lately weakened by technological developments (Southgate, 1996:379). Due to advanced technology, the production, processing and distribution of food products are now not entirely dependent on the physical environment and the season, and food products can be produced through-out the year. This contributes to the continuous availability of food products to the consumer (such as strawberries, avocados and oranges).

Consumers living in urban areas have more access food products and it is assumed that dairy fruit beverages will also be more available in these areas. The availability of dairy fruit beverages in supermarkets and to food retailers makes it more accessible to the consumer. Supermarkets and food retailers have contributed to major changes in food purchasing patterns and are responsible for the increased variety and availability of food products (Southgate, 1996:382). This confirms that food choice is also influenced by factors such as seasonality, packaging, price, income, and the distribution of the food product (Fieldhouse, 1995:27).

4.4.3 Brand

A brand refers to the whole experience surrounding a product – it defines the relationship that a consumer has with a specific product and is, therefore, much more than simply a logo that aims to influence consumer behaviour (Schreurer, 2000:16). The average consumer takes approximately 12 seconds to choose a specific brand, which does not leave much time for the consumer to consider other factors such as price and nutritional information (Blaylock *et al*, 1999:279). Consumers associate food products with a name, and packaging with a label, and thus evaluate a food product by its name, packaging and label (Meiselman, 1996:246). The packaging or the appearance of the product can influence the consumer's first impression of the product

(Cardello, 1994:267). This not only includes the packaging or label of the product, but also the sensory characteristics of the product. Previous research indicated that colour was the most significant attribute when it came to the consumer's perception and acceptability of a food product. The shape, colour, design, logo, symbols, brand and item names are some of the characteristics that are related to the packaging of the product (Hutchings in Cardello, 1994:269). The packaging creates an expectation of the sensory quality of the food product that can influence the consumer's preferences about a product (Cardello, 1994:271). The consumer, therefore, has a certain expectation that is associated with a food product's name, packaging and label.

It is widely recognised that advertising and mass media have a major influence on society. Advertising may indeed influence the choice of brand-name or specific commodity within an already desired category of items (Fieldhouse, 1995:11). The communication industry is recognised as a media that sells and promotes social change and affects and shapes people's lives (Fieldhouse, 1995:11). It is, therefore, clear that marketing communication is used to reinforce and retain loyal consumers, and that it has become a powerful means of spreading information and influencing people (Van Raaij *et al*, 2001:60). Advertising and mass media can according to Fieldhouse (1995:11), influence the choice of different brands but, if there is not a perceived need for a certain product, then no advertising will persuade the consumer to buy that product. Advertising or marketing establishes product identity, provides product information and builds brand loyalty. The advertising of food products may have a considerable impact on children, who then persuade adults to purchase products on their behalf and according to their demands and requests (Fieldhouse, 1995:5). Schreurer (2000:17) states that marketing communicates what consumers can expect from a brand, but that the experience with the brand is important when food choice is considered. A concern for the continued success of a food manufacturing company is its capability to retain its current consumers and make them loyal to the brand (Southgate, 1996:382; Dekimpe, Steenkamp, Mellens & Abeelee, 1997:405). Odin, Odin and Valette-Florence (2001:75) states that "the success of a brand on the long term is not based on the number of consumers that buy once, but on the number of consumers who become regular buyers of the brand". A large number of loyal consumers have been identified as a competitive advantage for a company. Dekimpe *et al* (1997:405) also mentions that loyal consumers are typically less price sensitive.

4.4.4 Cultural and social influences

Cultural and social influences are considered as part of the external environment that influences food choice, acceptance and consumption. These will be discussed separately under the cultural and social aspects, however, it is important to remember that these two aspects are often closely related and that they can influence each other through the process of socialization and enculturation (Fieldhouse, 1995:3; Bryant *et al*, 2003:347).

4.4.4.1 Cultural aspects

Culture is broadly defined as the “values, beliefs, attitudes, and practices accepted by members of a group or community, it is learned, not inherited and is passed on from generation to generation through language acquisition and socialization, in a process called enculturation” (Kittler & Sucher, 2004:5). Culture is “a major determinant of what we eat”, and includes all the food taboos, rituals and food rules, that define what may be eaten, by whom, how and when (Marshall, 1995:5; Fieldhouse, 1995:1). “People communicate deep-rooted sentiments through food” (Parraga, 1990:661). Rozin (1996:89) also mentions that culture has “a powerful influence on what a person eats”. Culture establishes how food is used and, therefore, it affects food intake (Fieldhouse, 1995:1; Kittler & Sucher, 2004:4). This determines the boundaries of an individual's food choice. Culture also provides a sense of security through familiar foods. This emphasises the influence that an individual's culture will have on food choice and food behaviour. An individual's cultural background can, therefore, dictate a person's taste preferences. It is important to mention that culture is a learned experience, acquired by people as they live their everyday lives, and is transmitted from one generation to the next. Parraga (1990:661) gives the example of milk that is considered as a primary security, due to the association with early life or childhood. The consumption of food is, therefore, not only to provide nourishment but also serves as a reflection of the symbolic meanings, values and lifestyles that are often related to the culture of an individual (Shaw & Clarke, 1998:163).

Culture consists of a value system and, therefore, food practices of a cultural group are closely related to that culture's value system (Fieldhouse, 1995:2). Values determine what food is seen as desirable and undesirable in a cultural group (Parraga, 1990:661). The value system of a culture “shapes the way in which foods are used” (Fieldhouse 1995:15). Values are reflected in the beliefs, attitude, behaviour and

practices related to food, and how specific foods are viewed and used. Values are used by individuals as a frame of reference when they are confronted with new food products. Beliefs about food products represent "an interpretation of the food values, and serve as cognitive elements of attitude" (Parraga, 1990:661).

Food habits and choices also reflect a person's cultural background and can be defined as "the standards, norms, or behaviour that one acquires as a member of a social group" (Parraga, 1990:662). Individuals will therefore choose the food items from the available foods that are considered as acceptable to their social or cultural group. These food patterns and food choices that are considered as acceptable are transmitted to the children and the succeeding generations in a cultural group through the process of enculturation and socialization (Kronld & Coleman, 1986:193; Parraga, 1990:662; Fieldhouse, 1995:5; Rozin, 1996:96). This means that culture is not only reflected by a person's social behaviour, but that it is constantly changing, and forms part of a dynamic process. Although food habits are established early in life, they are often long lasting, but are nevertheless subject to change (Fieldhouse, 1995:3)

4.4.4.2 Social aspects

Food has numerous associations and meanings and this becomes evident in everyday experiences and social interactions. Food can, for example, be used to express friendship and it can also be a symbol of social prestige and status (Kronld & Coleman, 1988:63; Fieldhouse, 1995:78). Food can be used as an expression of status and social distance, or of power and family ties. Food can also be used to express respect, for smoothing social relations, and for showing concern. Social values and structures are reflected in the way that food is distributed and shared between people although this is often done according to the complex rules and customs of the cultural group. This is portrayed in certain cultural groups where the quality and quantity of food offered or shared could, for example, reflect an understanding of the type of social relationship involved. Most people are unaware of the social rules that govern their food behaviour and simply accept it as how things are done. The social environment and the effects of social interaction have a major influence on food choices and on food appreciation (Meiselman, 1996:250).

It has long been recognised that foods have social, prestige, status and values attached to them, which are not related to its nutritional value. Status is, for example, connected to costly items to impress others, and this can create the illusion of freedom

of choice, or to enhance self-esteem if an expensive or exotic food is purchased (Fieldhouse, 1995:81). Food is also used to express social relationships (such as friendship) and hospitality, for example sharing and drinking a cup of coffee or tea with a friend (Fieldhouse, 1995:83). What is seen as prestigious foods can often reflect a measure of status that would frequently differ between different cultural groups, and also have different meanings. Dairy fruit beverages can, for example, be shared amongst friends, and can be used to reflect values of status, friendship or hospitality.

4.5 Attitude

In the model of Shepherd (in Shepherd & Raats, 1996:347), attitude is one of the variables that influence food choice. The model refers to the consumer's perception of sensory attributes, the psychological factors, and the economic and social environment that all have an influence on the attitude of the individual. Many of the influencing factors on food choice are shaped by the **attitudes** and beliefs of an individual that had their origin in aspects relating to the food, the consumer and the economic and social environment. The economic and social environment includes influences such as price, brand, availability, and cultural and social aspects. These all have a direct influence on the consumer's attitude towards a food product. Attitude is related to a person's behaviour (Bareham, 1995:169; Shepherd & Raats, 1996:347). According to Krech and Crutchfield (1969:810) attitude consists of three components, namely a cognitive, an affective and a conative component. The cognitive component refers to the information or beliefs about a product or object. The affective component relates to feelings of like or dislike towards an object, while the conative component indicates the tendency to behave in a certain way. If a person believes that a food product has certain desirable characteristics (cognitive element), it seems probable that he or she will like the product (affective element) and should the appropriate opportunity arise he or she will most likely buy it (conative element) (Bareham, 1995:171).

Shepherd and Sparks (1994:205) pointed out that many of the influencing factors on food choice can be the result of people's beliefs and attitudes. A person's attitude towards a food will portray certain beliefs or information about the product, as well as feelings of like or dislike towards the food. This will result in certain behaviour, such as purchasing of a specific brand or specific flavour. If the reasons for brand and flavour preferences can be determined, it will be useful information for product development and strategic marketing. Marketing and economic variables, together with the cultural and social background are also seen as factors that can influence a person's beliefs

and attitudes. Beliefs about the taste and flavour of food products are considered as some of the most important factors in predicting food choice (Shepherd & Sparks, 1994:209).

4.6 Food acceptability, choice and preferences

The influences concerning food, the consumer, the economic and social environment, and the attitude of an individual contributes to the **acceptability, choice** and **preference** of a food product. The model of Shepherd in Figure 1 represents three groups of the variables that can have an influence on food choice. The complete food choice process is a cognitive process that gives the individual a memory of experiences with foods, and can provide insight into predicting food choice behaviour (Cardello, 1994:254). See point 4.3.1 for an explanation of the cognitive process involved during food choice in Olsen's (1981) illustration (see Figure 2).

Food acceptability refers to the emotional or hedonic response to a food product that can cause a pleasant/unpleasant or like/dislike response. Food acceptability therefore gives an indication of how much a person likes or dislikes a food and the sensory attributes of the food (Cardello, 1994:254). Acceptability can be determined on a single food product and is not compared to another product. A test to determine acceptability can also be used to determine preference indirectly (Lawless & Heymann, 1998:431).

Food choice can be described as "a set of conscious and unconscious decisions made by a person at the point of purchase, and at the point of consumption or any point in between" (Hamilton, Mcliveen, & Strugnell 2000:113). As explained above, the food choice process is complex and is influenced by various interrelated factors (Kronl & Coleman, 1986:179; Shepherd & Sparks, 1994:202; Falk *et al*, 1996:257; Palojoki & Tuomi-Gröhn, 2001:15). Rozin (1996:90) describes food choice as "multidetermined, context dependent, and is shaped by cultural factors and individual experiences". Sims (1981:S72) also describes the influence of food choice by many interrelated factors such as the external and internal environment that affects food decisions. Furst, Connors, Bisogni, Sobal and Falk (1996:247) state that food choice has been explored from a variety of disciplines and perspectives, but agrees that it incorporates food decisions that are based on not only conscious reflections but also subconscious and automatic reflections that are influenced by a variety of complex factors.

Food preference refers to an expressed choice between two or more products where the consumer has a choice and one product is chosen above one or more products (Fieldhouse, 1995:194). Food preference can, therefore, be determined directly by paired comparison or preference ranking tests, or indirectly by hedonic tests (Lawless & Heymann, 1998:43; Resurreccion, 1998:11). This implicates according to Resurreccion (1998:11), that there is “an obvious and direct relationship between measuring product liking/acceptance and preference”. Measurements to determine food preference can then also be used to assess food acceptability and to interpret food choice behaviour.

The decision making process that takes place during the choice or purchase of a food product is also a cognitive process (Raats *et al*, 1995:484). Consumers classify the sensory characteristics of a product according to their previous experiences with the product, from statements on the packaging and information that is provided through marketing, as well as from consuming the product itself (Raats *et al*, 1995:484). The combination of the sensory attributes of the product and the cognitive processes result in a like/dislike response to a food product and this is referred to as food acceptability (Cardello, 1994:254). The sensory attributes of a food product can be determined by qualitative and quantitative research techniques that can explain the **acceptability** and **preferences** of the food product in order to make a prediction of food behaviour. Qualitative and quantitative research techniques can be used separately or in combination when sensory evaluation research is conducted. If used in a combined effort both can contribute to determine and describe the sensory attributes of a food product. Both Cardello (1994:254) and Garber *et al* (2003:5) point out that purchase behaviour and an expressed choice is not only influenced by the sensory characteristics of a food product, but by the cognitive process that takes place in the individual consumer’s mind, and by other factors relating to the whole decision making process. All these should be considered when measurements from sensory evaluation tests are interpreted.

Raats *et al* (1995:239) and Garber *et al* (2003:3) further indicated that taste is not the only determinant of food choice, and that the external factors such as price, brand, availability, and culture are also considered simultaneously with the sensory attributes of the products.

4.7 Summary

In this chapter the theoretical framework for the study is explained by using the model of Shepherd (see Figure 1). The factors influencing food choice are categorised as those related to food, the consumer making the choice and to the external economic and social environments within which the choice is made. The physical and/or chemical properties of the food product can have an effect on the consumer's perception of the sensory attributes. Psychological differences between people, such as personality, may also influence food choice. The consumer's perception of sensory attributes together with psychological factors and the economic and social environment influences the attitude of the consumer. Attitude is related to behaviour and will, therefore, have an influence on food acceptability, choice and preference. The interrelatedness and interdependency of these three groups of factors in the food choice process were discussed.

CHAPTER 5

RESEARCH DESIGN AND METHODOLOGY

5.1 Introduction

It is essential to have a plan when conducting research. The research design refers to how the researcher conducted the research process in order to solve the research problem and, therefore, reflects the methods, techniques and procedures that were used to conduct the study. The formulated research problem included specifying the research aim and the unit of analysis (Babbie & Mouton, 2001:xxvi). The research goal and objectives that were relevant to the aim of this study including the methodology that was used in the collection and analysis of the data will be presented.

5.2 Research goal and objectives

The research goal for this study was to determine, understand and describe the reasons for the acceptability, choice and preference of dairy fruit beverages by a group of black South-African female consumers. Food choice, acceptability and preference are complex and dynamic processes, influenced by various groups of interrelated factors as described in the previous chapter. The study was, therefore, conducted in two phases. In the first phase a quantitative research approach was followed to collect the demographic information of the participants and to determine the degree of acceptability towards the dairy fruit beverages by means of standardized sensory evaluation tests. A qualitative research approach was followed during the second phase of the study where focus group discussions were conducted to obtain supportive information to interpret and explain the data obtained from the first phase of the study, and to understand and describe the reasons for acceptability. According to Lawless and Heymann (1998:519), limited qualitative research has been conducted to support the perspectives obtained from sensory evaluation. Many sensory evaluation research departments have thus started to include a qualitative research approach in their consumer research (Lawless & Heymann, 1998:519; Resurreccion, 1998:93). The main difference between the two approaches is that quantitative sensory evaluation is focused on the product attributes and performances, whereas the qualitative approach deals with the underlying perceptions and ideas of the

consumer's reaction and or attitude to these products. When applied to food product evaluation there could be an overlap in these two approaches, as both involve the measuring and / or description of the consumer's attitude towards the food product, based on the consumer's experience (Stewart & Shamdasani in Lawless & Heymann, 1998:520). These two approaches, therefore, support and complement each other, and together they can contribute to more effective product development and marketing of dairy fruit beverages. Qualitative research methods can be used to determine the critical attributes of a food product and to obtain detailed information about consumer attitudes, opinions, perceptions, behaviours and habits and to support the information obtained from the quantitative research methods.

The following objectives were formulated for each phase of the study according to the research goal namely to determine and understand the acceptability, choice and preference of dairy fruit beverages in South-Africa by black female consumers.

For phase one the objectives were:

- To determine the different brands of dairy fruit beverages that were purchased.
- To determine the frequency of use of dairy fruit beverages.
- To determine the different flavours of dairy fruit beverages that were purchased.
- To determine the acceptability of the sensory attributes of the different brands of dairy fruit beverages and their respective flavours.
- To determine whether there was a significant preference for a particular brand and/or flavour of dairy fruit beverages.

In order to understand and describe the responses to the sensory attributes of the dairy fruit beverages including the flavour preferences, the following objectives were set for phase two of the study during the focus group discussions:

- To identify the sensory attributes of dairy fruit beverages that were important during the choice process or at the point of purchase and/or consumption
- To understand the reasons for the hedonic responses to the sensory attributes of the dairy fruit beverages.
- To understand the reasons for brand preferences of the dairy fruit beverages.
- To understand the reasons for flavour preferences of the dairy fruit beverages.
- To understand the influence of external environmental factors (price,

availability, brand, psychological, social and cultural) on the acceptability, choice and preference of dairy fruit beverages.

