

**Consumer response towards yoghurt that comes  
with a spoon: Product design and consumer  
behaviour**

**Fadzai Kamungozi**

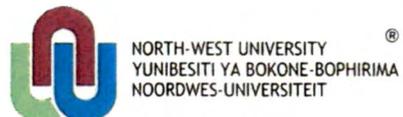
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Supervisor: Mr TP Venter

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It all starts here™



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## **DECLARATION OF OWN WORK**

I hereby declare that this mini-dissertation is my own work and effort. Where other sources of information have been used, they have been acknowledged.

**SIGNATURE:**

A handwritten signature in black ink, appearing to be 'D. P.' or similar, written in a cursive style.

**DATE:**

**30 NOVEMBER 2015**

## **ABSTRACT**

The study deals with consumer response towards yoghurt that comes with a spoon concerning product design and consumer behaviour. The study intends to meet the convenient need of a spoon when eating yoghurt. It will unveil the power of a product design on consumer behaviour. Attributes such as product design, product information, quality and price and product involvement are also considered. The study is based on two theories that are *“Means-end theory” which states that people do not buy products for the products’ sake, but for the benefits that their consumption can provide. Another theory is “Consumer-led new product development” which considers consumer needs, as the foundation of product development and aims at fulfilling those needs thus providing consumer value.*

I used a questionnaire as a data instrument. Participants were chosen through non-probability sampling, as it is readily accessible and convenient. Data was analysed through using Descriptive Analysis, Correlation and Binary logistic regression. The results show that convenience is statistically significant to the usefulness of the spoon on yoghurt. There is a strong correlation between purchase decision and product design, price quality and product information. Future research may consider the visual aspects of product design or cognitive interaction affecting consumer response on yoghurt tubs and also the flavours of yoghurt and consumer responses. It would also be interesting to include pre-school kids and other school children as part of the sample when researching yoghurt.

### **Keywords:**

Consumer, yoghurt, consumer responses, spoon, product design, consumer behaviour, marketing strategy, Conjoint analysis, marketing, quantitative research.

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# CHAPTER 1: INTRODUCTION

## 1.1 INTRODUCTION AND PROBLEM STATEMENT

Product design is the process of creating a new product to be sold by a business to its customers. A very broad concept, it is essentially the efficient and effective generation and development of ideas through a process that leads to new products (Riley, 2014)<sup>1</sup>. Design refers to those activities involved in creating the styling; look and feel of the product; deciding on the product's mechanical architecture; selecting materials and processes, and engineering the various components necessary to make the product work (Riley, 2014). Consumer response according to Cant et al. (2006:202), is the outcome of the evaluation, and involves mental process of selecting the most desirable alternative from a set of options that a consumer has generated. Costa and Jongen (2006:457), state that the new product development is recommended as a suitable strategy to build competitive advantage and long-term financial success in today's global markets. The consumer-led product development was introduced in the early 1990s according to Costa and Jongen (2006:458), as a market innovation using consumers' current and future needs in the development of new products that add value.

Within the dairy sector, which seems to outperform all other branches of the food sector in consumption, continuously increased and almost doubled in most European countries during the previous decade (Verbeke & Viaene, 1998:202). The yoghurt market in South Africa increased at a compound annual growth rate of 6% between 2004 and 2009 (Datamonitor, 2011). This shows a clear rise in the yoghurt market. It is in understanding your market that businesses are likely to elicit the desired response from the consumers.

The intention of the understudy is to increase the consumer behaviour on a product i.e. yoghurt. The aim is determined by solving a common problem or offering an added benefit of a spoon. There is a broad study on consumer behaviour or product design but not necessarily on designing a spoon suitable for a yoghurt 125/250g container. According to Kotler and Armstrong (2012:254), product design begins with observing

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<sup>1</sup> All references without page numbers are Internet references reflected fully in reference list.

customers and developing a deeper understanding of their needs. Therefore, the study intends to meet the convenient need of a spoon when eating yoghurt anywhere and anytime. It will also unveil the power of a product design on the consumer behaviour.

This topic was reached based on constant complaints from consumers/children on the need of a spoon on a yoghurt product. Consumer research can provide information on many aspects of product experience and is often focused on issues such as functionality, usability and satisfaction (Crilly et al., 2008:234). Specifically, my project addresses the importance of functionality in designing a product. By increasing functionality, can it also increase the consumer response? According to Bloch (1995:16), the form or design of a product may contribute to its success in several ways like gaining consumer attention, communicating information or providing sensory pleasure and stimulation.

Two theories that support the importance of product design is “means-end chain theory” and “form follows function theory”.

#### **1.1.1 Means-end chain theory**

According to the theory ‘means-end chain theory’, (MEC) main assumption is that people do not buy products for the products’ sake, but for the benefits that its consumption can provide (Costa, Dekker & Jongen, 2004:404). MEC theory views consumers as goal oriented decision makers; they are calculative and weigh their options. They choose behaviours that lead to the desired outcome. The production technology and new foods should not be seen as the goal of the design process but rather as a means of fulfilling needs, thereby facilitating the achievement of consumers’ values and goals (Costa et al., 2004:404).

#### **1.1.2 Form follows Function theory**

According to Crilly, Moultrie and Clarkson (2008:225), products’ form are determined by the functions it provides. This notion originates from the theory by Louis Sullivan’s (1896) ‘form follows function’. The theory is based on a principle that the shape of a product, building or object should be based on its purpose. This theory, when applied to product design, creates customer value hence increasing sales and profits. On the other hand, it makes other products unnecessary and put some entrepreneurs out of business by making too durable products and prevents sales of replacements.

However, Cant et al. (2006:12), say that a company should react more effectively and appropriately to the needs, either real or anticipated so as to offer superior value to its customers and in turn outshining its competitors.

### **1.1.3 Performance Objectives and Constraints: Sub-Problem One – Can the design itself of the spoon negatively affect the response of the consumer?**

Crilly et al. (2008:225) concur that the final appearance of the product is logically determined by the general problem that the design must solve or the specific benefits that it must offer. This then raises questions like, is the spoon too small that it becomes uncomfortable for the consumer to use it? Or is the shape of the spoon too big that it now occupies a bigger space to carry, or to put in the lunch box? According to Bloch (1995:18), the product form must take into account the level of performance desired by both target segment and distributors. Bloch (1995:18), also mentions that the form of the product must increasingly incorporate and address environmental aspects of performance including its ability to be recycled and in turn addressing technical constraints about the product's work.

### **1.1.4 Functionality and customer needs: Sub-Problem Two — Do people want the spoon on the yoghurt?**

The assumption of the project is that consumers need the spoon. This, however, can be debatable as products are used differently and in a different scenario. A yoghurt as a dairy product is used for treating diarrhoea; preventing vaginal yeast or preventing urinary tract infections. It is also used to treat bacterial infections in pregnant women, or it can be eaten as a snack. Yoghurt as food is presented or prepared in different ways. Therefore, it may not be necessary to design a spoon if it is going to be served as dessert or appetizer at home or a restaurant. In Nepal it is part of their culture and is used in local festivals, marriage ceremonies or family gatherings. This finding then supports Crilly et al. (2008:225) who say that different product types should adopt different product forms. The understudy would design a spoon specifically for a 125g/250g container. This container is mainly used by kids at school, as lunch by working people or as a snack when travelling or while busy doing something else. It will, therefore, be convenient to have a spoon.

### **1.1.5 Production and Cost Constraints: Sub-Problem Three – Can the spoon make the yoghurt too expensive to buy?**

According to Bloch (1995:18), designers would need to develop products that can be efficiently manufactured at a target cost while meeting quality control parameters. Veryzer and Viaenne (1995a), describes a successful design as one that is economical, performs its function and is pleasant to behold. Therefore, the designed spoon would not need to increase the price too much of the product and would need to be pleasant to behold otherwise it might reduce sales in return. Theory by Lawson (in Crilly et al., 2008:225) explains six categories of constraints that must be accommodated during product form development. The theory mentions constraints as functionality; production and cost; regulatory and legality; designer generation and marketing (Crilly et al., 2008:225). It is therefore of paramount importance that when designing the spoon, consider the production and cost; material needed; how to market it or if it is viable or feasible.