- To describe the different occasions/situations where dairy fruit beverages are usually consumed.

5.3 Research approach

To be able to reach the research goal, both quantitative and qualitative research approaches were, therefore, employed, as explained above. Preference testing as the only scientific measurement to understand and explain food choice is usually not sufficient (Guthrie, 1990:50; Schutz, 1994:25). To understand food choice, the insights obtained from more than one research approach is usually required to measure, interpret and explain food choice (Lawless & Heymann, 1998:520; Resurreccion, 1998:93).

Resurreccion (1998:93) and Neuman (2000:156) stated that both qualitative and quantitative research approaches involve systematic methods to gather high-quality data, but in each approach the measurement process is different. Lawless and Heymann (1998:522), Neuman (2000:157) as well as Babbie and Mouton (2001:270) also compare the qualitative and quantitative research approaches with each other and concluded that both contribute in their unique way to understand and explain the research problem. The differences, limitations, strengths/weaknesses and advantages of both the quantitative and qualitative research approaches complement each other and are compared in Table 1.

TABLE 1: COMPARISON OF THE QUANTITATIVE AND QUALITATIVE RESEARCH APPROACHES (Lawless & Heymann, 1998:522)

QUANTITATIVE RESEARCH	QUALITATIVE RESEARCH
Large sample (n = 50 – 100)	Small sample or number of participants (n < 12 per group)
Objective data collection methods	Interaction between group members
Fixed questions	Open ended questions, flexible and modifiable
Poorly suited to generate ideas	Well suited to generate ideas and probe issues
Well suited to numerical analysis, easy to assess reliability	Poorly suited to numerical analysis
Statistical analysis appropriate	Analysis is necessarily subjective, mostly non statistical

By using both qualitative and quantitative research approaches, insight is gained into the black female consumer's acceptance, choice and preferences of dairy fruit beverages. Using both research approaches also contributes to describe the performance and attributes of the different brands and flavours of dairy fruit beverages.

A quantitative research approach refers to the quantification of constructs that implies the assigning of numbers to the variables that will be measured (Resurreccion, 1998:93; Babbie & Mouton, 2001:49). The quantitative approach focuses mainly on the control of the variables that are measured, and these can be either through experimental or through statistical control. Sensory evaluation tests measure the sensory attributes of a food product and the consumer's perception of these attributes in a food product (Lawless & Heymann, 1998:604). In consumer sensory analysis, the aim is to determine whether the consumer likes the product, prefers it over another product, or finds the product acceptable based on its sensory characteristics (Lawless & Heymann, 1998:430). Sensory evaluation tests as quantitative data collection techniques, therefore, assisted in the discovering and measuring of the sensory and performance attributes of dairy fruit beverages in this study. Preference rating and ranking tests were used as sensory evaluation techniques. The preference rating tests were used to determine the consumer's like or dislike responses to the sensory attributes of the dairy fruit beverages. The preference ranking test was used to determine the most preferred flavour between the different dairy fruit beverage brands.

A qualitative research approach on the other hand is descriptive and employs techniques that aid in defining the critical attributes of a food product from the consumer's point of view and this has certain advantages for a food manufacturing company (Resurreccion, 1998:93). It can therefore be used to gain insight into the reasons for the success or failure of new variations of a product through or by means of the consumer's opinions. For example, important product attributes for future developments can also be obtained. Qualitative research findings can be used for marketing purposes and to describe the desired sensory attributes of a food product. It can contribute to understanding reasons for brand preferences and/or perceived shortcomings compared to the competitor's product, and even for new product developments (Lawless & Heymann, 1998:603; Resurreccion, 1998:93). It was, therefore, decided to compare and describe the three brands of dairy fruit beverages used in this study by means of focus group discussions. Defining the desired sensory attributes of dairy fruit beverages from the consumer's point of view could certainly provide more insight into product development and could be an advantage for the food

manufacturing company.

Various techniques can be employed in qualitative research to identify, interpret and explain the consumer's reaction to specific sensory attributes of a food product. Focus group discussions can be used as a technique to obtain consumer responses that can identify product concepts, and attributes about the product or concepts that are considered important by the consumer (Casey & Krueger, 1994:77; Resurreccion, 1998:2). These insights gained from focus group discussion are valuable in the early stages of product development (Lawless & Heymann, 1998:520). Focus group discussions were used because they add depth and a better understanding to sensory responses. Most people feel comfortable talking about a topic when they are involved in a discussion as part of a group. Focus group discussions were therefore considered appropriate for this study, due to the open and active participation of the consumer when the topic of interest, such as the themes relating to dairy fruit beverages, was discussed.

5.4. Conceptual framework

The conceptual framework used in this study is presented in Figure 3, and is based on a model of Shepherd (in Shepherd & Raats, 1996:347). It indicates three groups of factors that influence food choice. How these three groups of factors influence the acceptability, food choice and preference of dairy fruit beverages were investigated.

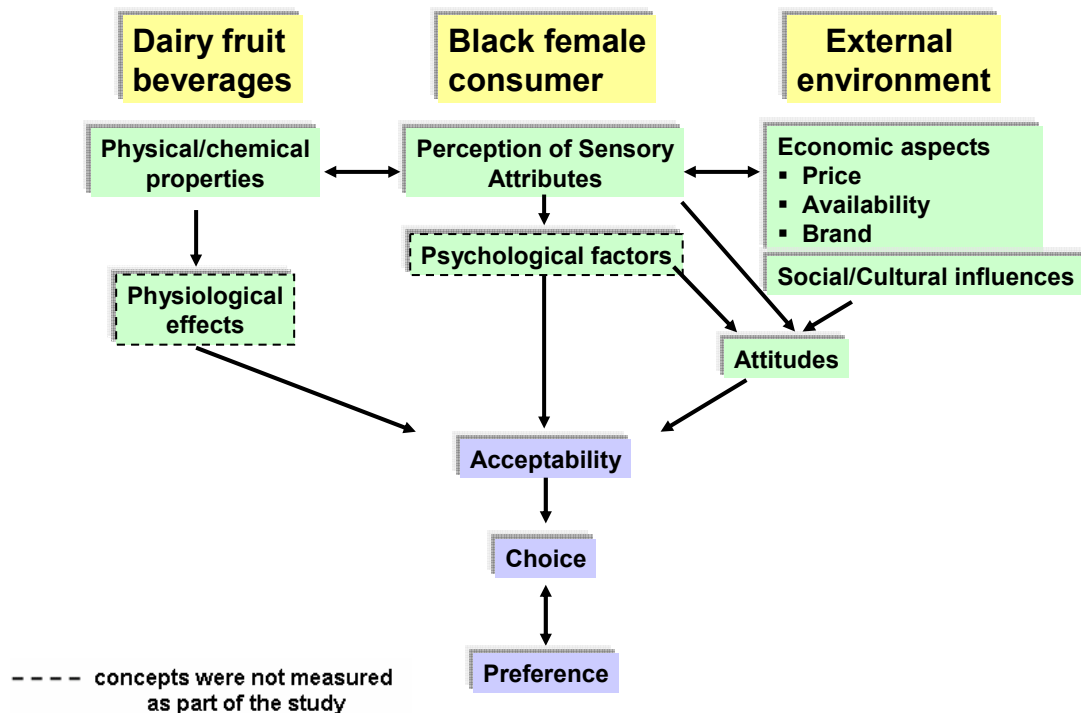


FIGURE 3: CONCEPTUAL FRAMEWORK FOR THE STUDY

5.5 Conceptualisation

The description of the important concepts of this study as derived from the research goal and conceptual framework (highlighted in bold) is given below.

Dairy fruit beverages refer to beverages that consist of skimmed milk, fruit juice, sugar, citrate, flavourants, colourants and preservatives that are available in different fruit flavours and are manufactured by three different food companies under certain brands in South Africa. **Physical** and/or **chemical properties** refer to the physical state of the food product with attributes such as the appearance, viscosity, texture, chemical composition and the flavour of dairy fruit beverages. These will have a **physiological effect** on the consumer. The physiological effect is an indication of the effect that the food product has on the physiological state of the human body and refers to aspects such as appetite, satiety, hunger and thirst. The refreshing effect of consuming a thirst quenching beverage is an example of a physiological effect (Shepherd & Sparks, 1994:205).

Black female consumers refer to females between the ages of 18 to 40 years, from any of the black South African ethnic groups. **Perception of sensory attributes** refers to the perception of the sensory attributes of dairy fruit beverages that interact with the consumer's physiological, behavioural and cognitive characteristics (Imram, 1999:225). Food preference and choice is based on the perception that a person has of the sensory attributes of dairy fruit beverages (Cardello, 1994:254; Garber *et al*, 2003:3). The psychological differences between people, such as personality, behaviour, mood, beliefs and attitudes may also influence the purchase and/or consumption of dairy fruit beverages.

The **external environment** refers to the economic, social and cultural factors that might influence the acceptability, choice and preference of dairy fruit beverages. Aspects such as price, availability and brand of a food product are regarded as examples of economic influences. Social and cultural influences are also grouped under external and internal environment influences. **Price** refers to the cost of the different dairy fruit beverages available in the South African food sector. This can be a determining factor in food choice that can influence the selection of a specific brand of dairy fruit beverages. **Brand** refers to the whole experience surrounding a product. The brand of a product is recognized by the logo on the packaging and refers to the image and status that the consumer associates with the brand. It defines the

relationship that the consumer has with a food product and is, therefore, much more than just a logo and aims to influence consumer behaviour (Schreurer, 2000:16). In this study the preferred choice of a specific brand of dairy fruit beverage was considered. **Availability** refers to the access or obtainability of the dairy fruit beverages in the retail market as influenced by the economic and marketing environment and indicates the access of dairy fruit beverages to the consumer. The **social/cultural influences** relates to what the black female consumer eats and how it is consumed, because culture establishes the way in which food is used, while the social environment can be used to express social prestige and status that is a reflection of social values (Fieldhouse, 1995:78).

Many of the influences on food choice are related to the consumer's beliefs and **attitudes**. Beliefs about the nutritional content and health effects of dairy fruit beverages could be more important than the actual nutritional content and health consequences. Likewise various marketing and economic variables can act through the attitudes and beliefs held by the consumer, such as socio-cultural and demographic factors (Shepherd & Sparks, 1994:205). Attitude is reflected by the consumer's behaviour, and is indicated by like, dislike, preference and choice of different brands and flavours of dairy fruit beverages.

Food acceptability refers to the degree to which the consumer likes or dislikes dairy fruit beverages, and its sensory attributes and, therefore, experiences it as acceptable or not (Cardello, 1994:254; Lawless & Heymann, 1998:431). **Food choice** is a conscious or unconscious decision made by the consumer at the point of purchase, and/or at the point of consumption, or at any point in between the purchase and/or consumption of the dairy fruit beverages (Shepherd & Sparks, 1994:202; Falk *et al*, 1996:257; Rozin, 1996:90; Hamilton *et al*, 2000:113). **Food preference** refers to an expressed choice between two or more dairy fruit beverage brands and flavours. In preference measurement, the consumer has a choice and one product is chosen above one or more products (Lawless & Heymann, 1998:431; Resurreccion, 1998:11).

5.6 Operasionalisation

Operasionalisation indicates the way in which the concepts in the conceptual framework will be measured. The operationalisation of the main concepts as indicated in the conceptual framework follows for each of the approaches used.

Due to the interrelatedness and interdependency of the factors that influence food acceptability, preference and choice both a quantitative and qualitative research approach (as explained above) were employed. To be able to describe and understand the influence of these factors, the concepts indicated in the conceptual framework were measured as described below.

A questionnaire was compiled to obtain information on the demographic profiles of the participants regarding their age, ethnic group, qualifications and area of residence. Information on the purchasing and consumption behaviour of dairy fruit beverages, which included the frequency, place of purchase and product specific information (brand(s) and flavour(s) purchased) were obtained from the participants (see Addendum A). Structured open-ended and closed-ended questions were used in the questionnaire.

Two standardized sensory evaluation tests, namely preference rating and preference ranking tests, as described by Jellinek in Lawless and Heymann (1998:430), and Meilgaard, Civille and Carr (1991:210-213) were used to measure the participants' **acceptability** and **preference** for the different brands and flavours of dairy fruit beverages. Stone and Sidel (1993:12) and Lawless and Heymann (1998:2) define sensory evaluation as "a scientific discipline used to evoke, measure, analyse and interpret reactions to those characteristics of foods and materials as they are perceived by the senses of sight, smell, taste, touch and hearing".

5.6.1 Preference rating test

A five point Likert-type hedonic scale was used to measure the degree of acceptability of the **sensory attributes (appearance, aroma, taste, flavour, texture and aftertaste)** of the different brands and flavours of dairy fruit beverages. The **degree of acceptability** was measured on a scale from 1 to 5, where 1 was equal to *like very much* and 5 was equal to *dislike very much*. This scale was chosen in order to make it easier for the target sample in this to understand and rate the sensory characteristics.

This group of consumers associated the number 1 with the product they liked the most. See Addendum B for an example of the sensory evaluation form. The degree of preference served as an indication of the acceptability and attitude towards the dairy fruit beverages (Lawless & Heymann, 1998:431).

5.6.2 Preference ranking test

A preference ranking test was used to determine the most **preferred flavour** in the different brand ranges (Company X, Y and Z) on a scale from 1 to 5, where 1 is equal to *most preferred* and 5 is equal to *least preferred*. See Addendum C for an example of the preference ranking test. Food preference refers to an expressed choice between two or more dairy fruit beverage brands and flavours. In preference measurement, the consumer has a choice, and one product is chosen over one or more products (Lawless & Heymann, 1998:431; Resurreccion, 1998:11).

To fully understand and describe the contribution of the participants' perceptions of the sensory attributes of the dairy fruit beverages, their attitudes toward the dairy fruit beverages, and the influence of the external environment (e.g. price, brand, availability, social/cultural influences) on the acceptability, choice and preference were explored through focus group discussions. The approach followed for the focus group discussions was similar to that used in marketing and sensory evaluation research (Lawless & Heymann, 1998:524). This enabled the researcher to gain insight into the reasons why one brand or flavour of dairy fruit beverages was chosen above the other. The information obtained from the questionnaires on the purchasing and consumption behaviour as well as some of the results from the sensory evaluation tests were used as themes or probes for the focus group discussions (see Addendum D).

Table 2 gives a summary of the conceptualisation and operationalisation of the relevant concepts and in which phase of the data collection they were measured.

TABLE 2: SUMMARY OF CONCEPTUALISATION AND OPERASIONALISATION

CONCEPTS	CONCEPTUALISATION	OPERATIONALISATION	DATA COLLECTION	
			PHASE 1	PHASE 2
Acceptability of dairy fruit beverages	Food acceptability refers to the degree to which the consumer likes or dislikes dairy fruit beverages, and their sensory attributes.	5-point Likert type hedonic scale to measure sensory attributes and overall acceptability See Addendum B	Sensory evaluation test - preference rating test	Focus group discussion – probes on like/dislike of flavours and brands of dairy fruit beverages
Preference of dairy fruit beverages	Food preference refers to an expressed choice between two or more dairy fruit beverage brands and flavours. In preference measurement, the consumer expresses choice, and one product is chosen above one or more other products.	Preference ranking scale Seen Addendum C	Sensory evaluation test - preference ranking test	Focus group discussion – probes on preferred choice of fruit flavours and brand name of dairy fruit beverages
Choice	Food choice is a conscious or unconscious decision made by the consumer at the point of purchase, and at the point of consumption or at any point in between the purchase and/or consumption. One product selected above/over another.	See questions on purchasing, consumption and frequency of consumption in questionnaire	Questionnaire	Focus group discussion – probes on sensory attributes during purchase
Price	Price refers to the cost of the different dairy fruit beverages available in the South African food sector, and refers to the amount of money the consumer has to pay for it.	See probes on prices and the comparison of prices of dairy fruit beverage brands	-	Focus group discussion – probes on prices of dairy fruit beverages
Availability	Availability refers to the access or obtainability of the dairy fruit beverages in the retail market as influenced by the economic and marketing environment and indicates the access of dairy fruit beverages to the consumer.	See questions on purchasing and consumption in questionnaire	Questionnaire	Focus group discussion – probes on where and when dairy fruit beverages are purchased and consumed
Brand	Brand refers to the whole experience surrounding a product. The brand of a product is recognized by the logo on the packaging and refers to the image and status the consumer associates with the brand.	Closed-ended and open-ended questions of the most preferred brand.	Questionnaire	Focus group discussion – probes on brand name, brand loyalty and preferred brand of dairy fruit beverages

Social/Cultural	The social/cultural influences relates to what the black female consumer eats and where and how it is consumed.	Closed-ended questions on ethnic group and demographics. Open-ended questions on social behaviour and symbolic value of dairy fruit beverages within reference group	Questionnaire	Focus group discussion – probes on friends, status, occasions, image, culture group
Attitude	Attitude is reflected by the consumer's behaviour, and is indicated by like, dislike, preference and choice of different brands and flavours of dairy fruit beverages.	Sensory evaluation tests – preference rating and ranking tests	Questionnaire	Focus group discussion – probes on like and/or dislike of dairy fruit beverages

5.7 Development and testing of questionnaire

Before commencing with the data collection in phase one, the questionnaire as presented in Addendum A and the sensory evaluation tests (preference rating and preference ranking test) as presented in Addendum B and C were tested on a group of thirty black females with a similar background than those of the study group. They attended a cooking lesson, and were asked to participate in the testing of the questionnaire. The questionnaire and sensory evaluation tests were first tested for readability, clarity and comprehension. The questionnaire and sensory evaluation test were initially available in Zulu, but the participants in this pilot study indicated that they were more at ease with the questions in English and could understand English. This solved the problem of finding suitable words in Zulu for the sensory evaluation concepts. When translating from one language to another, it is often difficult to find suitable concepts reflecting degrees of difference on a scale. Questionnaires must therefore be simplified by using words that are familiar to them. A nine-point, seven-point, five-point or a three-point scale could be used in sensory evaluation tests. However a five-point scale was tested for this study and it was understood by the pilot group and therefore used in the study. A five-point Likert-type scale was also regarded as the most suitable for the South African population groups (Du Plessis & Rosseau, 2003:33). In order to compromise for the biased effects of cultural influences, the researcher had to make sure that the participants understood the concepts or words used in the questionnaire and sensory evaluation score sheets.