### **1.1.6 Marketing Constraints: Sub-Problem Four – Can the marketing itself negatively affect the consumer's response and product form?**

According to Bloch (1995:19), the manner in which the retailers display and sell the product has implications on product form. This means that when designing a spoon, it must not accommodate a lot of space on the yoghurt container causing the yoghurts itself to take shelf space. The product must still be able to attract consumers even with the new design. Product innovation is assumed to increase consumer utility but is effective, only if the innovating firm invests in marketing so that consumers become aware of the newly developed product (Kaiser, 2001).

However according to Crilly et al. (2008:226), designers' intentions for how product form should be experienced, can be considered as one of the many constraints that influence a design project. This is true as it raises the question of whether the spoon will be accepted by the consumer. Can the design of the spoon influence the reaction of the consumer? The form development process is driven by the designers' efforts to guide or constrain the way in which the product will be experienced, and the success of the final design may be determined by the degree of correspondence between designer intent and consumer response (Crilly et al., 2008:225).

For this understudy, a conjoint analysis will be used to predict consumer behaviour by considering the preferences of respondents to two options of the yoghurt. The results of the study will then provide support for decision makers to implement.

## **1.2 OBJECTIVES**

### **1.2.1 Main Objective**

The general objective of this research is to unveil the power of product design on consumer behaviour. Can the design of the spoon influence the reaction of the consumer? The intention of the understudy is to increase the consumer behaviour on a product i.e. yoghurt. Therefore, the study intends to meet the convenient need of a spoon on a yoghurt product.

### **1.2.2 Secondary Objectives**

The specific objectives of this research are:

- i. To increase the buying response from consumers on a yoghurt product
- ii. To unveil the power of product design on consumer behaviour
- iii. To conceptualise the possibility of a spoon on a yoghurt
- iv. To identify and conclude if the consumer wants a yoghurt with a spoon

### **1.2.3 Hypothesis**

Yoghurt that comes with a spoon will increase its sales because of meeting a convenient need.

This hypothesis supports the theory by Louis Sullivan's (1896) 'form follows function'. This theory is based on a principle that the shape of a product, building or object should be based on its purpose. This theory, when applied to product design, creates customer value hence increasing sales and profits.

## **1.3 RESEARCH DESIGN/METHOD**

This section will cover the literature review, secondary literature, empirical research, measuring instrument and statistical analysis to be used in this research.

### **1.3.1 Literature review**

According to Sage (2015)<sup>2</sup>, the purpose of the literature review is to provide the reader with an overall framework for where the piece of work fits in the big picture of what is known about a topic from previous research. Therefore, my literature review should be able to explain the topic of the research and why there is a need for additional research. A literature review can be used at the beginning of the study to explain what is known about your topic and provide a rationale for the study you are planning (Sage, 2015). Like my understudy, the literature review explains what is known about the product design and consumer response. It backs up with theories of why it is important to add value to the product. Sage (2015), states that the literature review can be used to help in the design of the study by guiding the appropriate sample size or identifying promising data collection practices or instrument. As for my research, conjoint analysis has been proved to be reliable and effective in testing consumer preference.

### **1.3.2 Secondary literature sources**

I will also use different scientific journals, some published by Elsevier (Costa, 2004), on product design and consumer behaviour. Other journals include the one written by Bloch (1995), which discusses the influence of product design and consumer response, seeking the ideal form. Other journals will assist on conjoint analysis. According to Sage (2015), a good literature review written by someone else can provide with an overview of what is known about your chosen topic. There are journals on different product design but not necessarily on yoghurt with a spoon. However, other journals will assist on how they used conjoint analysis.

Tertiary literature sources will assist in locating secondary literature. Therefore, I utilised different libraries including the NWU Library. The internet was be useful especially Google as a search engine in providing the required information. There are images of different yoghurts and different spoons that I could link and came up with a good design. On the internet, I obtained the information concerning the yoghurt market, for instance on Datamonitor (2011), information is available on the yoghurt market in

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<sup>2</sup> All references without page numbers are Internet references reflected fully in Bibliography.

South Africa. This information will assist to identify nuisance variables and be able to control them.

### **1.3.3 Empirical research**

The target population is the consumers. Non-probability sampling will be used. This sampling method is less complicated and more economical (Welman et al., 2005:69).

The accidental sample will be used, as they are readily available. We will target consumers entering supermarkets. Other sampling methods might create nuisance variables and likely to affect the results. However, by selecting a supermarket to measure can be considered as a stratified random sampling as it would have geographically selected the sample to be measured.

### **1.3.4 Measuring instrument**

The measuring instruments ideal for the understudy is conjoint analysis. It has become one of the most widely used quantitative tools in marketing research (Orme, 2009:1). It is frequently used in testing customer acceptance of new product design. According to Orme (2009:1), if this method is used properly, it provides reliable and useful results. Respondents are given options to choose from the different features of the product. This method measures the preference for product feature (Orme, 2009:1).

The respondents usually complete between 12 to 30 conjoint questions which might take 30 minutes to complete. The questions are designed carefully using experimental design principles of independence and balance of the features (Orme, 2009:1). The analyst can then statistically deduce what product feature is mostly desired and which attributes have the most impact on choice. By using Choice-Based Conjoint analysis, the aim is to predict product or service choices.

According to Orme (2009:6), key decision areas and how they affect choice of conjoint method are as follows:

i. *Number of Attributes:*

My research is studying fewer attributes; hence, the Choice-based conjoint analysis will be the ideal method to use.

ii. *Mode of Interviewing:*

The study is administered through paper-and-pencil/ questionnaires.

iii. *Sample Size:*

A bigger sample of more than 100 will be ideal hence the relevance of Conjoint based analysis.

iv. *Interview Time:*

Need only a few minutes to use in conjoint questions. However may need to compensate for the limited information from each by sharply increasing the sample size.

### **1.3.5 Advantages of Conjoint analysis: according to Alves (2014)**

- i. Attempts to break the task into a series of choices. These choices allow computing the relative importance of each attribute studied.
- ii. Uses the results to develop market simulation models that can be used well into the future.
- iii. Allows researchers to understand trade-offs made between product features, effectively measuring individual preferences.
- iv. Can uncover hidden or unknown factors that drive choice which may not be apparent to the respondents.
- v. Able to use physical objects.
- vi. Realistic choice or shopping task.
- vii. Used to develop needs-based segmentation.

### **1.3.6 Analysis of Conjoint Analysis**

Linear regression will be appropriate to use in analysing the data. According to The Pell Institute (2014), linear regression is an approach to modeling the relationship between the dependent variable and one or more explanatory variables. In linear regression, the data are modeled using linear predictor functions and linear models

are estimated from the data. The linear regression focuses on the conditional probability distribution. In my research, linear regression quantifies the strength of the relationship between a product feature and customer response.

Data collection procedures that will be used for the collection of the data for the study using conjoint analysis has two basic methods that is:

- i. The two factor-analysis-at-a-time procedure, and
- ii. The full-profile approach.

According to Green and Srinivasan (1978:107), the two factor-analysis-at-a-time procedure considers factors or attributes on a two-at-a-time basis, in which the respondent is asked to rank various combinations of each pair of factor levels from most preferred to least preferred. This is a very simple procedure and will be relevant to the understudy. According to Green and Srinivasan (1978:107), it eliminates information overload on the part of the respondent. In my research, the respondents will be able to rank their preferences between yoghurt with a spoon or not.

The full-profile approach as according to Green and Srinivasan (1978:107), utilizes the complete set of factors. It is possibly a major limitation because it could result in information overload; hence it is confined only to 5-6 factors per specific sort. Green and Srinivasan (1978:108), state that full-approach procedure gives a more realistic description of stimuli by defining the levels of each of the factors and taking into account the potential environment correlations between stimuli.

For the understudy, the two factor-analysis-at-a-time procedures will be appropriate to use as it yields higher predictive validity than full-profile approach (Green & Srinivasan, 1978:108). The survey would be self-completed and due to the sample size; there will be no opportunity to train the respondents to fill in the questionnaire. Therefore, the layout of the questionnaire would need to be simple to understand. The customer preference will be measured on 5 to 7 bi-polar scales such as very dissatisfied through to very satisfied.

The respondents will be asked to rate on a seven-point scale taking into consideration only two factors i.e. with a spoon or without a spoon. Some demographic questions might be asked on age, gender and intake of yoghurt per day or week and so on.

## 1.4 STATISTICAL ANALYSIS

The regression model will be used to analyse the data. The attributes will be coded 1 through 7 respectively. Data is modelled using linear predictor functions using linear models. Linear regression will focus on probability conditional distribution of  $y$ , given  $X$ . The regression will quantify the strength of the relationship between  $y$  and  $x_i$  and will use the least square approach. Statistical estimation and inferences in linear regression will focus on  $\beta$  (regression coefficients).

## 1.5 ETHICAL CONSIDERATIONS

- i. Privacy and confidentiality – According to Kimia (2013), it involves the participants right to decide whether to obey with the investigators' request; right to be debriefed about what is involved in their participation; the extent to which personal information is collected; the disclosure and retention of personal information and how to keep the information safe and confidential. The participants will, therefore, need to be informed about the purpose of the research and need to be informed about their entitlements.
- ii. Honesty in presenting and analysing results – According to Kimia (2013), the reports should be written in a way that is logical and persuasive and to curb the misleading of marketing research and errors in statistics – the researchers need to honestly present and analyse the information. In this case, may need to consider the specification and methodology to be used; the dependability of the source and whether the data is current.
- iii. The responsibility of the researchers, according to Kimia (2013), the individuals have the responsibility to ensure that they have the ability to meet the goal of the research. This is so because it helps to perform efficiently on the project. According to Kimia (2013), the people working on the research must have the following responsibility:
  - a. Conducting the research
  - b. Ensuring the outline is on track
  - c. Protecting the confidential data
  - d. Recording any events

In this case, it will be my responsibility to make sure to provide appropriate information and report any misconduct.

- iv. Plagiarism – use of other’s data or ideas without due acknowledgement and permission where appropriate as according to Welman et al. (2011:182), is clearly unethical.

## **1.6 CONCLUSION**

In conclusion, this chapter gives an overview of the research. It provides the objective of the research and the hypothesis. It also gives the research method that will be covered including the literature review and the sources of literature. Statistical analysis like regression and correlation will be used to analyse the data. However, we need to consider ethical issues like plagiarism, honesty, and confidentiality as we conduct this research.

In my next chapter, I will be looking at the literature review concerning the consumer response, yoghurt, and yoghurt tubs. The literature will be able to provide the reason why there hasn’t been any spoon attached to 125ml yoghurt tubs in the South African market, what factors influence the need for a spoon and what packaging elements to consider in designing a yoghurt tub and also the constraints that affect innovation in the yoghurt industry.

# **CHAPTER 2: LITERATURE REVIEW**

## **2.1 INTRODUCTION**

This chapter provides a review of consumer response including cognitive, affective and behavioural responses. It also provides the importance of product design, design requirements, and its constraints and also theories that govern the consumer response. It gives the review of yoghurt, its background, benefits, processes used and different designs in the market.

## **2.2 OVERVIEW**

The dairy sector seems to be tremendously increasing, outperform all other branches of the food sector. The benefits of yoghurt are very impressive, yet more discoveries are still coming concerning yoghurt. Current research is focusing on making a yoghurt a vaccine, but the research for yoghurt is still not complete. Yoghurt brands according to Loubser (2014a:43), are gaining market share by meeting consumer demand. However, there are some untapped markets for yoghurt that marketers still need to penetrate and more empowerment on the benefits of the yoghurt will help immensely. However, in this competitive market, innovation plays a major role in sustainability. Most innovations are focusing on cutting costs, value proposition and meeting a convenient need. The continuing drive for convenience in the food sector has fuelled demand for attractive and practical packs that maintain product quality and freshness while promoting and enhancing the brand (Loubser, 2014b:92). The selection of the packaging materials and packaging design must take into consideration physical product protection, protection of sensory properties, food safety, aesthetic, functional, environmental and cost issues. In increasing the market share for yoghurts, designers and marketers would need to consider consumer response taking note of the cognitive, affective, behavioral responses and culture of the targeted market.

## **2.3 CONSUMER RESPONSE**

Designers intend to elicit consumer responses that include drawing attention to the product, foster recognition of the product, generate attraction or desire, support comprehension of function and stimulate emotion (Crilly et al., 2004:230). As a

designer, you want the consumers to pay attention to your new product, and this can be achieved by aggressive advertisement and eye-catching design. According to Crilly et al. (2004:231), the designers intend for consumers to find the product attractive and be able to comprehend its functionality. However, the main goal is for the consumer to purchase the product, be satisfied with it and talk more about the product to their family and friends. The product design can elicit different responses that can be categorized into cognitive, affective and behavioral responses.

### **2.3.1 Cognitive responses**

Cognitive response as according to Crilly et al. (2004:553), refers to the judgement that the consumer makes the product based on information perceived by the senses. Consumers will use simplified judgement rules to reduce cognitive effort as they are continuously bombarded by numerous and frequent advertisement. Bloch (1995:19), mentions cognitive responses as influenced by product-related beliefs and categorisation. With product-related beliefs, it is how the product influences beliefs about its durability, dollar value, prestige, sex role appropriateness or technical sophistication. In the research done by Verbeke and Viaenne (1995:205), Polish people agreed that yoghurt was expensive, showing that the Polish people see yoghurt as not worth its price. To influence cognitive response, DANONE developed a yoghurt with men's taste, featuring a deep black color as a symbol of strength and dominance. In this way, a man will now go for black packaged yoghurt than pink packaged yoghurt to show masculinity. On categorisation, Bloch (1995:20), states that consumers try to understand a product by placing it within an existing category. Consumers can categorize products as a luxury, necessity, cheap or value for money depending on their perspective or experience. Marketers therefore, according to Bloch (1995:20), must take a pro-active approach and consider how they want consumers to categorise their product.

Cognitive responses are categorized as aesthetic impression which according to Crilly et al. (2004:552), is the sensation that results from the perception of attractiveness or unattractive in products. However, Veryzer and Viaenne (1995:642a), state that the crucial question is whether the aesthetic experience emanates from the object or generated by the perceiver of the object. It is to say whether beauty is governed by rules or subjective. Semantic interpretation is another category of cognitive response

which according to Crilly et al. (2004:552), is defined as what product is seen to say about its function, mode of use or quality. To influence this cognitive response, marketers would need to educate aggressively and empower their consumer, especially on complicated products. On food products, information about the product on its label can help as well. According to Macfie (2007:50), label information is a strong element in purchase decisions. On the yoghurt package, marketers may need to list a few benefits of eating yoghurt. If more people know its benefits, sales are likely to increase tremendously. Symbolic association category is the perception, according to Crilly et al. (2004:552), of what the product says about its owner or the personal or social significance attached to the design.

### **2.3.2 Affective response**

According to Bloch (1995:20), products elicit the moderate level of aesthetic responses in consumers including engagement of attention and strong positive emotions. A product that is designed nicely yet offering great functionality will increase its market share in the market. Bloch (1995:20), says it is the goal of product design to elicit more positive than negative responses among the targeted consumers. Crilly et al. (2004:553), mention that consumers may experience contradictory feelings towards an object/product like admiration, disappointment, amusement or disgust. Touch can create an affective response, which can influence the decision-making process even though the touch adds no product related information to the decision (Peck & Wiggins, 2006:56).

### **2.3.3 Behavioural response**

Bloch (1995:20), states that approach behaviours reflect an attraction to a design and spending time in the site or exploring it. Approach responses include extending viewing, listening, touching the product, willingness to visit retailers selling the product and purchasing the product. It is the goal of every marketer that the product elicits a response of purchase. According to Bloch (1995:21), there are also after-purchase responses. Marketers desire consumers to show their purchased product to their friends and family or careful product maintenance or displaying their product and taking good care of them. The consumer will be marketing the product unknowingly to other consumers. Avoidance behaviours can occur especially when the product elicits

negative beliefs and affect or unwillingness to purchase the product or when the consumer acquires an unattractive product (Bloch, 1995:21). Crilly et al. (2004:554), say avoid responses may be associated with ignoring the product, failure to purchase, product abuse and even hiding the product.