5.8 Research Methodology

As justified and explained above, the data collection took place in two phases. The methodology of the quantitative data collection (Phase One) will be described first whereafter the qualitative data collection methodology (Phase Two) will be given.

Phase One: Quantitative Research Methodology

The methodology executed for the quantitative phase of the study will follow.

5.8.1 Sampling

The target population for this study was black adult female consumers due to their high consumption and the popularity of dairy fruit beverages in this particular target group.

The sample frame was black adult female consumers who visited the School of Cookery of a large dairy company in Queensburgh in Kwa-Zulu Natal. According to Babbie and Mouton (2001:191) a large and homogenous participant group will both contribute to a smaller participant error and, therefore, only black adult females were used in this study. The unit of analysis was the individuals who participated in the sensory evaluation tests and they were selected on a convenience basis.

Every individual who visited the School of Cookery for cooking classes had the opportunity to participate in the sensory evaluation tests, and the sample consisted of a total of 113 participants. The number of participants for each sensory evaluation tests was based on the number of participants that were required for a significant difference in the statistical analysis of the data (Meilgaard *et al*, 1991:212). The number of participants who completed the preference rating test (56 participants), and the preference ranking test (57 participants), is described and outlined in point 5.8.4.2 where the representative sample is discussed more extensively.

5.8.2 Data collection

The data collection took place from July 2003 to November 2003. The participants had a choice to participate in the study, and were requested to sign consent forms before they could participate. They were aware that participation was voluntary and that the data will be handled in a confidential and anonymous manner. The questionnaires were completed by the participants after the researcher introduced herself and the assistant, and explained how to fill in the questionnaires. Instructions on how to complete the questionnaires were explained by the researcher. Procedures for tasting and completing the sensory evaluation score sheets were also explained before they commenced.

The sensory evaluation tests were conducted according to the schedule outlined in Table 3. The flavours available for a specific brand were chosen for the different sensory evaluation tests. The preference rating tests were conducted in four consecutive sessions, where all the fruit flavours of the different brands were evaluated. On the first day two sessions were held, followed by session three and four on day two and the fifth session was completed on the last day. In the fifth session a preference ranking test of all the flavours within the different fruit beverage brands was conducted. Two sessions were conducted once a week and the duration of each session was 30 minutes.

TABLE 3: SCHEDULE FOR SENSORY EVALUATION TESTS

SENSORY TEST	SESSION	NUMBER OF SAMPLES	FLAVOUR	BRAND
Preference rating test	1	3	Orange Orange Orange	Company X Company Y Company Z
	2	3	Pineapple Pineapple Pineapple	Company X Company Y Company Z
	3	3	Peach Peach Peach	Company X Company Y Company Z
	4	3	Naartjie Tropical Granadilla	Company X Company X Company Y
Preference ranking test	5	12	Orange, Pineapple, Tropical, Peach, Naartjie	Company X
			Orange, Pineapple, Peach, Granadilla	Company Y
			Orange, Pineapple, Peach	Company Z

The preparation and serving of the samples were done according to standardised sensory evaluation procedures as described by McWilliams (1997:51) and Lawless and Heymann (1998:91). The standardisation of all serving procedures and sample preparation techniques were planned very carefully to ensure validity and reliability of the collected data. The samples were served in odourless 75 ml plastic cups, and the volume of the samples was consistent throughout the sensory evaluation sessions, namely 50 ml of every dairy fruit juice sample, at 6 °C. Standardisation of the sample size and sample temperature are important in sensory evaluation. It is stated that it does affect scoring if this is not standardised throughout the whole sensory evaluation process (Lawless & Heymann, 1998:92).

A maximum of six samples were served in one session. The samples were coded with three-digit random numbers and were served in a random order according to a master sheet. Water and carrot sticks were provided as palate cleansers in order to refresh the palate between the tasting of the samples. Information on dairy fruit beverages were also given cautiously due to the possible influence of an “expectation error”.

5.8.3 Data analysis

The analysis of the data will be given in three parts. The demographic, purchasing and consumption information, will be dealt with first, followed by the preference rating test and, lastly, the preference ranking test will be addressed.

5.8.3.1 Demographic, purchasing and consumption information

Descriptive statistics were used to summarise the demographic information and the purchasing and consumption information of the dairy fruit beverages as obtained from Section A (Addendum A) of the questionnaire. The statistical software programme GenStat (2000) was used.

5.8.3.2 Preference rating test

The data of the preference rating test was analysed by using descriptive statistics, namely the analysis of variance (ANOVA analysis) with the statistical software programme GenStat (2000). This was used to calculate the differences, if any, between the sensory attributes (appearance, aroma, taste, flavour, texture, and aftertaste) of all the dairy fruit beverages as measured on the five-point hedonic scale with the preference rating test. See Section D (Addendum B) for an example of the preference rating test.

A correlation matrix was constructed to determine possible correlations. Multivariate statistical techniques such as Principal Component Analysis (PCA) and Canonical Variate Analysis (CVA) were analysed with the statistical software programme GenStat (2000). These were performed to determine the inter-relationship between the various samples. The interpretation of descriptive sensory evaluation is often simplified with the assistance of multivariate statistical procedures such as PCA. PCA is a statistical procedure that identifies the smallest number of latent variables, called principle components that explain the greatest amount of observed variability. Through PCA, the correlation structure of a group of multivariate observations is analysed and the axis along which maximum variability of the data occurs is identified and referred to as the first principle component or PC1. The second principle component or PC2 is the axis along which the greatest score of the remaining variability lies, subject to the constraint that the axis must be perpendicular (at right angles) to each other (Meilgaard *et al*, 1991:277).

5.8.3.3 Preference ranking test

The data of the preference ranking test was analysed using the Basker Table (Lawless & Heymann, 1998:444) and Regression Analysis with the software programme GenStat (2000). For the Basker Table analysis the critical value for a significant difference at a probability level of 5 % ($p \leq 0.05$) for five product samples (Company X) and 57 participants is 46.1. The probability level of 5 % ($p \leq 0.05$) for four product samples (Company Y) and 57 participants is 35.4 and for three product samples (Company Z) it is 25.0. For the Regression Analysis the preference ranking scores for all the flavours from Company X, Y and Z were compared to determine the flavour/s preferred the most or least. See Section E (Addendum C) for an example of the preference ranking tests.

5.8.4 Reliability and validity

The value of the results of any study depends on the validity and reliability of the respective data collection methods. The following was done to ensure the reliability and validity of the quantitative data and to limit shortcomings and sources of error.

5.8.4.1 Reliability

Reliability refers to the achievement of the same results if the same technique is repeated (Neuman, 2000:164; Babbie & Mouton, 2001:119). In order to achieve reliable results in this study the following measures were taken:

Using established measures Standardised preference rating and ranking sensory evaluation tests (affective tests) were used according to standardised sensory evaluation procedures (McWilliams, 1997:52; Lawless & Heymann, 1998:444), to ensure reliable results. The following sensory practices were performed to control bias and minimise variability:

Sensory testing environment: The physical setting where the tests were conducted, was free from distractions, quiet, air-conditioned, and no odours from food preparation were present. See point 5.8.2 for a description on the quantitative data collection techniques that were used during this study.

Sample serving procedures: The sample serving procedures and sample preparation techniques have been standardised and were applied throughout the study as discussed under point 5.8.2. The quality of the samples served to the participants was further controlled by ensuring that all the dairy fruit beverages were purchased from supermarkets in Durban within the same sell-by date.

5.8.4.2 Validity

Validity refers to the effectiveness of a measuring technique, when a specific concept is measured (Neuman, 2000:164; Babbie & Mouton, 2001:123). The following precautions were taken in order to ensure valid results:

Construct validity Construct validity refers to the relationship between the variables in the study and the logic of the relationships (Babbie & Mouton, 2001:123). The literature study and conceptualization were, therefore, thorough and provided a clear understanding of the concepts that were measured.

Content validity Content validity or also known as theoretical validity refers to “the extent that a measure covers the range of meanings included within the concept” (Babbie & Mouton, 2001:123). This involves the use of a valid scale and the correct measuring instruments in order to achieve measurement validity. For the sensory evaluation, standardised sensory evaluation tests (Lawless & Heymann, 1998:444; Neuman, 2000:168), namely a preference rating test (five-point hedonic scale) and a preference ranking test (Meilgaard *et al*, 1991:210-213; Lawless & Heymann, 1998:431), were used to determine acceptability, choice and preferences of the different dairy fruit beverage brands and flavours.

Representative sample The participants selected from the target population must be representative of the target population, in order to achieve an unbiased sample (Mouton, 1998:110). This was accomplished by giving a clear definition of the target population. In this study 113 participants participated in the sensory evaluation tests (56 in the preference rating test and 57 in the preference ranking test). Ensuring an adequate sample size contributes to representativeness and validity (Meilgaard *et al*, 1991:212).

Inferential validity Inferential validity refers to the analysis and interpretation of the data to ensure a clear and logical conclusion of the results. This can be achieved by

gaining a good understanding of the literature, and by using appropriate analytical techniques (Mouton, 1998:111). A thorough literature review was conducted and established data analysis techniques, as described in point 5.8.3 were followed.

Phase Two: Qualitative Research Methodology

The methodology employed for the qualitative data collection is described in the next section.

5.8.5 Sampling

In the qualitative research paradigm where the objective is to obtain specific in-depth information, a smaller well chosen sample is used (Neuman, 2000:198; Babbie & Mouton, 2001:288). In this study the reason(s) why certain brands and flavours of dairy fruit beverages were chosen, was discussed. As pointed out by Babbie and Mouton (2001:288) a smaller sample “is often purposeful and directed at certain inclusive criteria, rather than random”. Four focus group discussions were conducted and the participants for each focus group were selected according to certain criteria. This was done to obtain specific information from the focus group discussions. The differences between the participants were, therefore, maximised and minimised and in-depth information was obtained (Neuman, 2000:198; Babbie & Mouton, 2001:277). In Table 4 the criteria and the justification for these criteria for the focus group discussion participation are provided.

TABLE 4: PARTICIPANT CRITERIA AND JUSTIFICATION FOR FOCUS GROUP DISCUSSIONS

CRITERIA	MOTIVATION
Participants must be female	Females are mostly responsible for food purchases in the household (Kleinhans, 2003:1)
Adults (between the age 18 – 40 years)	Age group targeted for dairy fruit beverages
Participants must be literate	Participants must be able to express likes/dislikes, preferences and choice, and their reasons
Participants must be familiar with dairy fruit beverages	The participants must purchase or consume dairy fruit beverages on a regular basis
Participants must have access to purchasing dairy fruit beverages at a supermarket, shop, cafe or food retailer	Dairy fruit beverages must be available to the participants to enable them to provide information about likes/dislikes, preferences and purchasing behaviour

To enhance the depth of information on dairy fruit beverages, the participants were selected according to their purchasing and consumption patterns of the different brands of dairy fruit beverages. Table 5 gives a detailed description of the criteria for the selection of the participants that were selected for each of the focus groups. Although the consumption of dairy fruit beverages and the brands that were purchased differed among the participants, the participants could all associate with the topic under discussion and gave valuable information, even if they did not consume the brand or product themselves.

TABLE 5: CRITERIA FOR THE SELECTION OF PARTICIPANTS FOR THE DIFFERENT FOCUS GROUP DISCUSSIONS

FOCUS GROUP	PARTICIPANT CRITERIA
1	Participants must all <i>drink and buy</i> a specific brand of dairy fruit beverages
2	Participants must all <i>drink and buy</i> any brand of dairy fruit beverages
3	50 % of the participants must <i>drink and buy</i> any brand of dairy fruit beverages 50 % of the participants must <i>drink and buy</i> a specific brand of dairy fruit beverages
4	50 % of the participants must <i>drink and buy</i> dairy fruit beverages 50 % of the participants must <i>not drink and buy</i> dairy fruit beverages

Apart from the above criteria for inclusion in the focus group discussion, the following guidelines by Babbie and Mouton (2001:288) were also used to ensure purposeful and/or judgemental sampling:

Thoroughly enculturated A participant was regarded as thoroughly enculturated when she was familiar with dairy fruit beverages and therefore knowledgeable about the product and could provide more information. By including participants that were enculturated with dairy fruit beverages and participants that were not enculturated, the reasons for acceptance, choice and preferences of dairy fruit beverages could be minimised and maximised.

Current involvement The participants had to be regular consumers of dairy fruit beverages and would, therefore, be able to share their opinion of something with which they were familiar. They were regarded as having experience with the product and thus able to share this experience.

Adequate time The participants were asked at first if they would be willing to give some of their time to participate in the focus group discussions to ensure adequate time for performing the focus group discussion.

5.8.6 Data collection

Four focus group discussions with between eight to ten participants in each focus group were held over a period of three months. A sufficient number of participants were invited to each focus group discussion. In a particular group there were never less than six, or more than twelve participants. A group of eight participants produced the best results as the participants were more at ease to talk, than was the case in larger groups and shared information more spontaneously, as well as with more confidence. This correlates with the guidelines for focus group size as provided by Babbie and Mouton (2001:292). In larger groups (8 – 12 people) the participants shared their experiences more freely and therefore more information was obtained within the group.

The guidelines on conducting focus group discussions were followed (Casey & Krueger, 1994:79; Lawless & Heymann, 1998:528; Resurreccion, 1998:100). In Table 6 the guidelines and the manner in which these were made applicable to this study are presented.

TABLE 6: GUIDELINES FOR FOCUS GROUP DISCUSSIONS (Casey & Krueger, 1996:79; Lawless & Heymann, 1998:528; Resurreccion, 1998:100)

DISCUSSION GUIDE	APPLICATION IN THIS STUDY
1. Introduction	Introduce Moderator; Explain how the focus group will work; Brief participants on the general purpose of the study to ensure a meaningful discussion and high quality of information; Mention audio-taping and confidentiality of data
2. Warming up session	Participants were asked to taste the different dairy fruit beverage samples and to discuss it within the group
3. Discuss concepts with probes	Different themes were discussed according to an interview schedule, with open-ended questions and the probes provided by the moderator
4. Review concepts and ask for clarification	If any concepts were not clear, the moderator discussed it again with the group
5. Close	Participants were thanked for their contribution
6. Member checks	The interpretations of the results were taken back to the participants a month after the discussion for verification and member checking

The participants were seated around a table in a conference room (Lawless & Heymann, 1998:530). The participants each received three coded dairy fruit beverage samples that served as a reference or a probe for the discussions on the dairy fruit beverages. The flavours that were served to the participants were different for each focus group, in order to collect more in-depth information on dairy fruit beverages. The samples from all the brands were served at every focus group discussion in order to compare the attributes of the brands with each other. The participants were asked to discuss the sensory attributes of the three samples that were served to them. Other themes such as packaging sizes, labels and prices were also introduced in the focus group discussions. The interview schedule and themes of the discussions are outlined in Addendum D.

All the focus group discussions were audiotaped. Notes were made during the discussions on a flip chart. The discussions were conducted in English and the assistant only translated a few words or concepts that were unfamiliar to the participants during the discussion. The participants could easily follow the discussion and did not have major difficulties in understanding the language. The tape recordings

were transcribed verbatim. These transcriptions of the interviews were made a day after each focus group discussion. The tapes were separately marked for each session. All the transcribed information was taken back to the participants for member checks when they attended the next cooking classes a month after the focus group discussion took place. Every participant received a copy of the transcription before the cooking classes started, and a brief discussion followed after the cooking classes. The aim of the member checks is to correct obvious errors and to provide additional information (Babbie & Mouton, 2001:277). The participants agreed with the information, and often added more valuable information, that was then added to the transcripts. The transcription documents of the focus group discussions are available on request.

5.8.7 Data analysis

Content analysis was used as a data analysis technique. The procedures described by Krippendorf (1980); Stewart and Shamdasani (1990); Casey and Krueger, and Chambers and Smit in Lawless and Heymann (1998:537) were followed. Content analysis as a data analysis technique has been supported by various researchers (Lawless & Heymann, 1998:537; Kruger & Gericke, 2001:62). It can be described as “a data analysis technique used for making replicable and valid inferences from data to their context” (Krippendorf, 1980:21). The purpose of content analysis is to provide knowledge, new insights, a representation of facts and a practical guide to action.

Several different steps can be identified in the process of content analysis (Krippendorf, 1980:52). Data making refers to specific data that is recorded on a durable medium that provided information for a particular reason or problem. Data reduction involves the sorting of data into categories so that it can be used for a specific analytical technique. Analysis concerns the identification and representation of interpretations that describe the results from the focus group discussions.

The first step regarding content analysis involves the frequency with which an idea was voiced, which can indicate an index of importance or emphasis. The second step involves the degree of positive or negative statements or feelings about an idea. A third aspect is the kind of qualifications and associations made to an idea that can suggest the intensity of belief (Lawless & Heymann, 1998:537).

The transcribed data were compiled in such a format that the results could be divided into various categories. The topics discussed in the focus group discussions, served as a guide to structure the analysis of the topics. Casey and Krueger (1997:91) and Lawless and Heymann (1998:537) mention that there are many ways to analyse focus group discussions, and that the analysis will mainly depend on the complexity of the project and the degree of detail.

Useful guidelines in knowing what issues are important to report and how to consider them have been followed carefully in the analysis of the transcriptions (Casey & Krueger, 1996:92; Lawless & Heymann, 1998:541). Patterns, themes, similarities and differences among responses were summarised. The frequency and extensiveness of the participants' comments were considered as very important. Attention was given to opinions that were repeated across groups. Consistent opinions were considered valuable, as well as strong disagreement among participants. The context of specific comments was also considered when a structure was compiled to analyse the data. The intensity of the comments was considered as indicators of intense feelings.

Berelson in Krippendorff (1980:33) listed a variety of uses for content analysis. The following uses were considered applicable to this study:

- “to reflect attitudes, interests and values (cultural patterns) of population groups” (e.g. in terms of purchasing and consuming dairy fruit beverages)
- “to reveal focus of attention” (e.g. brand loyalty)
- “to describe attitudinal and behavioural responses to communications” (e.g. attitude and behaviour towards marketing campaigns).

5.8.8 Credibility and transferability

Credibility and transferability are difficult to achieve in qualitative research (Lawless & Heymann, 1998:525; Babbie & Mouton, 2001:277). If several focus groups provide common themes and the same feedback and the same stories are repeated, then the observation can be made that there is some retest reliability in the sense that additional groups yielded similar information (Lawless & Heymann, 1998:525). Babbie and Mouton (2001:288) also mention that data-collection reaches a point where no new inputs or categories are gathered and refer to this as theoretical saturation that contributes to reliability. If this occurs, it enhances the trustworthiness of the data. However, having more than one person's input in the analysis and objectivity in the

analysis and interpretation of the discussion can minimise the threat to reliability and validity (Lawless & Heymann, 1998:525). If the same information is obtained from different focus groups it can increase the trustworthiness of the data. The accuracy of the interpretation of the results can be enhanced if the quantitative and qualitative data coordinates (Lawless & Heymann, 1998:526). If the data obtained from the quantitative and qualitative phases of this study support each other, it contributes to the trustworthiness of the results.

Credibility was ensured through the following techniques:

Triangulation during data collection Triangulation refers to the use of multiple data collection techniques during research, such as qualitative and quantitative research techniques in order to ensure reliability (Mouton, 1998:156). A combination of quantitative and qualitative research techniques were used in this study. The attitudes of the black female consumers and their perception of the sensory attributes of the dairy fruit beverages were determined in phase one with the sensory evaluation tests, and also described in phase two with the focus group discussions. The influence of the external environment (such as brand) on the choice of dairy fruit beverages was determined in phase one with the demographic questionnaire, and in phase two with the focus group discussions.

Referential adequacy Extensive field notes involve keeping notes on the environment, observations about the participants and any information about the subjects of the study and their social behaviour (Babbie & Mouton, 2001:275). Field notes were kept by the researcher and the assistant during the focus group discussions, and this aided in the description of the environment and the reaction of the participants towards the researcher, the dairy fruit beverage samples and towards each other when a topic was discussed.

Member checks Member checks refer to the researcher's transcripts and interpretations that were taken back to the participants, and to check with them if the data reflect what they said and meant (Babbie & Mouton, 2001:276). The notes taken during the focus group discussion and verbatim transcriptions of the recordings were used. The recorded field notes and the transcribed conversations were interpreted and the participants were asked to verify the interpretations of the researcher.

Transferability was ensured through:

Purposeful sampling Purposeful sampling is used in cases where the range of specific information that can be obtained from the focus group discussion, is maximised by selecting the participants. It is very valuable to obtain in-depth information on a specific theme or topic relevant to the study and the specific target group (Neuman, 2000:198; Babbie & Mouton, 2001:277).

Credibility and transferability, therefore, both contribute to trustworthiness that is described as “neutrality of its finding or decisions” by Babbie and Mouton (2001:276).

5.9 Summary

In this chapter the research design for conducting the study was described. All the methods, techniques and procedures followed to solve the research problem were explained and justified. The manner in which the collected data was analysed also received attention. Measures to ensure that the collected data were valid and reliable in phase one of the data collection were given as well as the measures followed in the second phase. In the second phase of the data collection the qualitative techniques to ensure trustworthy research were described. In the following chapter the results of this study and the discussion thereof will be presented.

CHAPTER 6

RESULTS AND DISCUSSION OF RESULTS

6.1 Introduction

In this chapter the results of the study will be presented and discussed. The presentation and discussion of the results will be according to the two phases in which the study was conducted. For phase one (quantitative approach) the demographic, purchasing and consumption information will be presented first and then discussed. This will be followed by the results and discussions of the preference rating test. Thereafter the results of the preference ranking test will be presented in graphical format with the discussion thereof. For phase two (qualitative approach) of the study the results of the focus group discussions will be presented and discussed.

6.2 Results and discussion of results: Phase One

The results of the data obtained in phase one and the discussion will be presented.

6.2.1 Results and discussion of demographic information

The results obtained from the demographic, purchasing and consumption information were calculated into percentages to simplify interpretation. In Table 7 the demographic profile of the participants is presented.

**TABLE 7: DEMOGRAPHIC PROFILE OF THE BLACK FEMALE PARTICIPANTS
(n = 113)**

Language (%)							
Zulu	English	Xhosa	South Sotho	Sesotho			
95	2	2	1	1			
Ethnic group (%)							
South Sotho	North Sotho	Tswana	Zulu	Xhosa	Venda	Ndebele	Swazi
1	1	1	94	0	0	0	1
Level of education (%)							
Grade 8		Matric		Tertiary education			
19		50		32			

The majority of the participants spoke Zulu (95 %) and belonged to the Zulu ethnic group (94 %). Other ethnic groups, such as South Sotho, North Sotho, Tswana and Xhosa were also represented, however in very small numbers. Approximately half of the participants had a matriculation qualification (50 %), followed by a tertiary education (32 %). The study group can therefore be regarded as educated (Du Plessis & Rousseau, 2003:95). The minority of the participants had a Grade 8 (19 %) qualification. The majority of participants came from the Umlazi, Kwamashu and Hammersdale regions in the Durban areas of Kwa-Zulu Natal. The average age of the participants was 35 years, with the youngest participant 19 years and eldest 62 years.

6.2.2 Results and discussion of purchasing and consumption practices

It was found that 97 % of the participants purchased dairy fruit beverages. The majority (95 %) of the participants consume dairy fruit beverages. The frequency of use showed that the participants generally purchased the dairy fruit beverages once a week (44 %), followed by 24 % of participants purchasing dairy fruit beverages two to three times a week. The results showed that 10 % of the participants purchased dairy fruit beverages every day.

The majority of the participants buy the dairy fruit beverages from Company X (93 %), compared to the 6 % of the participants that purchased the brand of Company Z. The flavour that the participants purchased most often was pineapple flavour (24 %), followed by peach flavour (24 %), tropical flavour (20 %) and orange flavour (19 %). The flavour purchased the least by the participants was the naartjie flavour (5 %).

Most of the purchasing took place at Supermarkets (65 %), followed by the Hypermarket (15 %), the local shop (9 %) and spazas (4 %). Dairy fruit beverages were often consumed in summer (54 %). Other occasions when they were served were at birthday parties (10 %), when friends were invited or came to visit (8 %), with breakfast (6 %), and when watching movies (6 %). The purchasing and consumption practices are presented in Table 8.

TABLE 8: PURCHASING AND CONSUMPTION INFORMATION (n = 113)

Consumption of dairy fruit beverages (%)										
YES	NO									
95	5									
Purchasing of dairy fruit beverages (%)										
YES	NO									
97	3									
Frequency of use (%)										
Every day	2 – 3 times a week	Once a week	Once a month							
10	24	44	22							
Brand purchased (%)										
Company X	Company Y	Company Z								
1	6	93								
Flavour purchased (%)										
Granadilla	Naartjie	Peach	Pineapple	Orange	Tropical					
8	5	24	24	19	20					
Location for purchase (%)										
Hyper	Super	Local shop	Spaza	Café	Hawker					
15	65	9	4	3	3					
Occasions (%)										
Summer	Winter	Wedding	Birthday	Funeral	Breakfast	Exercise	Movies	With dinner/lunch	Taxi	Invite friends
54	3	4	10	4	6	1	6	3	2	8

6.2.3 Presentation and discussion of preference ranking tests

The results obtained from the ANOVA analysis, the correlation matrix, and the PCA and CVA analysis of the preference ranking data were organised in tables and figures and are presented and discussed according to the four fruit flavour categories.

6.2.3.1 Analysis of preference ranking results with ANOVA

The significant differences between the sensory attributes of the different fruit flavours will be discussed under the following sub-headings according to the four fruit flavour categories (orange, pineapple, peach and tropical). The mean values were compared to determine if a significant difference ($p \leq 0.01$) was found using an analysis of variance (ANOVA) procedure. Least square means were performed to determine the direction of the difference, if significant. Significant differences in the mean values are described by an a, b and/or c (uppercase) in the same column. See Addendum E for graphical presentation of the results of the ANOVA analysis of the four fruit flavour categories.

Results of the orange flavoured dairy fruit beverages

The mean values of the orange flavoured dairy fruit beverages ANOVA analysis is presented in Table 9.

TABLE 9: MEAN VALUES* OF ANOVA ANALYSIS OF ORANGE FLAVOURED DAIRY FRUIT BEVERAGES

	APPEARANCE	AROMA	FLAVOUR	TASTE	TEXTURE	AFTERTASTE
Company X	2.379 ^a	2.276 ^a	2.569 ^a	2.552 ^a	2.638 ^a	2.759 ^a
Company Y	3.052 ^b	3.207 ^b	3.500 ^b	3.621 ^b	3.500 ^b	3.724 ^b
Company Z	1.983 ^a	2.293 ^a	2.310 ^a	2.345 ^a	2.362 ^a	2.638 ^a
p-Value	0.001	0.001	0.001	0.001	0.001	0.001
SEM	0.1554	0.1445	0.1598	0.1559	0.1617	0.1661

abc = mean values in the same **column** with different superscripts differ significantly ($p \leq 0.001$)

*1 = like very much, 5 = dislike very much

The results obtained indicated there was not a significant difference between the orange flavoured dairy fruit beverages from Company X and Z for all the sensory

attributes tested. However all the sensory attributes of Company X and Z were significantly different ($p \leq 0.01$) from that of Company Y. The results show that the participants liked the appearance, aroma, flavour, taste, texture and aftertaste of the orange flavoured dairy fruit beverage of Company X and Z consistently more than that of Company Y.

Results of the pineapple flavoured dairy fruit beverages

The mean values of the pineapple flavoured dairy fruit beverages ANOVA analysis is presented in Table 10.

TABLE 10: MEAN VALUES* OF ANOVA ANALYSIS OF PINEAPPLE FLAVOURED DAIRY FRUIT BEVERAGES

	APPEARANCE	AROMA	FLAVOUR	TASTE	TEXTURE	AFTERTASTE
Company X	1.828 ^a	1.724 ^a	1.776 ^a	1.741 ^a	1.828 ^a	1.931 ^a
Company Y	3.655 ^b	3.586 ^b	3.759 ^b	3.879 ^b	3.690 ^b	3.897 ^b
Company Z	2.086 ^a	2.155 ^c	2.241 ^c	2.345 ^c	2.414 ^c	2.517 ^c
p-Value	0.001	0.001	0.001	0.001	0.001	0.001
SEM	0.1369	0.1352	0.1360	0.1414	0.1444	0.1433

abc = mean values in the same **column** with different superscripts differ significantly ($p \leq 0.001$)

*1 = like very much, 5 = dislike very much

There was a significant difference ($p \leq 0.01$) between the appearance aroma, flavour, taste, texture and aftertaste of dairy fruit beverages from Company X, Y and Z. The results indicate that the participants liked ($p \leq 0.01$) the sensory attributes of pineapple flavoured dairy fruit beverage from Company X the most compared to that of Company Y and Z. In turn, the participants preferred ($p \leq 0.01$) the sensory attributes of the pineapple dairy fruit beverages from Company X more than that of Company Z. The only exception was the appearance where participants preferred the pineapple flavour dairy fruit beverages from Company X and Z, compared to that of Company Y.

Results of the peach flavoured dairy fruit beverages

The mean values of the peach flavoured dairy fruit beverages ANOVA analysis is presented in Table 11.

TABLE 11: MEAN VALUES* OF ANOVA ANALYSIS OF PEACH FLAVOURED DAIRY FRUIT BEVERAGES

	APPEARANCE	AROMA	FLAVOUR	TASTE	TEXTURE	AFTERTASTE
Company X	2.241 ^a	2.293 ^a	2.293 ^a	2.310 ^a	2.414 ^a	2.500 ^a
Company Y	2.845 ^b	2.931 ^b	3.086 ^b	3.241 ^b	3.259 ^b	3.345 ^b
Company Z	2.190 ^a	2.293 ^a	2.172 ^a	2.069 ^a	2.259 ^a	2.517 ^a
p-Value	0.001	0.001	0.001	0.001	0.001	0.001
SEM	0.1424	0.1433	0.1499	0.1519	0.1497	0.1569

abc = mean values in the same **column** with different superscripts differ significantly ($p \leq 0.001$)

*1 = like very much, 5 = dislike very much

The results obtained indicated there was not a significant difference ($p \leq 0.01$) between peach flavoured dairy fruit beverages of Company X and Z for all the sensory attributes, but they were significant different ($p \leq 0.01$) in appearance, aroma, flavour, taste, texture and aftertaste compared to the peach flavoured dairy fruit beverage of Company Y. Participants liked ($p \leq 0.01$) the sensory attributes of the peach flavoured dairy fruit beverages of Company X and Z the most, compared to that of Company Y.

Results of the tropical flavoured dairy fruit beverages

The mean values of the tropical flavoured dairy fruit beverages ANOVA analysis is presented in Table 12.

TABLE 12: MEAN VALUES* OF ANOVA ANALYSIS OF TROPICAL FLAVOURED DAIRY FRUIT BEVERAGES

	APPEARANCE	AROMA	FLAVOUR	TASTE	TEXTURE	AFTERTASTE
Tropical flavour	1.793 ^a	1.931 ^a	1.862 ^a	1.879 ^a	1.897 ^a	1.983 ^a
Naartjie flavour	2.448 ^b	2.621 ^b	2.672 ^b	2.793 ^b	2.690 ^b	2.828 ^b
Granadilla flavour	3.241 ^c	3.362 ^c	3.655 ^c	3.741 ^c	3.828 ^c	3.690 ^c
p-Value	0.001	0.001	0.001	0.001	0.001	0.001
SEM	0.1498	0.1532	0.1458	0.1552	0.1496	0.1548

abc = mean values in the same **column** with different superscripts differ significantly ($p \leq 0.001$)

*1 = like very much, 5 = dislike very much

The results showed a significant difference ($p \leq 0.01$) between the sensory attributes of the naartjie, granadilla and tropical flavours. The results showed that the participants disliked the sensory attributes of the granadilla flavoured dairy fruit beverages significantly more. Participants liked ($p \leq 0.01$) the appearance, aroma, flavour, taste, texture and aftertaste of tropical flavour the most, compared to the naartjie flavour that was, in turn, ($p \leq 0.01$) preferred to that of the granadilla flavour.