#### **2.3.4 Consumers' cultural context**

According to Crilly et al. (2004:554), culture and experience of the consumer are influential in determining their response to products. Designers have to consider the culture of their targeted market. What worked in one country might not work in another due to cultural differences. According to Ambwani and Mishra (2014), the multi-national Group Danone turned to Indian women instead of relying on its tested global strategies, for developing and packaging products for the Indian market. This shows that Danone recognized cultural differences in different markets and is engaging with key consumers for guidance in their product development. According to Ambwani and Mishra (2014), as a result of this strategy, Danone launched products such as Dahi, Mishti Doi Lass and Chaas yoghurt. The preference lies in taste and texture in India, which is why they recruited women, and homemakers for regular tasting sessions (Tandon, 2013). Acceptance of a particular taste by a culture, according to Bloch (1995:22), is influenced by the culture's values and preferences. Research done by Verbeke and Viaenne (1998:201), discovered that the preference for yoghurt with a fruit taste or supplement was more extended in Poland than Belgium and Polish prefer full fat than semi-skimmed yoghurt compared to Belgians.

According to DSM (2015:5) pairing a yoghurt is driven by cultural tastes, 55% of Brazilians like to have yoghurt with cereal, 44% of Chinese pair with a sweet snack and 42% of Americans pair yoghurt with fruit. Foti (2011), blogged that yoghurt packaging is based on cultural preferences where in Spain it is packed in glass jars with a thin aluminum covering so as to appeal to an older audience that finds glass jars as nostalgic. According to Foti (2011), the design of cardboard packaging is simple and features the airy blue colors hinting a natural image relevant to the Spain market. However, according to Silayoi and Speece (2007:1502), incorporating consumer response to packaging elements into packaging design decisions is likely to be complex because different consumers respond differently to these elements.

## **2.4 PRODUCT DESIGN**

### **2.4.1 Importance of product design**

A design, according to Veryzer and Viaenne (1995:642b), is used to refer to a particular configuration. Rhoads (2007:17), states that design is a visual language that is built on fundamental principles and elements. Creusen (2011:405), describes product design as both the process and result of determining the physical execution and arrangement of the characteristics of a product offering and these characteristics refer to functionalities and physical appearance or form. According to Radford and Bloch (2011:209), consumers decode design elements in order to categorise a product and position it with respect to other competing goods. A successful design is one that performs its intended functions well, is economical and pleasant to the consumer (Veryzer & Viaenne, 1995b:642). Product design was discovered as the most important determinant of sales success (Bloch, 1995:16).

Design begins with observing customers and developing a deep understanding of their needs, shaping the customer's product-use experience (Kotler & Armstrong, 2012:231). Marketers will require designs that have an appealing form and able to catch consumers' attention. Kotler and Armstrong (2012:231) state that product designers should think less about product attributes and technical specifications and more about how customers will use and benefit from the product. Firms, according to Gonçalves (2008:1), spend more money and time on packaging to attract consumers and increase consumption.

According to Bloch (1995:16), the design of a product contributes to its success in that; it is one way to gain consumer notice in a clustered market. Yoplait yoghurt successfully entered a competitive market by using a container that was narrower at the top than at the bottom, opposite of other yoghurts in the market as shown in figure 26. Consumers tend to decide on the spot about the purchases and as a result, packaging is an important communication tool and have a great impact on consumers' decision-making process (Kalyvioti, 2013:10). According to Bloch (1995:16), it is a means of communicating information to consumers, creating an initial impression and generating inferences regarding other product in the same manner as do price and it develops corporate and brand identities. Product design affects the quality of our lives,

by providing sensory pleasure and stimulation and has a long-lasting effect such as those with aesthetic characteristics of more durable products (Bloch, 1995:16). The main role of packaging is to protect the food from physical damage, biological deterioration, facilitate distribution, providing information of the product and supporting marketing (Kalyvioti, 2013:2). Packaging is a crucial tool in the purchase decision-making (Monnot et al., 2014:3).

#### **2.4.2 Means-end theory**

The Means-end theory states that people do not buy products for the products' sake, but for the benefits that their consumption can provide (Costa et al., 2004:404). For instance, consumers will buy the yoghurt based on its benefits as a health food and so on. According to Costa et al. (2004:403), the utility of the product is in the functionality and psychological consequence it delivers to the consumer. MEC theory has two assumptions that say consumers buy and use products depending on their evaluation of the self-relevant consequence of their behaviour. The other assumption is the level of intent and awareness of consumption related behavioural decisions (Costa et al., 2004:404). The usefulness of this theory according to Costa et al. (2004:405), is evaluated by the extent to which its users understand consumer decision-making process and be able to predict consumption behaviour.

#### **2.4.3 Consumer-led new product development**

According to Costa and Jongen (2006:459), it is an integrated concept concerning the application of consumers' current and future needs, its determinants in the development of innovative products. The theory considers consumer needs as the foundation and aims at fulfilling those needs realizing consumer value. According to Costa and Jongen (2006:459), the new product development process should fit the new product and the needs of the targeted market. Every decision made on the product should, therefore, be based on whether it creates value to the customer. Creusen (2011:406), states that understanding users' needs and wants and integrating them into the new product development has been recognised as an important success factor for new products. Conjoint analysis is another way of identifying the consumer needs and wants which will be integrated into incremental and radical designs.

The consumer-led NPD process involves opportunity identification, product design, testing, introduction and life-cycle management. The opportunity identification according to Costa and Jongen (2006:460), define the target market. Then the design will look at identifying the advantages that the new product will provide to the consumer. Costa and Jongen (2006:461), state that opportunity evaluation will be required consisting of forecasting sales for designed product. However, according to Creusen (2011:406), there is an inadequate assessment of market and customer needs. Costa and Jongen (2006:462), also state that consumers cannot be expected to provide needs about product or technology which are yet unknown to them. There is, therefore, benefits and limitation towards this process.

#### **2.4.4 Design goals and constraints**

According to Crilly et al. (2008:235), there are design requirements that motivate the intentions that are held and those that constrain the forms. According to Crilly et al. (2008:235), these include:

- **Function and usage:** Products offer value based on utility or function. Bloch (1995:18), states that ergonomics involves the matching of a product to the target user's capability to maximize safety, efficiency of use and comfort. These have an effect on form, weight, texture, and shape. According to Bloch (1995:18), the ideal product will be the one whose form is most comprehensible and usable. Crilly et al. (2008:235), state that product must only offer the appropriate functionality but must also be designed to allow for suitable access, operation and maintenance.
- **Production and cost constraints:** According to Bloch (1995:18), managers typically instruct designers to develop products that can be efficiently manufactured at a target cost while meeting quality control parameters. Crilly et al. (2008:238), also mention that such considerations influence product form/design. In designing a yoghurt tub, production will influence the material that will be used, form and costs involved.
- **Distribution and retail:** Crilly et al. (2008:238), state that distribution costs significantly contribute to the unit price at retail, the manner of transportation and how the product looks. The constraints influence how the product must

be packaged and presented and what features can be emphasized (Crilly et al., 2008:238).

- **Regulatory and legal constraints:** Products must comply with specific legal and regulatory guidelines. Specifications relating to allergens must be incorporated on food labels. In designing the labels for yoghurt, it has to display, “contains milk” to notify the consumers in case they are allergic to that specific ingredient. Regulations like, “no sugar added” are now prohibited for foods that inherently contain any sugar.
- **Performance objectives and constraints:** Bloch (1995:18), states that there are functional performance goals and constraints that pertain to some variables, including service life, shelf life, resistance to environmental stress and maintainability. MacBean (2010:147), highlights that yeast and molds are principal spoilage of yoghurt due to contamination in the processing operations, packaging material, filling operations, or faulty seals. Therefore, the designers would need to consider these factors in a yoghurt, as it will affect the form and material used. According to MacBean (2010:151), yoghurt requires packaging materials that are less permeable to Oxygen.
- **Packaging elements:** According to Silayoi and Speece (2007:1498), there are four main packaging elements potentially affecting consumer purchase decisions, which are:
  - **Graphics and colour:** The evaluation of attributes is less important in low involvement decisions; a highly noticeable factor such as graphics and colour becomes important (Silayoi & Speece, 2007:1498). Graphics include image layout, colour combinations, typography, product photography and the total presentation communicates an image. According to Silayoi and Speece (2007:1498), for consumers, the package is the product; particularly low involvement products where initial impressions formed during initial contact have a lasting impact.
  - **Placement of visual elements matters:** According to Silayoi and Speece (2007:1499), the recall of packaging elements is likely to be influenced by their lateral position on the package as well as other recognised factors like font style, size, and colour. Johnson (2015), lists seven visual elements that include lines, shapes, forms, texture, colour, value and space. Lines, according to Johnson (2015), suggest speed, solidity, and

purposefulness. Lines are basic buildings of all art, with horizontal lines suggesting passivity and vertical lines suggesting power and activity (Johnson, 2015). To maximize consumers' recall, pictorial elements, such as photographs of the product, should be positioned on the left-hand side of the package (Silayoi & Speece, 2007:1499).

- Using color as a cue on packaging can foster potentially strong associations especially when it is unique (Silayoi & Speece, 2007:1499). Colours are powerful image builders where red is used to depict youthfulness, power, and action; blue is often relaxing and green suggesting growth, hope and organic (Johnson, 2015). Colour influences the mood and style of an advertisement (Rhoads, 2007:22).
- Package size and shape: According to Silayoi and Speece (2007:1499), consumers use visual heuristic to make volume judgements. They perceive elongated packages to be larger with value for money. Elongating the shape according to Silayoi and Speece (2007:1499), result in consumers thinking of the package as better value for money and result in increased sales. Shapes according to Johnson (2015), can suggest anything, with curves suggesting feminine voluptuousness while angles suggest masculine practicality. A circle can imply eternity and virtue; triangles focus the mind upward while squares suggest practicality and usefulness (Johnson, 2015). Polyoak Packaging Company designed a taller yoghurt packaging design to increase shelf appeal, and they also made easy snap separation easy to cater for the consumer's need (Loubser, 2014a:64). Product downsizing, according to Ordabayeva and Chandon (2013:123), can be risky as consumers find it deceitful as they associate smaller sizes with low value.
- Product information: Packaging communicates product information to assist consumers to make their decision effectively. According to Silayoi and Speece (2007:1499), the trend towards healthier eating has highlighted the importance of labeling. Government regulations are also influencing the information that must be presented to the consumer. Consumer acquisition of low involvement products is often made without carefully examining brand and product information hence the information on the package will carry less value (Silayoi and Speece, 2007:1499).

Consumers like the idea of the simplified front of pack information (Grunet & Willis, 2007:395).

- **Technology image:** Packaging technology conveys information that is often linked to the consumers' lifestyle (Silayoi & Speece, 2007:1500). Technology is normally linked to the market trends and consumers' prevailing needs. According to Silayoi and Speece (2007:1500), convenience has become increasingly important for food products, and consumers who are worried about time saving will pay more attention to claims of new technology because technology is associated with convenience. This means that yoghurt tubs that meet convenient needs will influence the purchase decision and gain market share.

Other packaging design elements by Rhoads (2007:21), include:

- **Typography:** which comprised typefaces or fonts like 'Times New Roman'. Large fonts are good for readability. Selecting the appropriate fonts can help create a consistent look among all aspects of the brand's communication (Rhoads, 2007:22).
- **Logo:** Consistent use of the logo helps customers recognize a brand more easily. The logo is the company identity and shorthand to what the brand stands for.

Although these packaging elements are important, Marangon et al. (2013:81), state that consumers do not consider each product attribute independently when formulating a choice decision. They evaluate total value of the product combining separate amounts of utility for each attribute level (Marangon et al., 2014:81). Sustainable packaging is also very important. According to Magnier and Crié (2014:351), sustainable packaging is safe, healthy, beneficial, use recycled material and manufactured using clean production.

## **2.5 YOGHURT TUBS**

### **2.5.1 Yoghurt**

Yoghurt, according to Downtoearth (2013), is impressively old, dating back to the 3<sup>rd</sup> millennium BC, when goatherds, in what now is Turkey, fermented milk in sheepskin bags to conserve it. Today it is consumed worldwide, according to Downtoearth (2013), with a historical prevalence in the Western world, but a fast growing foothold in emerging markets. Over the five millenniums of its history, yoghurt has known different manufacturing techniques, a variety of flavours and packaging and inexhaustible popularity (Downtoearth, 2013). According to Downtoearth (2013), it was born in Anatolia, but there are records of it in India and Iran around 500 BC and in France it was introduced around 1542 under the reign of Francois the first who had fallen sick of diarrhea. According to Kadaya (2012), yoghurt packaging and merchandising have a long history in Japan back to the 1950s, beginning with a packaging bottle. It was only in the 20<sup>th</sup> century when yoghurt became part and parcel of daily diets in a variety of flavours and familiar packaging (Downtoearth, 2013). Yoghurt products are classified into three types, which include:

- In-package fermented yoghurt
- Prepackage fermented yoghurt
- Pasteurized yoghurt

According to Kadam et al. (2010:12), yoghurt is a cultured milk product and contains 12-14% total milk solids. Yoghurt is made by blending fermented milk with various ingredients that provide flavour and colour. Yoghurt supplies high quality of protein and an excellent source of calcium, phosphorus, potassium and significant quantities of vitamins (Kadam et al., 2010:12). Weaver (2011), states that yoghurt has strong medicinal properties including the ability to stimulate the immune system and kill bad bugs or bacteria in the human gut. Yoghurt has been around for many years, and its popularity is increasing tremendously due to continuous benefits that are being discovered from it. Weaver (2011), also states that yoghurt helps people with HIV when their CD4 count is under 200 by enhancing their HCL (hydrochloric acid) production thus improving digestion, vitamins and mineral absorption. Barrie (2015), also states that yoghurt soothes the skin as it contains lactic acid that gently exfoliates the top layers of the epidermis, which clear up blemishes and discoloration, and even reduces

fine wrinkles. Kesuma (2010), in her research, showed that soy yoghurt with artificial sweeteners is an alternative health-enhancing food that is safe for diabetic people. Sears (2015), mentions ten reasons yoghurt is a top health food. That is:

- Yoghurt is easier to digest than milk – the bacterial enzymes created by culturing process partially digest the milk protein casein making it easier to absorb and less allergenic.
- Yoghurt contributes to colon health – Yoghurt contains lacto-bacteria which foster colon health and helps lowering the risk of colon cancer.
- Yoghurt improves the bioavailability of other nutrients – The culturing increases the absorption of calcium and B-Vitamins.
- Yoghurt can boost immunity.
- Yoghurt aids healing after intestinal infections – it is a healing food for diarrhea.
- Yoghurt can decrease yeast infections – reduces the amount of yeast colonies in the vagina and decreases the incidence of vaginal yeast infections.
- Yoghurt is a rich source of calcium.
- Yoghurt is an excellent source of protein.
- Yoghurt can lower cholesterol.
- Yoghurt is a growth food.

According to Sears (2015), Bulgarians consume a lot more of yoghurt than any other culture, yet they are noted for their long lifespan and remain in good health even in their old age. The benefits of yoghurt are very impressive, yet more discoveries are still coming concerning yoghurt. According to Madehow (2015), the research for yoghurt is still not complete on its benefits, and this is very important in the continued market growth of yoghurt. Downtoearth (2013), also states that there are entire areas of the world where yoghurt is still not very common. According to Verbeke and Viaene (1998:202), the introduction of milk quotas, the challenges of the single market and the impact of new trends in food consumption has made it a topic of interest in Europe.