6.2.3.2 Analysis of preference ranking results by using the correlation matrix, PCA and CVA

A correlation matrix was constructed to investigate possible correlations. It is presented first followed by discussion of the four flavour categories. In order to establish which of the correlated variates were the most important in discriminating between the sensory characteristics (appearance, aroma, taste, flavour, texture, aftertaste) of the different companies, canonical variate analysis (CVA), also known as linear discriminant analysis, and principal component analysis (PCA) were performed. PCA and CVA were performed on all the different variates for each of the four flavour categories (orange, pineapple, peach and tropical). For the multivariate statistical

technique of CVA the latent roots must be more than 1, in order to be meaningful. The latent roots for all the CVA results were less than 1 and, therefore, PCA was the preferred choice for analysis.

Results of the orange flavoured dairy fruit beverages

A correlation matrix was constructed to determine whether a significant correlation exist between the different attributes measured. A significant correlation was found between taste and texture ($r = 0.901$) and flavour and taste ($r = 0.900$) for orange flavoured dairy fruit beverages. To what extent texture was evaluated as a separate attribute or as part of the taste attribute is, therefore, questionable. The correlation matrix of the orange flavoured dairy fruit beverages is presented in Table 13.

TABLE 13: CORRELATION MATRIX OF ORANGE FLAVOURED DAIRY FRUIT BEVERAGES

Buy	1.00						
Appearance	-0.540	1.00					
Aroma	-0.612	0.775	1.00				
Flavour	-0.691	0.787	0.857	1.00			
Taste	-0.771	0.740	0.821	0.900	1.00		
Texture	-0.682	0.725	0.805	0.872	0.901	1.00	
Ater taste	-0.748	0.585	0.702	0.804	0.863	0.811	1.00
	Buy	Appearance	Aroma	Flavour	Taste	Texture	Aftertaste

PCA was performed to obtain a graphical presentation of the interrelationships of the sensory attributes of the three different brands from Company X, Y and Z respectively and is presented in Figure 4. PCA was performed on the full data set obtained from the analysis of the sensory attributes (appearance, aroma, taste, flavour, texture, aftertaste).

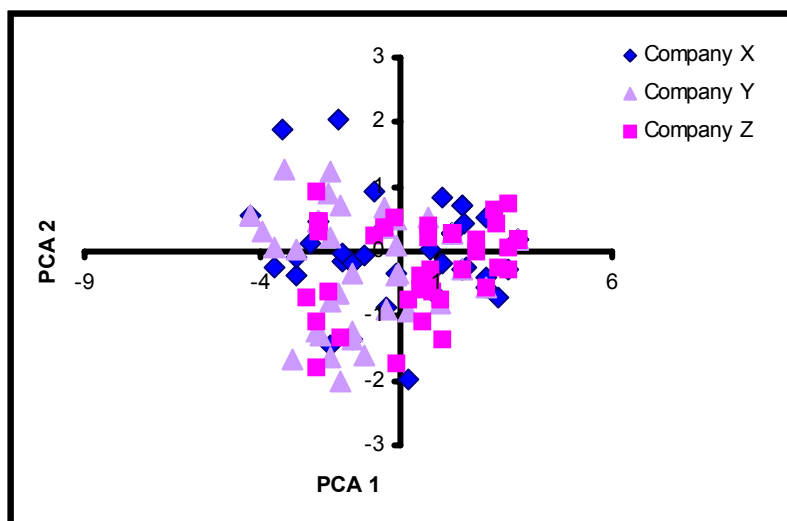


FIGURE 4: PLOT OF ORANGE FLAVOUR PCA SCORES

In the PCA the first principal component (PC 1) accounted for 83.22 % of the variation in the data with a latent root of 4.99. The second principle component (PC 2) accounted for 7.66 % of the variation in the data with a latent root of 0.46 and will therefore not be discussed. The main discriminating characteristics between the different sensory attributes for PC 1 were firstly **taste** ($r = -0.957$), **flavour** ($r = -0.956$) and **texture** ($r = -0.937$). For taste, flavour and texture the orange flavoured dairy fruit beverage of Company Z contrasted the strongest with Company Y according to PC 1. The taste, flavour and texture of the dairy fruit beverages of Company Z was liked the most and the taste, flavour and texture of Company Y disliked the most.

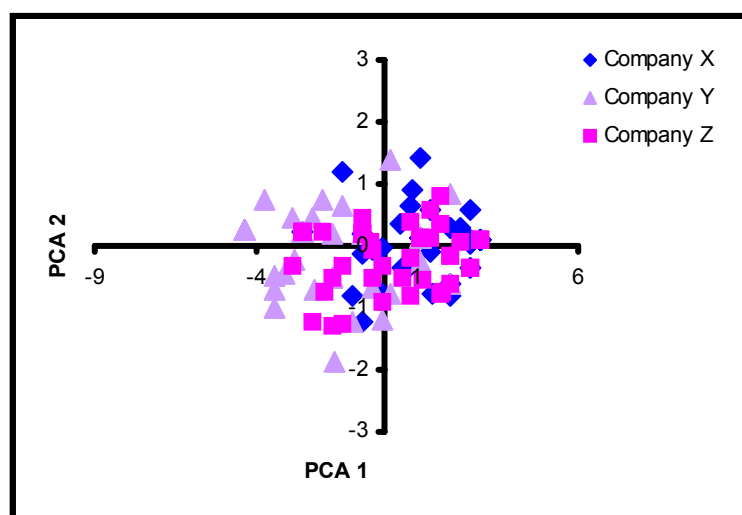
Results of the pineapple flavoured dairy fruit beverages

According to the correlation matrix a significant correlation ($r = 0.920$) was found between taste and flavour for the pineapple flavoured dairy fruit beverages. To what extent flavour was evaluated as a separate attribute or as part of the taste is, therefore, questionable. The correlation matrix of the pineapple flavoured dairy fruit beverages is presented in Table 14.

TABLE 14: CORRELATION MATRIX OF PINEAPPLE FLAVOURED DAIRY FRUIT BEVERAGES

Buy	1.00						
Appearance	-0.726	1.00					
Aroma	-0.734	0.848	1.00				
Flavour	-0.806	0.853	0.873	1.00			
Taste	-0.825	0.820	0.869	0.920	1.00		
Texture	-0.799	0.839	0.857	0.886	0.896	1.00	
Ater taste	-0.752	0.789	0.812	0.843	0.883	0.844	1.00
	Buy	Appearance	Aroma	Flavour	Taste	Texture	Aftertaste

PCA was performed to obtain a graphical presentation of the interrelationships of the sensory attributes of the three different brands of dairy fruit beverages from Company X, Y and Z respectively and is presented in Figure 5. PCA was performed on the full data set obtained from the analysis of the sensory attributes (appearance, aroma, taste, flavour, texture, aftertaste).

**FIGURE 5: PLOT OF PINEAPPLE FLAVOUR PCA SCORES**

In the PCA the first principal component (PC 1) accounted for 88,00 % of the variation in the data with a latent root of 5.28. The second principle component (PC 2) accounted for 3.92 % of the variation in the data with a latent root of 0.24 and will, therefore, not be discussed. The main discriminating characteristics between the different sensory attributes for PC 1 were firstly **taste** ($r = -0.958$), **flavour** ($r = -0.956$) and **texture** ($r = -0.946$). For taste, flavour and texture the pineapple flavour dairy fruit beverages of Company Z and X contrasted the strongest with that of Company Y according to PC 1. The taste, flavour and texture of the dairy fruit beverages of

Company Z were liked the most and the taste, flavour and texture of that from Company Y were disliked the most.

Results of the peach flavoured dairy fruit beverages

A correlation matrix was constructed to determine whether a significant correlation existed between the different attributes measured. A significant correlation ($r = 0.891$) was found between taste and texture. There was also a strong correlation ($r = 0.856$) between taste and flavour. The correlation matrix of the peach flavoured dairy fruit beverages is presented in Table 15.

TABLE 15: CORRELATION MATRIX OF PEACH FLAVOURED DAIRY FRUIT BEVERAGES

Buy	1.00						
Appearance	-0.609	1.00					
Aroma	-0.644	0.810	1.00				
Flavour	-0.727	0.800	0.777	1.00			
Taste	-0.773	0.761	0.729	0.856	1.00		
Texture	-0.684	0.749	0.689	0.789	0.891	1.00	
Ater taste	-0.672	0.647	0.618	0.740	0.823	0.793	1.00
	Buy	Appearance	Aroma	Flavour	Taste	Texture	Aftertaste

PCA was performed to obtain a graphical presentation of the interrelationships of the sensory attributes of the three different brands of dairy fruit beverages from Company X, Y and Z respectively and is presented in Figure 6. PCA was performed on the full data set obtained from sensory analysis (appearance, aroma, taste, flavour, texture, aftertaste).

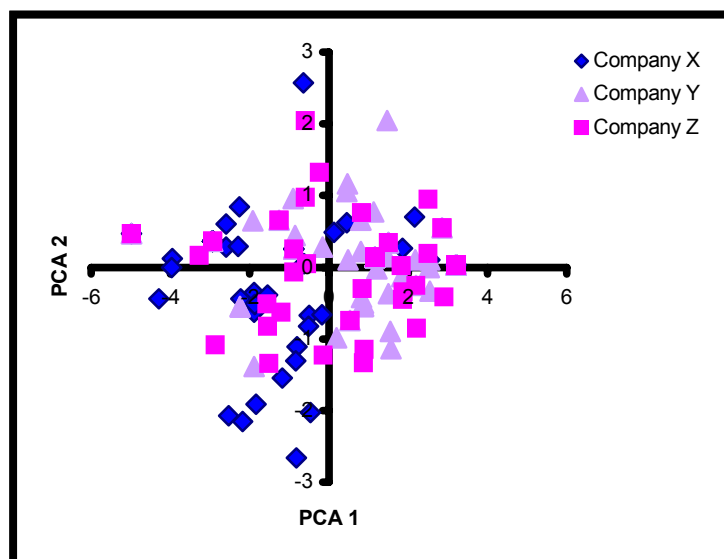


FIGURE 6: PLOT OF PEACH FLAVOUR PCA SCORES

In the PCA the first principal component accounted for 80.49 % of the variation in the data with a latent root of 4.83. The second principle component (PC 2) accounted for 8.30 % of the variation in the data with a latent root of 0.59 and will therefore, not be discussed. The main discriminating characteristics between the different sensory attributes for PC 1 were firstly **taste** ($r = -0.942$), **flavour** ($r = -0.923$) and **texture** ($r = -0.914$). For taste, flavour and texture the peach flavoured dairy fruit beverages of Company Z contrasted the strongest with that of Company X according to PC 1. The taste, flavour and texture of the dairy fruit beverages of Company Z were liked most and the taste, flavour and texture of that of Company X disliked most.

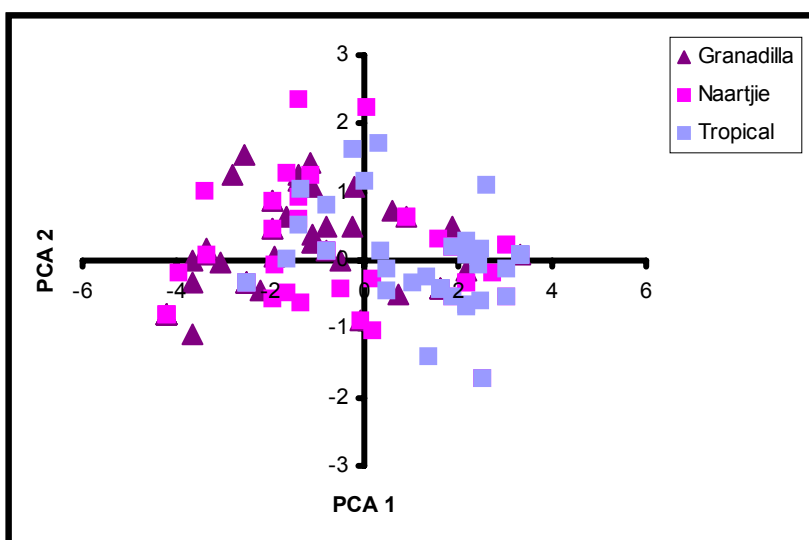
Results of the tropical flavoured dairy fruit beverages

A correlation matrix was constructed to determine if a significant correlation existed between the different attributes measured. A significant correlation was found between taste and aftertaste ($r = 0.917$), and taste and texture ($r = 0.908$). To what extent taste was evaluated as a separate attribute or as part of the aftertaste and texture is, therefore, questionable. The correlation matrix of the tropical flavoured dairy fruit beverages is presented in Table 16.

TABLE 16: CORRELATION MATRIX OF TROPICAL FLAVOURED DAIRY FRUIT BEVERAGES

Buy	1.00						
Appearance	-0.623	1.00					
Aroma	-0.717	0.765	1.00				
Flavour	-0.768	0.797	0.865	1.00			
Taste	-0.818	0.738	0.825	0.917	1.00		
Texture	-0.795	0.724	0.819	0.891	0.908	1.00	
Ater taste	-0.792	0.699	0.843	0.888	0.917	0.901	1.00
	Buy	Appearance	Aroma	Flavour	Taste	Texture	Aftertaste

PCA was performed to obtain a graphical presentation of the interrelationships of the sensory attributes of the three different tropical flavours, namely granadilla, naartjie and tropical, and is presented in Figure 7. PCA was performed on the full data set obtained from sensory analysis (appearance, aroma, taste, flavour, texture, aftertaste).

**FIGURE 7: PLOT OF TROPICAL FLAVOUR PCA SCORES**

In the PCA the first principal component (PC 1) accounted for 83.92 % of the variation in the data with a latent root of 5.87. The second principle component (PC 2) accounted for 6.02 % of the variation in the data with a latent root of 0.42 and will therefore not be discussed. The main discriminating characteristics between the different sensory attributes for PC 1 were firstly **taste** ($r = -0.958$), **flavour** ($r = -0.958$) and **aftertaste** ($r = -0.945$). For taste, flavour and texture the tropical flavour contrasted the strongest with the granadilla flavour according to PC 1. The taste, flavour and texture of the tropical flavour were liked the most and the granadilla flavour disliked the most.

6.2.4 Presentation and discussion of preference ranking results

Preference ranking tests were done to determine the significant differences between the different fruit flavours for Company X, Y and Z respectively and will be discussed. The analysis with the Basker Table will be presented first, followed by the Regression Analysis. For the analysis with the Basker Table the total scores were compared to determine whether there was a significant difference. If the values were found to be significant ($p \leq 0.05$), the differences in the total scores are described by a, b and/or c (uppercase) in the same row. For the Regression Analysis all the fruit flavours of Company X, Y and Z were compared together in order to determine the brand and the flavour that was preferred the most.

6.2.4.1 Analysis of preference ranking results with Basker Table

The Basker Table was used to analyse the data of the preference ranking test. The participants ranked the fruit flavours from 1 (*equal to most preferred*), to 5 (*equal to least preferred*). The critical value for a significant difference at a probability level of 5 % ($p \leq 0.05$) for five product samples (**Company X**) and 57 participants will be **46.1**. The probability level of 5 % ($p \leq 0.05$) for four product samples (**Company Y**) and 57 participants will be **35.4** and for three product samples (**Company Z**) it will be **25.0**. The significant difference between the different fruit flavours of each company is presented in Table 17.

TABLE 17: CRITICAL VALUE AND TOTAL SCORES OF THE DIFFERENT FRUIT FLAVOURS OF DAIRY FRUIT BEVERAGES FROM COMPANY X, Y AND Z ($p \leq 0.05$)

	CRITICAL VALUE	ORANGE	PINEAPPLE	PEACH	NAARTJIE	TROPICAL	GRANADILLA
X	46.1	171 ^b	189 ^{ab}	107 ^c	224 ^a	149 ^{bc}	-
Y	35.3	163 ^a	146 ^a	112 ^a	-	-	149 ^a
Z	25.0	131 ^a	109 ^{ab}	102 ^b	-	-	-

abc = total scores in the same **row** with different superscripts differ significantly ($p \leq 0.05$)

1 = most preferred, 5 = least preferred

Company X fruit flavours

The preference ranking results of the dairy fruit beverages of Company X is presented in Figure 8.