The discoveries of yoghurt benefits have increased its production and market. According to Verbeke and Viaene (1998:202), the dairy sector seems to outperform all other branches of the food sector in consumption continuously increased and almost doubled in most European countries during the previous decade. According to Downtoearth (2013), Americans still eat six times less yoghurt than the French, who

consume a record of 33kg per head per year. In Asian countries, the per-capita consumption of milk and dairy products is currently low (MacBean, 2010:146). Exposing clearly that there are still some markets that are still to be penetrated. Datamonitor (2011), also states that the yoghurt market in South Africa increased at a compound annual growth rate of 6% between 2004 and 2009, showing a sharp rising of the yoghurt market.

According to DAFF (2012:1), the contribution of milk production in South Africa makes approximately 0.5% to the world milk production. The South African dairy market is divided into 60% liquid and 40% concentrated products; pasteurized milk with highest of 52% followed by yoghurt with 13%. According to DAFF (2012:7), In Africa, Zimbabwe commands a bigger market share of South African's milk and dairy markets exports with 38% followed by Mozambique with 32%. Gauteng province has the greatest share of SA milk and dairy products exports followed by the Western Cape province, and the reason could be their geographical location where they are exit points for milk and dairy products to the SADC region (DAFF, 2012:8). South Africa also exports an average value of US \$1938/ per unit to Angola, Mozambique and Zimbabwe of dairy products. Its yoghurt export has increased by 16% between 2007 and 2011 (DAFF, 2012: 86). It is also quite clear that the export percentage has increased taking note of the decreasing economy of Zimbabwe as of today. These statistics once again shows a rising market of the yoghurt industry and its impact on the economy of South Africa and worldwide.

Manufacturers of yoghurts as according to Madehow (2015), have responded to the growth in the yoghurt market by introducing many different types of yoghurt including low fat, and no-fat; creamy; drinking; bio-yoghurt; organic, baby and more unique flavours like cream-pie and chocolate. The future of yoghurt manufacturing as according to Madehow (2015), will focus on the development of new flavours and long lasting yoghurts and more research on its benefits. Some say yoghurt may soon become a vaccine. According to Downtoearth (2013), a professor at Northwestern University Feinberg is currently developing an edible vaccine.

The more yoghurt produced, the more packaging needed and the more yoghurt tubs designs are required so as to meet the needs of a growing market. Producers in the dairy sector have made it clear recently that they are looking for innovative ways to

contain costs. New machinery offers dairy products high-quality plastic containers of varying sizes for products such as yoghurt (O'Hara, 2014).

## **2.5.2 Packaging for yoghurt**

There are many factors to consider when packaging yoghurt. These factors include packaging material, machine processing, requirements for packaging, the shelf life of yoghurts in different packages and different designs already in the market.

### *2.5.2.1 Packaging material*

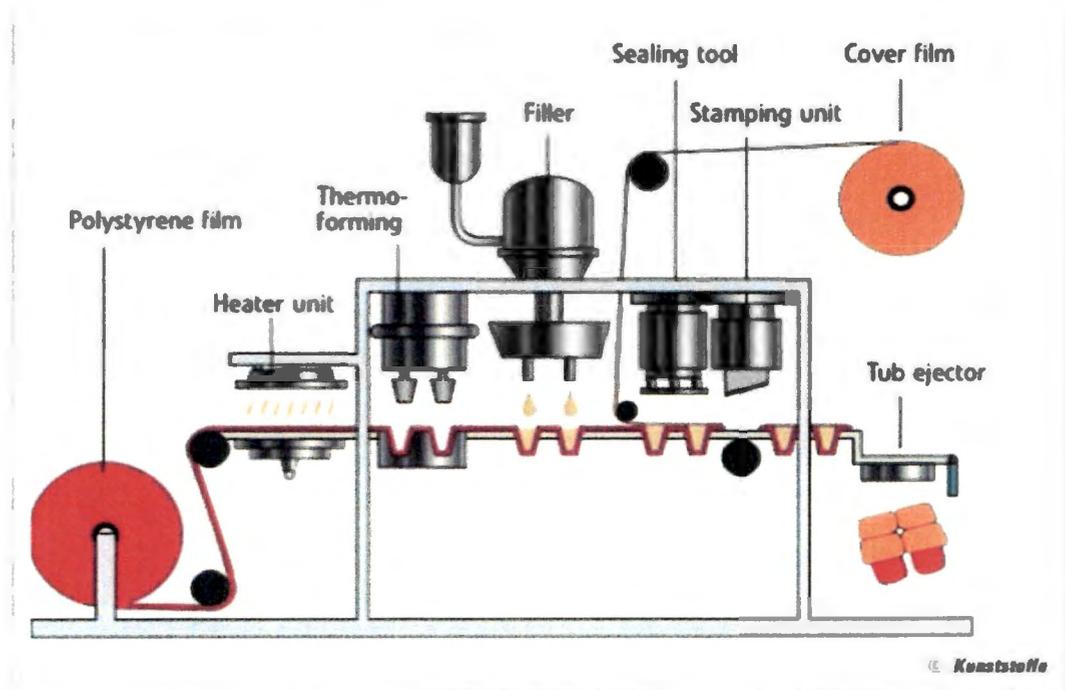
The most common types of material used for packaging are paper, fiberboard, plastic, glass, steel and aluminum (Zamani, 2010:2). The plastic according to Takashi (2012:349), was introduced as a material for packaging because of its durability, printability, formability, productivity and costs. According to MacBean (2010:150), rectangular paperboard cartons or cups, glass containers, PP or HDPE are also in common use and been proposed in some markets including the ceramic containers. The great packaging as according to Zamani (2010:2), begins with the right material, one that can deliver performance, quality and reliability for the product it houses. In the research conducted by Zamani (2010:3), he used material such as paperboard, polymers, and aluminum to design a package for yoghurt. The aluminum foil according to Zamani (2010:5), acts as a complete barrier to light and oxygen, odours and flavours, moisture and bacteria and helps the preservation of dairy products without refrigeration for some time. Takashi (2012:351), states that the aluminum offers easy opening and prevention of post-contamination by heat sealing.

According to MacBean (2010:150), the most popular material by far in current use for spoonable yoghurt is Thermoformed HIPS in the form of small cups or larger tubs with either aluminum foil/plastic laminate or paper/plastic laminate heat-seal lid or closure. According to Weinkotz and Schade (2006:2), HIPS (High Impact Polystyrene), contributes strength and low shrinkage. According to Takashi (2012:351), thermoformed polystyrene sheet are heat sealed with a composite paper label in the forming system to provide physical strength, lower material costs, and prevention of post-contamination. Laminated materials are desirable for long shelf-life with some having shelf-lives of 4-6 months at ambient temperature (MacBean, 2010:150). A good oxygen barrier according to MacBean (2010:150), will help to protect the product from

oxidation and a good light barrier will help delay fading of light-sensitive colours and avoid light-induced oxidation. Weinkotz and Schade (2006: 1), mentions that packaging accounts now more than 40% of polystyrene usage in Europe and the trend is ever upward. This is so because the packaging which polystyrene is used for is mainly of the thin-wall type, such as tubs (Weinkotz & Schade, 2006:1). The market for drinking yoghurts is still growing. Their containers as according to MacBean (2010:150), uses HDPE bottles with either aluminum foil heat seal closures or LDPE snap or screw caps. Other materials used for bottles are PET. Shrink-sleeves are commonly used for labeling and decoration in bottles (MacBean, 2010:150).

#### 2.5.2.2 Form-fill-seal machine processing

Form-seal method (FFS, as according to Weinkotz and Schade (2006:2), is very efficient for packaging dairy products. This is because it combines different steps of making the tubs in one working operation. The figure below shows Form-fill-seal machine for processing polystyrene yoghurt tubs.



**Figure 1: Schematic diagram of form-fill machine**

From the figure, the film is heated in FFS machine and thermoformed into tubs. These are filled with yoghurt and then sealed with a printed sealing film, separated into

multipacks and ready for delivery (Weinkotz and Schade, 2006:2). Form-fill-seal containers and sometimes preformed cups, labels are applied that provide a further barrier to light and the HIPS sheet for forming containers is 1.0-1.4mm thick with a wall thickness of around 0.2mm (MacBean, 2010:150). Fair Cape is one of the companies in South Africa that uses a form-fill seal technology, to expand their operation (O'hara, 2014).