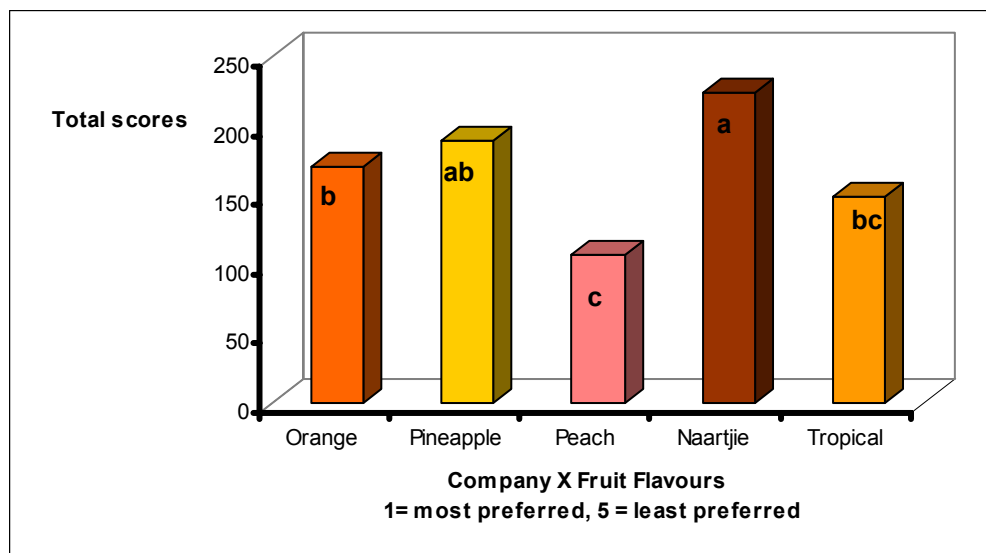


FIGURE 8: PREFERENCE RANKING RESULTS OF THE DAIRY FRUIT BEVERAGES OF COMPANY X

According to the results presented in Figure 8 the participants liked ($p \leq 0.05$) the peach flavour of the dairy fruit beverages from Company X the most, and disliked the naartjie flavour the most. The significant ($p \leq 0.05$) difference between the flavours is presented in Table 17, where the critical value was 46.1. There was a significant difference ($p \leq 0.05$) between the preference ranking for the peach flavour and the pineapple, orange and naartjie flavours. Apart from the peach flavour, the tropical and orange flavour were significantly ($p \leq 0.05$) more preferred to the naartjie flavour. There was not a significant difference ($p \leq 0.05$) between the pineapple and naartjie flavour. There was not a significant difference ($p \leq 0.05$) between the pineapple, orange and tropical flavours. There was not a significant difference ($p \leq 0.05$) between the peach and tropical flavour. It is interesting to note that the participants indicated in the purchasing information that they buy the pineapple flavour the most, but clearly preferred the peach and tropical flavours in the preference ranking test.

Company Y fruit flavours

The preference ranking results of the dairy fruit beverages of Company Y is presented in Figure 9.

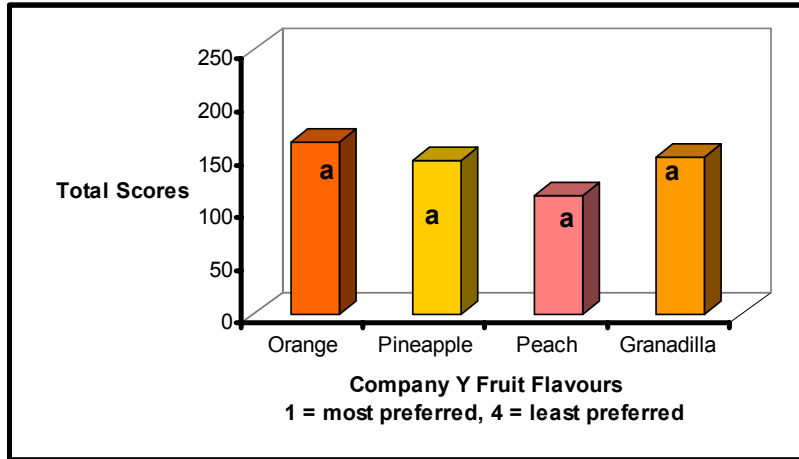


FIGURE 9: PREFERENCE RANKING RESULTS OF DAIRY FRUIT BEVERAGES OF COMPANY Y

Figure 9 illustrates that the peach flavoured dairy fruit beverages of Company Y was the most preferred flavour, and that the orange flavour was the least preferred flavour, but not significantly ($p \leq 0.05$) so (critical value of 35.4).

Company Z fruit flavours

The preference ranking results of the dairy fruit beverages from Company Z is presented in Figure 10.

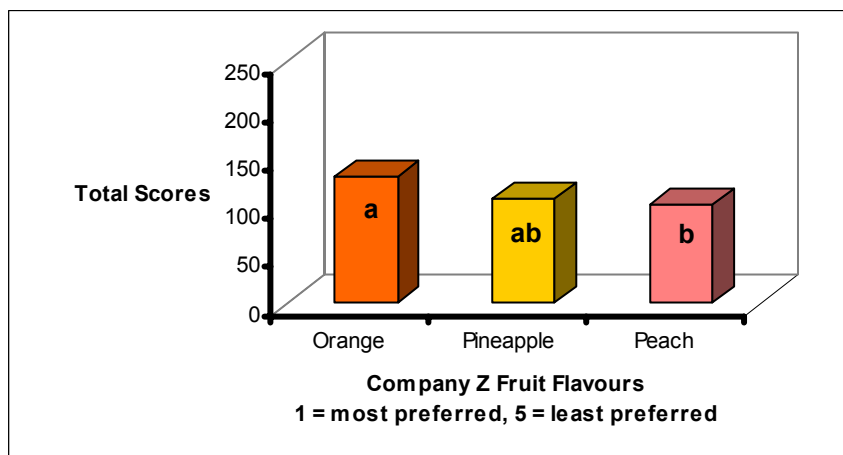


FIGURE 10: PREFERENCE RANKING RESULTS OF DAIRY FRUIT BEVERAGES OF COMPANY Z

Figure 10 reflects that the peach flavoured dairy fruit beverages of Company Z was the most preferred ($p \leq 0.05$) flavour, and that the orange flavour was the least preferred flavour. Table 12 indicates that there was not a significant difference ($p \leq 0.05$) between the peach and pineapple flavours, and also not between the pineapple and orange flavours (critical value of 25.0).

6.2.4.2 Regression analysis on preference ranking results

The regressions analysis on all the fruit flavours and brands of dairy fruit beverages ($p \leq 0,001$) is presented in Table 18.

TABLE 18: REGRESSION ANALYSIS OF ALL THE FRUIT FLAVOURS AND BRANDS OF DAIRY FRUIT BEVERAGES ($p \leq 0.001$)

PRODUCT SAMPLE	MEAN VALUE	VARIANCE/SEM
Peach – Z	1.78	0.491
Peach – X	1.91	1.610
Pineapple – Z	1.91	0.689
Peach – Y	1.96	1.213
Orange – Z	2.29	0.713
Pineapple – Y	2.56	1.322
Granadilla – Y	2.61	1.170
Tropical – X	2.66	1.428
Orange – Y	2.86	0.944
Orange – X	3.05	1.288
Pineapple – X	3.37	1.548
Naartjie – X	4.00	1.818

The regression analysis on the preference ranking data represents the mean values of all the flavours and brands so that the most preferred flavour and brand from all the data could be identified. The results indicated that the peach flavoured dairy fruit beverage from Company Z was the most preferred ($p \leq 0.01$) fruit flavour when compared to all the other flavours and brands. It was followed by the peach flavoured dairy fruit beverage from Company X, and the pineapple flavoured dairy fruit beverage from Company Z. This supports the results obtained from the analysis using the Basker table, where the peach flavoured dairy fruit beverage was the most preferred flavour within the different brands.

6.3 Results and discussion of results: Phase Two

The results and the discussion of the results for phase two, the focus group discussions, are presented in the following section. Purposive sampling was used to select the participants that were participating in the focus group discussions. The focus group discussions were conducted according to the procedures described in point 5.8.6 in Chapter 5. Four focus group discussions with eight to ten participants each, were conducted and each took approximately one hour. The focus group discussions were held during the second week, after the participants completed phase one. A total of 31 participants participated in the focus group discussions.

6.3.1 Focus group discussions

The main purpose of employing qualitative research techniques was to understand and describe the actions and events that were studied (Babbie & Mouton, 2001:270). The data analysis, therefore, was largely guided by the research problem and the aim of the research. The first step in qualitative data analysis was to assemble all the data. This included aspects such as transcribing the focus group discussions and adding the field notes to compile a comprehensive data set. The transcriptions and the field notes provided a basis for analysing the content. Data gathered during focus group discussions were analysed by means of content analysis as described under point 5.8.7 in Chapter 5. The findings from the focus group discussions will be presented and discussed according to the objectives that were set for the focus group discussions. These objectives related to the influence of familiarity, purchasing and consumption behaviour, the response to the sensory attributes of dairy fruit beverages, the external environmental factors, and the different situations in which dairy fruit beverages were used.

▪ Familiarity and purchasing behaviour

Findings from the focus group discussions indicated that the majority (87%) of the participants were familiar with dairy fruit beverages and often purchased them. This correlates with the information obtained from the questionnaire in the quantitative phase that indicated that 93 % of the participants were familiar with dairy fruit beverages. They frequently mentioned that they purchased dairy fruit beverages once a week or when they went to town to shop. Information obtained from phase one indicated that most of the participants (44 %) purchased the dairy fruit beverages once a week, followed by 24 % of participants purchasing dairy fruit beverages two to three

times a week. This means that almost two-thirds of the participants purchased and consumed dairy fruit beverages on a weekly basis. Only 10 % of the participants purchased dairy fruit beverages every day. The reason provided by some participants (13 %) who were familiar with dairy fruit beverages but who did not purchase it, was that they do not like it, however, they indicated that they will purchase it for their friends or family. Responses regarding familiarity included comments such as “...we know the product...” and “...we are familiar with the product...”. Dairy fruit beverages appeared to be a familiar product and the majority of the participants purchased and consumed them on a regular basis. Palliam (1989:142) also confirmed that black consumers often purchased products they were familiar with and have a high recognition of product applications and their brand names.

▪ **Sensory attributes of dairy fruit beverages**

The most frequently mentioned (77 %) reason for buying and drinking dairy fruit beverages was because it is nice and sweet and they liked the taste. Taste can therefore be identified as a very important factor in the choice of dairy fruit beverages. Shepherd (1990:142) and Asp (1999:290) confirmed that, from all the sensory attributes, taste is considered as one of the most important factors in food selection.

Most of the participants indicated that they considered sensory attributes as very important when purchasing or consuming dairy fruit beverages. The participants indicated that the sensory attributes were important when the preference of the different brands of dairy fruit beverages was discussed. The taste (80 %), appearance (71 %) and aroma (31 %) of the dairy fruit beverages from Company Z were the most preferred sensory attributes when the participants were requested to taste the samples served to them, and to choose the one they liked the most. The sample least preferred in terms of sensory characteristics was that from Company Y, and second most frequently chosen brand was that of Company X.

Appearance seemed to be an important factor when the participants had to choose the most preferred sample of dairy fruit beverages. Comments such as “...it must look like real juice or real fruit...”, “...it looks rich and thicker...”, “...it must be bright and colourful...” and “...the colour is nice...” portrayed their reaction of what they perceived as the ideal appearance of dairy fruit beverages. Negative reactions regarding the appearance of dairy fruit beverages, included responses that related to a “...watery or weak...” appearance that did not appeal to them. These were some of the reasons for not accepting the appearance. Appearance was an important attribute when dairy fruit

beverages were chosen during the purchasing process as it was the only sensory attribute that guided them in their decision making. The other sensory attributes appeared to have an influence after purchasing and during consumption. This refers to the cognitive processes taking place in the consumer's mind after they previously experienced some of the sensory attributes of a specific dairy fruit beverage. The consumer would have a memory of what they liked or disliked and this will guide them during the rest of the decision making process. See Figure 2 for an indication of the role of previous experiences on food choice.

The participants indicated that aroma was also an important sensory attribute when choosing dairy fruit beverages, since their perception of the aroma related to comments that the juice must smell like real fruit and must have a nice and sweet smell. Comments included "*...it must smell like real fruit...*" and "*...it must have a nice and sweet smell...*". Negative perceptions of the beverages such as the aroma that smelled like nothing are important.

Taste was one of the most frequently mentioned reasons for purchasing and consuming dairy fruit beverages with comments such as "*...it tastes the nicest...*", "*...the other juices are too sweet or too weak...*", "*...it must taste like real fruit...*" and "*...sometimes it taste if there is something inside the other juices...*". Taste as a sensory attribute is important when the acceptability, choice and preference of dairy fruit beverages are considered. A sweet, natural taste and not an artificial taste was emphasised by the participants. It was mentioned that some of the brands can sometimes have an aftertaste, and this created the perception that there "*is something inside*" the beverage. Most of the participants were familiar with dairy fruit beverages, and they had a well formed idea of what they liked and disliked when considering the taste of the different dairy fruit beverage brands. Shepherd (1990:142) and Asp (1999:290) also confirmed that, from all the sensory attributes, taste is considered as one of the most important factors in food selection.

▪ **External environmental factors**

One of the objectives for the study was to understand and describe the influence of the external environmental influences (price, availability, brand, socio-cultural) on the acceptability, choice and preference of dairy fruit beverages. The findings from the focus group discussions of the environmental influences on the acceptability, choice and preference of dairy fruit beverages will be discussed.

Price The majority (71 %) of the participants chose the dairy fruit beverages of Company X when the different brands and prices were revealed to them. Although this was the most expensive dairy fruit beverage, the participants had very strong feelings regarding the choice of this specific brand and its price. Responses indicate that other factors apart from a higher price are also important and it was considered as value for money. Comments included “...we will buy only juice from Company X because it is good quality...”. Du Plessis and Rousseau (2003:243) also confirms that price is often linked to the quality or service of the product for the South African consumer.

The rest (29 %) of the participants suggested that they would buy the other brands because it was cheaper, or because it had a bigger volume and this was considered as better value for money. Most of the participants mentioned that they would not buy dairy fruit beverages over weekends or for parties, because it would be too expensive. The responses also reflected the perception of the participants that good quality was associated with a higher price. The fact that it was also seen as a price risk to purchase any of the other brands, indicated their strong association of a high price with good quality. Comments included “...we don't try any other brands because then you experiment...”. The risk of purchasing a product with an inferior quality is therefore lowered if the product is more expensive and familiar (Van Raaij *et al*, 2001:60).

Brand The brand of a product is recognized by the logo on the packaging and also refers to the image and status the consumer associates with the product. Brand therefore refers to the whole experience surrounding a product. It defines the relationship that the consumer has with a food product and this is much more than just a logo, and aims to influence consumer behaviour (Schreurer, 2000:16). When the participants were asked to choose the brand they preferred or liked the most, the majority (94 %) chose the product of Company X. The reasons that were mentioned related to good quality and included comments such as “...it is good quality...”. A brand name is therefore associated with good quality and is used to eliminate risk during the purchasing decision. It is evident that brand loyalty is one of the most important risk reduction strategies to eliminate risk in the purchase of a product (Odin *et al*, 2001:81)

None of the participants mentioned that they bought dairy fruit beverages from Company Y, but indicated that they would buy that of Company Z if they were very thirsty and didn't have enough money. This implicated that the participants were brand loyal, however they admitted that price was a factor in certain situations.

The participants were requested to share which brand they served to friends when they came to visit. The most frequently mentioned brand that will be served to friends was from Company X (81 %). The majority of participants indicated that the brand they served to friends and family was very important. Comments related to these included “...I give only Company X to my friends when they come to visit...”, “...if I don't give them juice from Company X the people will talk and think you don't care about your friends, they think bad of you and will go tell the others...”, and “...if I don't buy dairy fruit beverages from Company X, then I buy something else from Company X (such as nectar)...”. This indicated that there was a strong relationship between social status and brand loyalty. The black consumer tends to have a strong brand preference for certain grocery products that symbolise status (Palliam, 1989:142). It is also mentioned that black consumers in general have greater confidence in products that are widely advertised.

The majority of participants, therefore, had very definite feelings regarding the brand they chose, and perceived it as a social risk to purchase any other brand than that of Company X. Responses such as “...I don't want to risk taking any other juices than Company X – then you experiment...” and “...if it is expensive, it means it is good quality...” referred to the strong associations of brand and the perceived social risk involved.

Availability The place most frequently mentioned by all for purchasing dairy fruit beverages was at a large retail supermarket. This supermarket targeted the black population. The participants mentioned that they bought dairy fruit beverages once a month, or on Saturdays when they did their monthly or weekly shopping. The reason given for purchasing dairy fruit beverages was that they got thirsty when shopping. Du Plessis and Rousseau (2003:391) also indicated that black consumers living in urban areas mainly shopped at supermarkets and hypermarkets.

Social/cultural influences All the participants mentioned that they grew up with dairy fruit beverages and that they were familiar with the product since childhood. However the majority (58 %) of the participants revealed that they only started purchasing and consuming dairy fruit beverages on a regular basis when they started earning their own salaries. When they were asked to give an indication when they usually consumed dairy fruit beverages 68 % indicated that they usually drink it at lunch or supper, with their meals. They said that they would only serve dairy fruit beverages from Company X on the occasion when their friends came to visit.