Another method of processing is Fill Seal (FS). This process, according to Weinkotz and Schade (2006:2), involves a film processor delivering preformed tubs, which the dairy operation needs only to fill and seal. In other words, someone else will produce the containers, and one only needs to fill and seal. Weinkotz and Schade (2006:2) state that the FFS machine is more eco-efficient than FS as the machine is designed to minimise the use of packaging material and have low energy consumption. The machines also achieve high cycle numbers and generate minimum amounts of scrap than the FS (Weinkotz & Schade, 2006:2).

#### *2.5.2.3 The requirements for yoghurt package*

According to Takashi (2012:350), the requirements can be common to all types of yoghurts but some are specific to each type and for common types they are:

- For end use – functionality like easy opening; scoopability; storing in the home refrigerator; easy handling; appeal; reclosability; hygiene or printability.
- For handling and distribution – like the size and shape of the package; physical strength; space and saving; stacking at the retailer or hygiene.
- For productivity – that is the cost of the container, the productivity of packaging operation or packaging system used.

Specific requirements for each type of yoghurt as according to Takashi (2012:350), are:

- In-package Fermented yoghurt – fermentation control through packaging i.e. temperature control and oxygen supply.
- Prepackage fermented yoghurt – maintaining quality through prevention of contamination and other deteriorations such as water separation and excess acidification.

- Pasteurised yoghurt – availability of the aseptic filling system and high barrier material to prevent deterioration from oxygen.

Polyoak Packaging is also one of the plastic companies in South Africa that also produces yoghurt tubs. According to their website, their yoghurt tubs provide lightweight and functional solutions. Providing benefits such as excellent decoration options; tamper evident break tab; same lids fitting several sizes; multipack configuration of 4,6,8; single material for easy recycling; highly durable to transparent and stack and broad range of standard shapes and sizes. Polyoak Packaging uses IML and Offset print for the decoration to stand out on yoghurt tubs. They also offer optional caps on their yoghurt tubs to their market such as:

- The foil seal with over-cap;
- Drinking over-cap
- Compact-vent over-cap
- Over-cap with a spoon-in-lid

#### *2.5.2.4 Shelf life of yoghurt in different packages*

Packaging has a significant role in the shelf life of the yoghurt. According to MacBean (2010:150), the selection of the packaging materials and packaging design must take into consideration physical product protection, protection of sensory properties, food safety, aesthetic, functional, environmental and cost issues. Innovation plays a major role in the yoghurt market, with some innovation concentrating more on costs, value proposition and meeting a convenient need. The addition of oxygen is a scavenger to yoghurt hence there are various production methods to reduce the product oxygen levels. The selection of probiotic strains with robust technological properties is widely used to maintain good viability throughout shelf-life (MacBean, 2010:151).

The shrink-sleeve label may provide a significantly increased barrier to oxygen transmission and together with the aluminum foil lid. MacBean (2010:15), states that it is possible to provide a measure of protection against oxygen permeation. However, the oxygen can also be influenced by production method or packaging material. According to MacBean (2010:151), HIPS material reduces the oxygen content. Packaging yoghurts in polystyrene, according to Talwalkar and Kailasapathy (2004:122), is relatively of low cost and easy to handle. These findings explain why

yoghurt is packaged like the way it is currently in the market. HDPE material gave the best result for *B. bifidum* bacteria and thermophiles bacteria for cow milk bio-yoghurt; PS material was best for goat milk bio-yoghurt (MacBean, 2010:152). A study done on the effect of packaging material on flavoured yoghurts showed, according to MacBean (2010:153), 0% fat yoghurt deteriorate faster than 4% fat yoghurt regardless of the packaging type. However, a conclusion was made that PS/HIPS seemed preferable to PP for avoiding loss of fruity notes and development of odour and aroma defects. The oxygen content of yoghurts packaged in glass bottles remained low (Talwalkar & Kailasapathy, 2004:122). This shows that glass bottles will be suitable for yoghurt packaging, but unfortunately glass is associated with high costs and handling hazards than plastic cups. Packaging materials therefore as according to (MacBean 2010:153), have some effect on the shelf life of yoghurt.

Light can induce oxidation in yoghurts due to riboflavin present in yoghurt that absorbs visual light. Overwraps according to MacBean (2010:153), will help reduce the light penetration. IML covers the whole container hence a high chance of reducing light penetration. The process of filling can reincorporate atmospheric oxygen into the product (Talwalkar & Kailasapathy, 2004: 120). The designers would, therefore, need to take note of oxygen, which is a scavenger to the yoghurt, and the oxygen can be increased by the material, production filling and storage temperature.

#### *2.5.2.5 Different designs for yoghurt tubs in the market*

Yoghurt brands as according to Loubser (2015:43), are gaining market share by meeting consumer demand for on-the-go consumption and for bulk family size packs for home consumption. There are different types of yoghurt tubs in the market and these include:

- i. DANONE according to Berry (2014), developed a yoghurt with men's taste, texture and packaging preference in mind specifically to Bulgarian market. Launched in 2013 but it is now being extended to other markets. The tub is shown below in Figure 2.



**Figure 2: DANONE Bulgarian Men's yoghurt**

The package as shown in Figure 2, features a deep black colour as a symbol of strength and dominance. The clear masculine structure is reflected in the unique shape of the cup.

- ii. Parmalat got a Gold Pack award by its squeezable crush pack six pack for Parmalat presto yoghurt. The package allows the customer to ease the yoghurt up towards the mouth of the container from where it can be enjoyed without a spoon (Loubser, 2015:43). Figure 3 below shows the Parmalat squeezable crush pack.



**Figure 3: Parmalat Squeezable crush pack**

This new design by Parmalat, according to Loubser (2014a:43), reduces the plastic content of a standard yoghurt up to 35% bringing the manufacturing cost savings and environmental benefit. As according to Loubser (2014a:43), Parmalat manufactured 15g to 350g of yoghurt tubs and the quality of decoration and graphics, provides shelf appeal and catches customer attention.

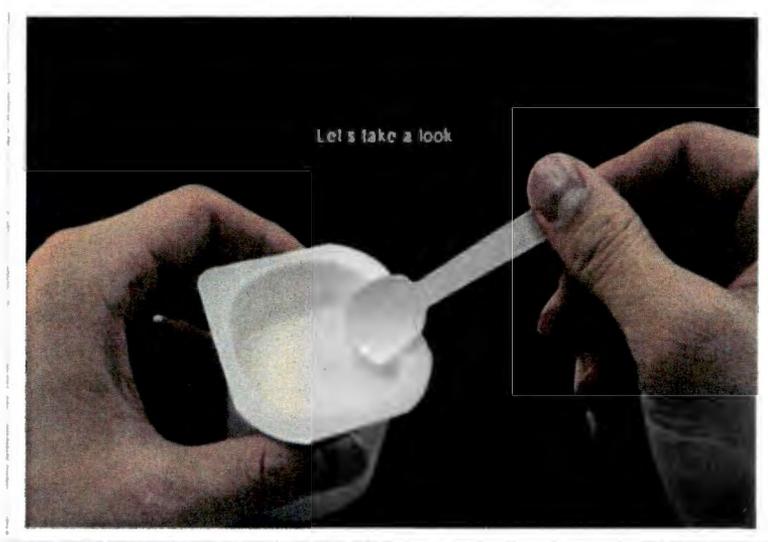
- iii. Nestle produced a Hello Kitty ice cream tub 125ml as shown below in Figure 4. The tub is lightweight, printed with ultra-low migration ink conforming to their food safety requirement. As according to Loubser (2014a:24), the in-mold labeling over-cap, optimize its seal quality while inner compartment is foil sealed, to contain a toy and a spoon and yet hygienically secured inside the lid.



**Figure 4: Hello Kitty ice cream tub 125ml**

The principle behind this packaging on Figure 4 above, can be applied to yoghurt packaging. Consideration will still need to be taken on the effect of oxygen, production costs and distribution.