This also reflected the value attached to, and the importance of this specific brand name in their social group. Comments included “...I don't want to risk taking any of the other juices– then you experiment...”, “...maybe my friends won't like the other juices...” and “...if I don't give them juice from Company X the people will talk and think you don't care about your friends, they think bad of you and will go tell the others...”. All the participants (100 %) indicated that they never served this at parties because it was expensive. From these comments, it also became clear that prestige was closely associated with the dairy fruit beverages from Company X. This confirms once again that image is very important among the black consumers in South Africa and they often use food products that are perceived as prestigious in their own culture to reflect social status (Cant & Brink, 1999:8).

The participants were asked if they could remember any advertisement of the dairy fruit beverages brands. This question provoked a lot of emotion and excitement. The participants could only remember an advertisement from Company X, which they were able to describe in detail, although the advertisement was old now and not broadcasted on television anymore. The majority also indicated that they would try out a product if they saw it on television, and if their children told them to buy it. This also indicated that the media plays a powerful role in the participant's perception of dairy fruit beverages. Children also have an effect on the purchasing of dairy fruit beverages, and it is important to recognise the influence of children on the choice of certain brands. Responses included “...I will buy it for my children, even if I don't drink it...”. Recent research indicated that children who are exposed to commercials were more likely to choose the advertised items than those children who had not been exposed to those commercials (Grimm, Harnack & Story, 2004:1247).

- **Different situations in which dairy fruit beverages would be used**

One of the reasons mentioned for the different situations in which dairy fruit beverages were used was for physiological reasons. The participants also consumed dairy fruit beverages when they were thirsty. The responses that reflected these included “...it is smooth and refreshing...”, “...it takes away the thirst...” and “...I drink it when it is hot...”. When they were asked to give an indication when they usually consume dairy fruit beverages most of the participants (68 %) responded by saying that they normally drink it at lunch or supper, with their meals.

All the participants (100 %) were of the opinion that they think dairy fruit beverages were healthy to drink and would, for this reason also give it to their children. Responses dealing with health included the following “...I’m not sure about the ingredients...”, “...the ingredients make it healthy...”, “...it contains juice...” and “...it contains skim milk...”. There is, therefore, a perception that dairy fruit beverages are healthy to drink, and they felt it is for this reason acceptable to give it to their children. However, it appeared as though they were not sure about the nutritional benefits or the ingredients of the dairy fruit beverages. They were not fully informed regarding the nutritional content and the majority did not know that it contains skim milk. Comments included “...it contains juice...” and “...it is healthy to drink...”. The perception seemed to be that everything that contains juice and milk is healthy.

6.4 Summary

In this chapter the results of the quantitative as well as the qualitative phases of the study was reported.

The demographic profile indicated that the Zulu language was the representative language of these black female consumers. The level of education was mostly a matriculation qualification, followed by a tertiary qualification, meaning that most of the participants were educated and literate. Participants were mainly from Durban and surrounding areas. The average age of the participants was 35 years of age.

The purchasing and consumption information revealed that the participants purchased and consumed dairy fruit beverages on average once a week. Purchases were generally made at a local supermarket. The dairy fruit beverages were consumed more often in summer and on special occasions (small occasions such as birthdays). The majority of the participants indicated that they preferred to purchase and consume the brand from Company X. The flavour purchased the most often was the pineapple flavour.

The results from the preference rating test indicated that the main discriminating sensory attributes were firstly taste and then flavour. The results from the preference ranking test indicated that the peach flavour from Company Z was the most preferred fruit flavour. The purchasing and consumption information, however, indicated that the black female consumers mostly buy and consume the pineapple flavour.

From the focus group discussions it was evident that all the participants were

familiar with dairy fruit beverages and consumed them often. This is also supported by the demographic, purchasing and consumption information. The results from the focus group discussions confirmed that taste is an important sensory attribute in the food choice process. Appearance was also an important sensory attribute. The participants emphasised that the appearance must represent “...*real fruit juice*...” and must also smell like “...*real fruit*...”. It also became clear that a high price is associated with good quality by this group of consumers. Brand loyalty and social status were also associated with the dairy fruit beverage brands, and again indicated the powerful impact of mass media and advertisements on the perception and choices of dairy fruit beverages. Children were also mentioned as a persuading factor that influenced the choice and purchase of certain brands of dairy fruit beverages.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The main findings of this study will be presented according to the three groups of influencing factors described by the theoretical framework (Figure 3). Dairy fruit beverages as a unique South African food product were used for the study. The conclusions and recommendations of the study will follow after the main findings. An evaluation of the study will be discussed and presented in this chapter.

7.2 Main findings

The theoretical model illustrates a variety of factors that can influence the choice, acceptability and the preference of dairy fruit beverages. Various authors such as Shepherd and Sparks (1994:202), Cardello (1994:253), Falk *et al* (1996:265), Drewnowski (1997:238) and Asp (1999:1) mention that food choice is influenced simultaneously by many interrelating factors and these must be viewed together and not separately as they are often addressed and discussed. It is, therefore, important to gain an understanding of all the factors that influence food choices.

The first group of variables that can influence food choice as indicated in Figure 1 is the **food** itself and, in this study, **dairy fruit beverages** in particular. The importance of the chemical and physical properties of dairy fruit beverages during selection, the influence on the acceptability and preference was clearly illustrated. Comments on the smooth mouthfeel, the presence of an artificial taste with some of the beverages, comparisons with a “*real fruit juice*”, and the thirst quenching effect indicates the influence of the chemical and physical properties on the choice of dairy fruit beverages. Closely associated with the chemical and physical properties of these beverages are the physiological effects on the human body. In this study the participants associated dairy fruit beverages as thirst quenching and refreshing and this gave an indication of the physiological effect when dairy fruit beverages are consumed. The thirst quenching characteristics, therefore, appeared

important when dairy fruit beverages are consumed. Similar to previous studies, the participants revealed that sensory attributes are important during food choice (Kronl & Coleman, 1988:54; Cardello, 1994:254; Shepherd & Sparks, 1994:204; Shepherd & Raats, 1996:347), and identified taste, flavour and texture as the main discriminating sensory attributes that contributed to acceptability. Shepherd (1990:143) and Asp (1999:290) also confirm that taste is considered as one of the most important factors in food selection.

The second group of variables deals with the **individual** making the choice is the **black female consumers** in this study. In the theoretical framework, psychological factors are also related to perceptions of the sensory attributes of food (Shepherd & Raats, 1996:347; Asp, 1999:290). The influence of psychological factors is reflected in a person's attitude, behaviour and personality (Shepherd & Sparks, 1994:204; Blades, 2001:72). Attitude was measured with the preference rating and preference ranking tests in this study. The purchasing and consumption behaviour determined in this study, as well as the sensory evaluation tests, indicated the importance of measuring the consumer's attitude towards the sensory attributes of a food product in order to explain and understand the acceptability, preference and choice of certain brands and flavours of dairy fruit beverages. It will be valuable to the food manufacturer to be conscious of the attitudes and intentions of their target market and consumers. The black female consumer's attitude involves the acceptability and preference of certain flavours and brands of dairy fruit beverages. The brand name from Company X is a preferred brand by the black female consumers and is associated with status and prestige. The peach and tropical flavours are preferred flavours. Focus group discussions are a valuable research technique that can contribute to the understanding of consumer behaviour. The manufacturer is advised to stay in touch with the consumer's needs and the continuous changes.

The third group of variables that can influence food choice is the **external environment** that is represented by the price, brand, availability and social/cultural aspects. It was once again confirmed that price is an important determinant during food choice and was also an important factor in the choice of dairy fruit beverages (Bareham, 1995:39; Blaylock *et al*, 1999:271). It was revealed that price was also strongly associated with quality and it appeared as though the perception exists that good quality is equal to expensiveness. Brand name was also strongly associated with good quality and, in addition, reflected values, social status and prestige. It was evident that brand loyalty is created through consistent quality, familiarity and mass media communication. Advertising or marketing establishes product identity,

provides product information and builds brand loyalty. In this study, it was evident that advertising does contribute to brand loyalty and provides the black female consumer with a perception of quality and is a reflection of her social status in the community. The advertising of food products also has a powerful impact on children who persuade adults to purchase products on their behalf and according to their demands and requests (Fieldhouse, 1995:5). The influence of social/cultural aspects was reflected by the food habits and the values of the black female consumers. Serving dairy fruit beverages when friends came to visit, consuming them with meals and when they are going to town is a reflection of their socio-cultural interactions, including their ideas about the role of food and health, religious beliefs involving food, food preferences and even restrictions.

7.3 Conclusions

The results of the sensory evaluation and focus group discussions in this study showed that the black consumer in this study is brand loyal and it is recommended that the food manufacturer must focus on this aspect during product development. The focus should be to reinforce and retain loyal consumers. In this study quality was often associated with the price and the brand name of dairy fruit beverages. It appeared to provide the black consumer with a degree of social status when these products are purchased and consumed. The food manufacturer could, therefore, build on this brand loyalty by using it in marketing communication by emphasising the social status attached to the dairy fruit beverages, and by focusing on the sensory attributes (appearance, aroma, taste, flavour, texture and aftertaste) that are regarded as important and discriminatory during purchasing and/or consumption.

Taste and flavour were the main discriminating sensory attributes of importance when black female consumers evaluate various dairy fruit beverages. The food manufacturer should, therefore, identify the taste characteristics that are liked and/or preferred by their consumers. The challenge is to capture these sensory attributes in the dairy fruit beverages and to consistently provide the consumer with the same quality dairy fruit beverages. This study also revealed that the physical appearance of the dairy fruit beverages must be close to the “natural” colour of the fruit flavour, and that a “natural” appearance is an important requirement as perceived by them. The taste and flavour must also resemble that of natural fruit and it is advised that this could be emphasised in the marketing communication to the consumer. Peach and tropical fruit flavours are rated as high preference flavours of dairy fruit beverages by black female consumers in this study. However, these flavours are not often

purchased by the black consumer and it is, therefore, advised that the food manufacturer should expose the black consumer to these unfamiliar fruit flavours. Black consumers often purchase food items that are familiar to them and, therefore the marketing strategy can focus on ways to introduce new flavours to this target market. The results indicated that flavours such as granadilla and naartjie are not high preference flavours for dairy fruit beverages. It is recommended that the food manufacturer could either replace these flavours with new flavours or adapt the taste and flavour in order to be more acceptable, especially if they wish to increase their marketshare. Previous studies revealed that the habits of black consumers could sometimes differ from other cultural groups and it is, therefore, advised that the manufacturer communicate a message specifically directed to black consumers (Schiffman & Kanuk, 1997:442; Du Plessis & Rousseau, 2003:390).

The brand of dairy fruit beverages preferred by the black consumers was also strongly associated with a certain perception of quality. It was viewed as a social risk to purchase any other brand and feelings of comfort and quality that are associated with a specific brand were shared. They also associated a high price with good quality and were generally prepared to pay the higher price. The higher price and the brand name provided them with a social status and minimised the risk of purchasing a product of inferior quality. Purchasing dairy fruit beverages with a preferred brand name also reflects social security associated with brand loyalty.

7.4 Recommendations

It is, therefore, recommended that the food manufacturer must consider these variables simultaneously, as they all contribute to the choice, acceptability and preference of dairy fruit beverages. When comparing the competitor's products, it is important to consider not only the empirical sensory evaluation data, but also the consumer's behaviour in order to identify the competitive advantages, disadvantages, strengths and weaknesses. The development and marketing of a successful new food product is recognised as an important competitive strategy of a food company. The involvement of the consumer in the product development process is critical to the understanding of consumer needs and wants (Buisson, 1995:182; Imram, 1999:224). It is therefore important to keep track of the constant changes in the food industry and the needs and wants of consumers. The consumer is the most valuable contributor to the success or failure of the food product and should be recognised and it is, thus, advisable that the consumer must be included in the development process of new food products (Buisson, 1995:185).

The main discriminating characteristics for dairy fruit beverages were taste, flavour and texture. The sensory attributes of dairy fruit beverages from Company X and Z were consistently more liked than those of similar products of Company Y. The consumers experienced difficulties to evaluate the sensory attributes separately. It, therefore, appears that the entire product influences the consumers' degree of acceptability.

It is evident from the study that this group of black consumers was not familiar with all the new dairy fruit beverage flavours and that they preferred to buy the brand and the flavour they know and with which they are familiar. They mainly purchase the pineapple flavour. However, from the preference rating and ranking tests, it was found that they preferred the peach flavour. The flavour they disliked the most was naartjie. This could be due to the cultural influences where acceptable food items such as the orange flavoured dairy fruit beverages are purchased rather than try something that is not as familiar (Hughson, 1995:31). This indicates that the consumer often purchases only what is familiar and that the food manufacturer should, therefore, explore new ideas to continually introduce other flavours to the target market.

This study once again confirmed that the black South African consumer is brand loyal and that social status is important. It is recommended that the manufacturer of dairy fruit beverages pays more attention to being familiar with their target consumers and build on their brand loyalty. Marketing, advertising, mass media communication and encouraging brand loyalty are important avenues through which the food manufacturer could influence the South African consumer. Reference groups also appeared to be a powerful influencing force in the South African context (Du Plessis & Rousseau, 2003:391).

From this study it is evident that children play an important role in family decision-making in the choice or purchase of certain categories of food products. It is, therefore, recommended that the manufacturer of dairy fruit beverages should focus more on children when product development and marketing is considered. Du Plessis and Rousseau (2003:383) also confirm that children generally know what they want and are believed to be brand conscious particularly when it comes to names, labels and brand symbols. They are considered as sophisticated, discerning and well aware of their surroundings and are seen as strong brand loyalists. These are consequences of direct marketing and could be a powerful manner in which to influence the consumer.

7.5 Evaluation of the study

This study has contributed to the understanding and description of the behaviour of certain groups of black female consumers in South Africa. The study contributed to obtain additional knowledge of the black female consumers in South Africa. More insight was obtained in using both quantitative and qualitative research techniques when cross-cultural research is performed. The study also added support to the implementation of both quantitative and qualitative research to ensure that the consumer is satisfied and that expectations have been met. The quantitative and qualitative results supported one another and reached the objective of explaining and describing each other. It is important to mention that this particular consumer group could often not provide sufficient insight into deeper levels of certain themes with which they were confronted. This was probably because it was the first time that they were confronted with these questions, and it was the first time that they had to think about the things they do and why they do it. More time should be dedicated when cross-cultural research is performed in order to allow the participants to build confidence and share openly. A gap can be identified in the knowledge and understanding of the acceptability, preference and food choice of the black female consumers in South Africa. This provides opportunities for further research to identify and explore the food choice behaviour of the black female consumers in South Africa. This also provides opportunities to explore sensory evaluation techniques with consumers who could find it difficult to understand a sensory evaluation test.

The use of both quantitative and qualitative techniques is strongly recommended when consumers with different levels of literacy in the South African context is used as the target population. The black female consumers sometimes found it difficult to distinguish between the different sensory characteristics such as aftertaste. Qualitative research techniques are very valuable in the design phase of product development and contribute as valuable support for quantitative data (Trijp & Meulenberg, 1996:289). These can, therefore, have an essential role if new product opportunities and marketing ideas are considered and when the consumer's behaviour must be understood and described.

An explanation of what is expected from the participants before each session of the sensory evaluation tests was very valuable in obtaining the successful completion of evaluation forms and the participation in focus groups discussions. De Bruin and Minnaar (1994:28) and Du Plessis and Rousseau (2003:35) also confirm that

information sessions contributed to the rendering of credible results. A cross-cultural approach to consumer research can contain many pitfalls and must, therefore, be planned carefully (Du Plessis & Rousseau, 2003:35). This adds value to the reliability, validity and trustworthiness of the results. The measures to ensure the reliability, validity and trustworthiness of the results have already been discussed under point 5.8.8 in Chapter 5. In order to achieve reliability and validity in the quantitative phase of the study, various techniques were employed. Standardised preference rating and ranking sensory evaluation tests were used as established measures. The sensory testing environment and the sample serving procedures were also controlled to increase the reliability. The validity was increased by a thorough literature study and a clear understanding of the concepts that were measured. The use of a valid scale and the correct measuring instruments, such as the five-point hedonic scale and a standard preference ranking test, also contributed to increase the validity. In addition, the participants had the choice of participating out of their free will and this therefore, contributed to the reliability of the responses. The sensory evaluation tests and the way in which to complete the questionnaires were explained to the participants at the beginning of every session and this enhanced the reliability of the information. Trustworthiness was achieved in the second phase of the study through credibility and transferability. Credibility was achieved through triangulation during data collection by applying both quantitative and qualitative research techniques. Field notes were kept during the focus group discussions and member checks were performed to verify the interpretations of the researcher, thereby increasing the credibility. Transferability was ensured through purposeful sampling, where participants were selected to provide the researcher with specific information on a certain topic or theme. Information obtained by minimizing and maximizing the sample will result in more valuable and in-depth data.

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ADDENDUM A

QUESTIONNAIRE ON DAIRY FRUIT BEVERAGES

INSTRUCTIONS:

Please complete the following form as honestly as possible by filling in your own details next to the question, or by making an **X** in the appropriate block that answers the question.

Example:

What is your name? **Elaine Visser**

How often do you eat sandwiches?

1	Every day
<input checked="" type="checkbox"/>	3 – 4 times per week
3	Once a week
4	2 – 3 times per month
5	Never

The information that will be obtained from this questionnaire will be used to gain important information about dairy fruit beverages, and all information will be treated as confidential.

SECTION A: DEMOGRAPHIC INFORMATION

1. What is your name and surname?
2. What is your age in years?
3. What is your gender

1	Female
2	Male

4. Where do you live? (Please provide full home address)

.....

5. What is your home language?

6. To which ethnic group do you belong? *Tick one that applies.*

1	South Sotho
2	Northern Sotho
3	Tswana
4	Zulu
5	Xhosa
6	Venda
7	Ndebele
8	Swazi
9	Other, please specify:

7. What is your highest qualification? *Tick one that apply*

1	Some school education (up to which grade to you complete and pass?)
2	Matric
3	Technicon degree / diploma
4	University graduate
5	Postgraduate
6	Other qualification, please specify:

SECTION B: PURCHASING INFORMATION

8. Do you drink dairy fruit beverages (example Cabana, Fiesta, Tropika)?

YES	NO
-----	----

9. Do you buy or does someone in your family buy dairy fruit beverages (for example Cabana, Fiesta, Tropika)?

YES	NO
-----	----

10. How often do you/they buy dairy fruit beverages? *Tick one that applies.*

1	Every day
2	2 – 3 times a week
3	Once a week
4	Once a month
5	Other, please specify:

11. Where do you/they buy dairy fruit beverages? *Tick all that apply.*

1	Hypermarket
2	Supermarket
3	Local shop
4	Spaza shop
5	Café
6	A hawker or street vendor
7	Other, please specify:

12. What brand of dairy fruit beverages do you normally buy? *Tick one that apply*

1	Cabana
2	Fiesta
3	Tropika
4	Other, please specify

SECTION C: CONSUMPTION INFORMATION

13. What flavour/s of dairy fruit beverages do you like the most? *Tick all that apply.*

1	Granadilla
2	Naartjie
3	Peach
4	Pineapple
5	Orange
6.	Tropical
7	Other, please specify:

14. At what temperature do you drink dairy fruit beverages? *Tick one that apply.*

1	Chilled (straight from refrigerator)
2	Room temperature
3	Other, please specify:

15. Which situations or occasions are the most suitable for you to buy dairy fruit beverages? *Tick all that apply.*

1	Summer
2	Winter
3	Wedding functions
4	Children birthday parties
5	Funerals
6.	With breakfast
7	During exercise
8	With lunch or dinner
9	With my friends at the movies
10	Before I get a taxi home
11	When I invite people to my home
12	Other, please specify:

Thank you for the information. Please complete Section D now.

ADDENDUM B

SECTION D: PREFERENCE RATING OF DAIRY FRUIT BEVERAGES

Sample number:

You have received a coded dairy fruit drink.

- Rinse your mouth with water before tasting the sample.
- Remember to drink water between tasting the samples, and eat a carrot stick before tasting the next sample to clear your mouth.
- Start by looking at the appearance of the sample and note it on the form.
- Now smell the sample and tick your score.
- Proceed by tasting the sample and tick your score.

Please show how much you like or dislike the drink that you have in front of you by making an **X** in the block that says how you feel.

1. How much do you like the APPEARANCE (colour and surface characteristics)?

1	Like very much
2	Like
3	Neither like or dislike
4	Dislike
5	Dislike very much

2. How much do you like the AROMA?

1	Like very much
2	Like
3	Neither like or dislike
4	Dislike
5	Dislike very much

3. How much do you like the FLAVOUR?

1	Like very much
2	Like
3	Neither like or dislike
4	Dislike
5	Dislike very much

4. How much do you like the TASTE?

1	Like very much
2	Like
3	Neither like or dislike
4	Dislike
5	Dislike very much

5. How much do you like the TEXTURE?

1	Like very much
2	Like
3	Neither like or dislike
4	Dislike
5	Dislike very much

6. How much do you like the AFTERTASTE?

1	Like very much
2	Like
3	Neither like or dislike
4	Dislike
5	Dislike very much

7. Would you buy this product in the shop?

YES	NO
-----	----

Give a reason for you answer:

.....

.....

.....

Thank you for your time and participation!

ADDENDUM C

SECTION E: PREFERENCE RANKING TEST OF DAIRY FRUIT BEVERAGES

What is your name?

You have received five coded dairy fruit drinks.

- Rinse your mouth with water before tasting the sample, and drink water between tasting the samples.
- Taste the samples from left to right and eat carrot sticks between tasting the samples to clear your mouth.
- Indicate the fruit drink that you **like** the most to the one you **dislike** the most by ranking the sample numbers in the space below:

1 = most liked or most preferred

5 = most disliked or least preferred

	Sample number
1	
2	
3	
4	
5	

Give a reason for you answer:

.....

.....

.....

Thank you for your time and participation!

SECTION E: PREFERENCE RANKING TEST OF DAIRY FRUIT BEVERAGES

What is your name?

You have received four coded dairy fruit drinks.

- Rinse your mouth with water before tasting the sample, and drink water between tasting the samples.
- Taste the samples from left to right and eat carrot sticks between tasting the samples to clear your mouth.
- Indicate the fruit drink that you **like** the most to the one you **dislike** the most by ranking the sample numbers in the space below:

1 = most liked or most preferred

4 = most disliked or least preferred

	Sample number
1	
2	
3	
4	

Give a reason for you answer:

.....

.....

.....

Thank you for your time and participation!

SECTION E: PREFERENCE RANKING TEST OF DAIRY FRUIT BEVERAGES

What is your name?

You have received three coded dairy fruit drinks.

- Rinse your mouth with water before tasting the sample, and drink water between tasting the samples.
- Taste the samples from left to right and eat carrot sticks between tasting the samples to clear your mouth.
- Indicate the fruit drink that you **like** the most to the one you **dislike** the most by ranking the sample numbers in the space below:

1 = most liked or most preferred

3 = most disliked or least preferred

	Sample number
1	
2	
3	

Give a reason for you answer:

.....

.....

.....

Thank you for your time and participation!

ADDENDUM D

FOCUS GROUP DISCUSSION THEMES

1. DAIRY FRUIT BEVERAGES

- Discuss the dairy fruit beverages category. Probes: fruit juices, fruit juices with milk.
- Discuss physical properties of the dairy fruit beverages, such as the satiety value, aftertaste, texture and consistency.

2. SENSORY ATTRIBUTES

- Discuss reasons for the like or dislike of certain flavours and brands of dairy fruit beverages. Probes: fruit flavours, brands.
- Discuss the sensory characteristics that are the most important. Probes: appearance, aroma, taste, flavour, aftertaste.

4. PRICE

- Discuss the price the participants are willing to pay for dairy fruit beverages. Probes: compare prices of competitors, and other fruit juices in the market.
- Discuss quality vs price. Probes: value for money.

5. BRAND

- Discuss brand preference, and reasons for this. Probes: brands, reason for buying specific brand.
- Discuss the influence of packaging and label. Probes: comparison of competitor's packaging.

6. AVAILABILITY

- Discuss where dairy fruit beverages are usually purchased, and the reasons for this. Probes: where and when dairy fruit beverages are purchased and consumed.

7. CULTURAL, SOCIAL AND PSYCHOLOGICAL ASPECTS

- Discuss how acceptable dairy fruit beverages are in ethnic culture. Probes: acceptance in cultural group, consumption of dairy fruit beverages in culture.
- Discuss the beliefs and symbolic value of dairy fruit beverages in an ethnic culture. Probes: cultural values, meanings and associations with dairy fruit beverages.
- Discuss the influence of status and image. Probes: friends, status, occasions for consumption, image.
- Discuss the influence of behaviour, moods, personality, beliefs and attitude on choice. Probes: feelings, like, dislike, personality, mood.

9. NEW PRODUCT IDEAS

- Obtain ideas for new product extensions, such as new flavours, combination of different flavours, and concentrates. Probes: new flavour, combined flavours.
- New products specifically aimed at children. Probes: drinks aimed at children.

ADDENDUM E

GRAPHICAL PRESENTATION OF ANOVA ANALYSIS OF DAIRY FRUIT BEVERAGES

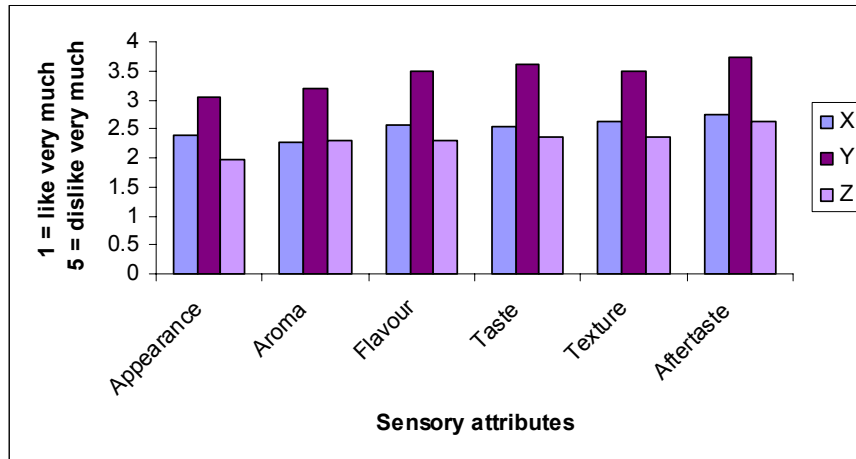


FIGURE 11: GRAPHICAL PRESENTATION OF ANOVA ANALYSIS OF ORANGE FLAVOURED DAIRY FRUIT BEVERAGES

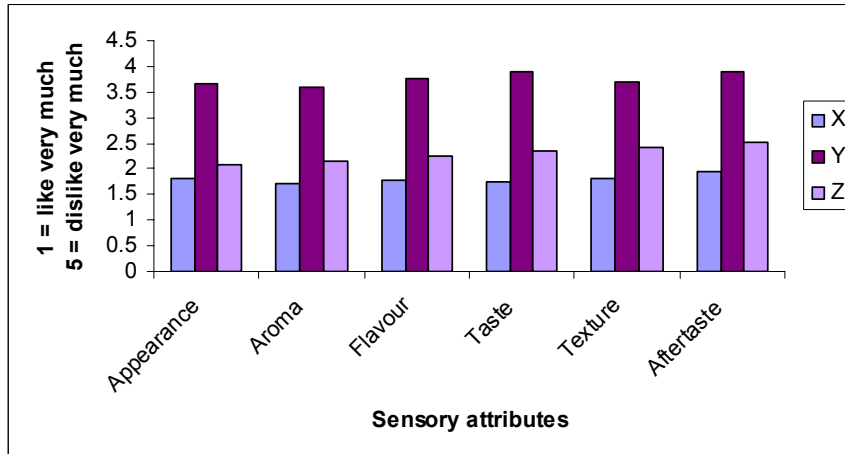


FIGURE 12: GRAPHICAL PRESENTATION OF ANOVA ANALYSIS OF PINEAPPLE FLAVOURED DAIRY FRUIT BEVERAGES

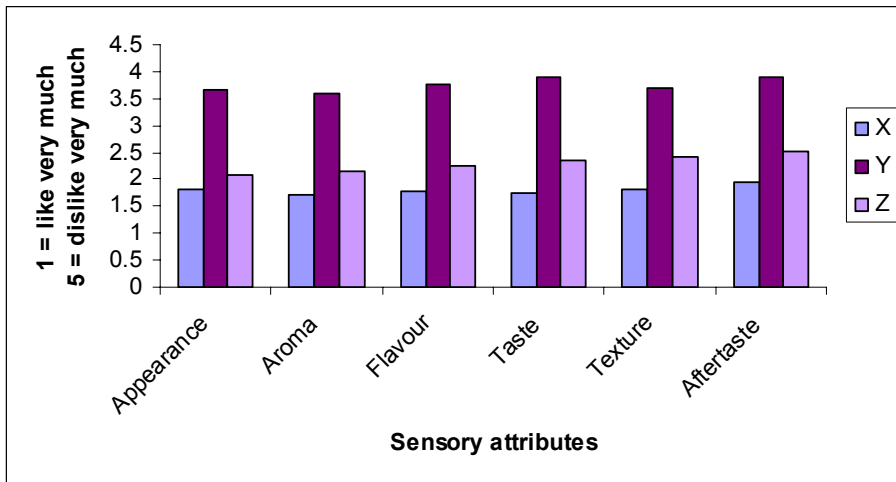


FIGURE 13: GRAPHICAL PRESENTATION OF ANOVA ANALYSIS OF PEACH FLAVOURED DAIRY FRUIT BEVERAGES

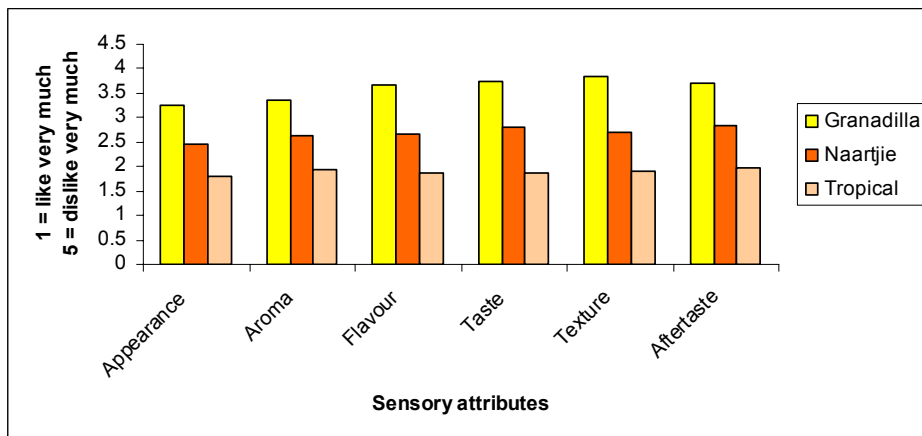
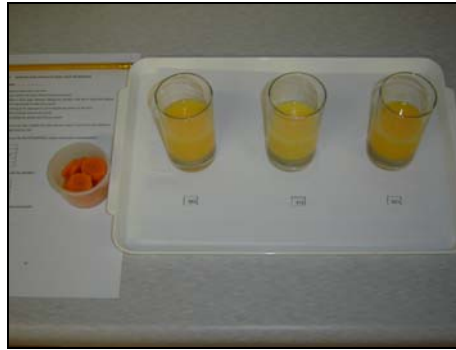


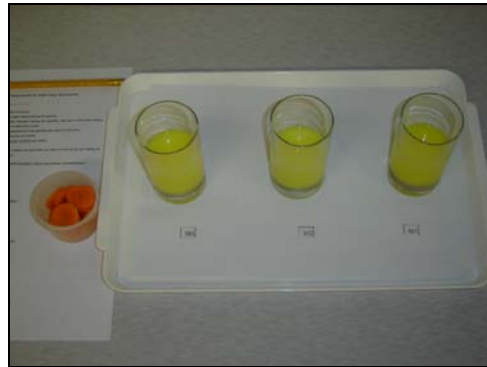
FIGURE 14: GRAPHICAL PRESENTATION OF ANOVA ANALYSIS OF TROPICAL FLAVOURED DAIRY FRUIT BEVERAGES

ADDENDUM F

PHOTOGRAPHS OF PREFERENCE RATING AND PREFERENCE RANKING TESTS



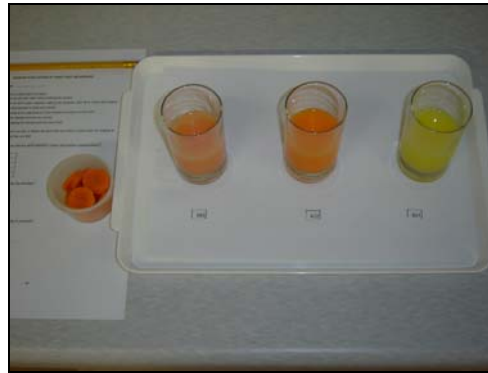
PHOTOGRAPH 1: PREFERENCE RATING TEST OF ORANGE FLAVOURED DAIRY FRUIT BEVERAGES



PHOTOGRAPH 2: PREFERENCE RATING TEST OF PINEAPPLE FLAVOURED DAIRY FRUIT BEVERAGES



PHOTOGRAPH 3: PREFERENCE RATING TEST OF PEACH FLAVOURED DAIRY FRUIT BEVERAGES



PHOTOGRAPH 4: PREFERENCE RATING TEST OF TROPICAL FLAVOURED DAIRY FRUIT BEVERAGES



PHOTOGRAPH 5: PREFERENCE RANKING TEST OF COMPANY X DAIRY FRUIT BEVERAGES



PHOTOGRAPH 6: PREFERENCE RANKING TEST OF COMPANY Y DAIRY FRUIT BEVERAGES



PHOTOGRAPH 7: PREFERENCE RANKING TEST OF COMPANY Z DAIRY FRUIT BEVERAGES