- iv. Yoghurt spoon - Yanko design, designed a spoon that is conveniently covering at the bottom of inconveniently shaped containers as shown in Figure 5 below.



**Figure 5: Yanko design with a covering spoon**

The spoon is designed to finish all the contents in the tub so that the consumer can fully enjoy value for money.

- v. Spooning the yoghurt – Yanko designed a yoghurt with a top seal that comes off and can be folded into a shape of a functional spoon as shown in figure 6 below.



**Figure 6: Yanko yoghurt with top seal that comes off**

Figure 6 shows a design of a yoghurt tub that meets the convenient need of a spoon but unfortunately it is not yet prevalent in the South African market.

- vi. DANONE Nutri-day sleeved yoghurt tub – use a full-length sleeve on a thermoformed tub as shown in Figure 7 below.



**Figure 7: Nutri-day Sleeved yoghurt tub**

The sleeved yoghurt tub shown in Figure 7 above, create a dynamic and noticeable packaging for maximum branding and shelf impact (Loubser, 2014a:24).

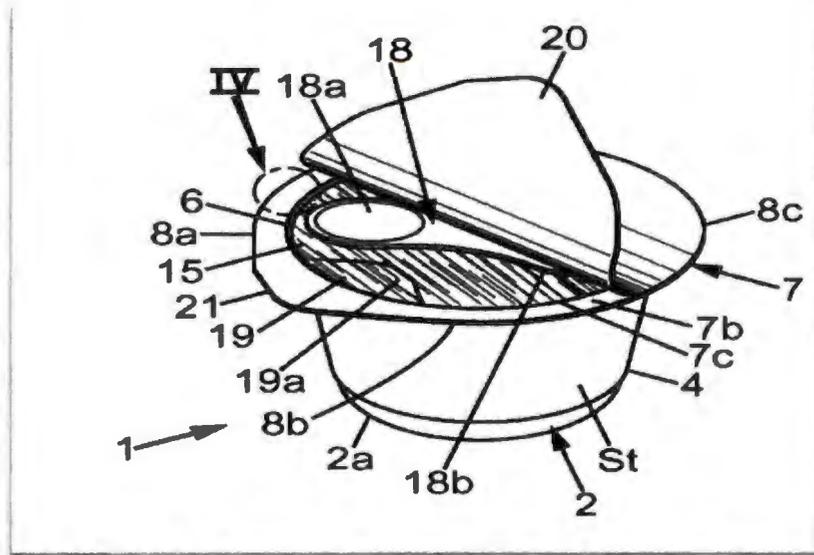
- vii. Yoplait Yoghurt – designed a container that is narrower at the top than at the bottom, opposite to other yoghurts in the market as shown in Figure 8 below.



**Figure 8: Yoplait yoghurt that is narrow at the top**

The design quickly captures the eye. It is different and looks much bigger than other tubs. This manipulates the consumer to think they are buying more contents than other yoghurts.

- viii. Lotus leaf Inspired packaging – Morinaga’s yoghurts can be opened and the lid peels off without any liquid left on the surface. According to Woollaston (2015), the aluminum surface is modified using a water repellent material and is an innovative, functional packaging material used for yoghurt container lids. This material prevents the adhesion of yoghurt to the inside surface of the lid allowing it to stay clean and providing an added sanitation benefit (Woollaston, 2015).
- ix. DANONE – Two foil configuration with a spoon inside. DANONE has designed a two-compartment food container with a thermoplastic body, flexible closure (foil) and a second flexible lid to seal an upper opening (Bouckley, 2015). Figure 9 below, shows a container with two superposed foils, one which provides an inner cover that partitions an interior volume within the pot, where there’s space to store a small spoon.



**Figure 9: DANONE Two-foil configuration with a spoon inside**

According to Bouckley (2015), the FFS technology is used to produce this container, and this invention allows better sealing of the lower compartment; easy opening because of pulling tab and a carton shoulder that define the slope yet reducing the amount of plastic used for manufacturing. The design is patented by DANONE but is not yet in the market.

- i. Reportable barrier tub – Loubser (2014b:92), states that Dairy pack launched the first Reportable barrier tubs, the first time in South Africa. It provides shelf-life up to 24 months. It is lightweight, low carbon and fully recyclable, safe handling, reclosable and cost saver in the supply chain. According to O'Hara (2014:52), these retortable tubs achieve an extremely low oxygen transmission rate. Figure 10 below shows the retortable yoghurt tubs.



**Figure 10: Retortable barrier yoghurt tubs**

The tubs as shown in Figure 10 above, are suitable for both hot and cold filling and can be retorted for pasteurisation, and they are stackable for efficient storage (Loubser, 2014b:92). This innovation is great and will allow innovation of spoon to be possible.

Other designs are attached as Appendix A. These designs seem to meet a need of production costs, convenience and for branding presence.

### **2.5.3 Possible solution of a spoon**

According to Kalyvioti (2013:2), one of the most disliked properties of packaging is the difficulty in emptying the packaging and this is why manufacturers are taking the initiative of launching a product of the food product from its packaging. Tetra Pak is looking at developing new packaging material that can help facilitate the reduction of food waste (Kalyvioti, 2013:3).

A spoon will also meet a convenient need for pre-school kids or on-the-go consumers who want to eat the yoghurt as they play, work or move. The new retortable tubs will be suitable, as they achieve an extremely low oxygen transmission rate, lightweight and are cost savers and will be suitable to introduce a spoon attached to these tubs. The tubs below as shown in Figure 11, have a snap on the lid to which a spoon is attached.



**Figure 11: Tubs with a snap on the lid**

However, there are still considerations to take note of, including the practicality. Putting the customer at the centre of packaging development means creating a product and packaging that are easy to use regardless of age, disability or physical health.

## **2.6 CONCLUSION**

From the literature review, one can clearly see that yoghurt brands are on the rise, they are increasingly growing. More benefits of yoghurt are being discovered, and more people are getting to know it as well. However, to increase consumer response toward yoghurt, we looked at product design i.e. its importance, production and cost constraints, distribution and retail constraints. There are also packaging elements to consider like graphics and colour; size, shape and product information. The more consumers are aware of its benefits, the more they will buy. From the literature review, we noticed a very important aspect that influence packaging designs on yoghurts, that is oxygen, as it is a scavenger to yoghurt. Therefore, the design and labeling must increase the barrier to oxygen transmission. This, therefore, explains why there has not been an introduction of a spoon on the yoghurt tubs. Currently, there are many different designs of yoghurt tubs from different brands like DANONE, Parmalat, Clover, Yoplait, mainly for the purpose of gaining market share by meeting customer demand. The retortable barrier tub which was launched recently in South Africa provides a shelf-life of up to 24 months; it is also lightweight and a cost saver in the supply chain. These

retortable tubs will be suitable to introduce a spoon on them, as they will be able to meet a convenient need for pre-school kids or on-the-go consumers who want to eat the yoghurt as they play, work or move.

In my next chapter, I will describe the methodology used in this study. The chapter mainly focuses on the gathering of data, sampling, research tools; survey designs and data analysis as a means of understanding the research. After data analysis, we will be able to discover whether the design of the spoon increases the buying response on a yoghurt product; unveil the power of product design on consumer behaviour; conceptualise the possibility of a spoon on a yoghurt and to identify and conclude if the consumer wants a yoghurt with a spoon. We will also be able to prove our hypothesis that yoghurt that comes with a spoon will increase its sales because of meeting a convenient need.

## **CHAPTER 3: EMPIRICAL RESEARCH**

### **3.1 INTRODUCTION**

The chapter describes the methodology used in this study. The main objective was to unveil consumer response towards yoghurt that comes with a spoon. Investigation into the influence of different attributes such as product design, convenience, product information, price and quality and product involvement on consumer response were done. The chapter focuses on the gathering of data, sampling, research tools; survey designs and data analysis as a means of understanding the research. Correlation analysis as a statistical tool was used to find a relationship between the dependent and independent variables whereas Logistic regression was used to predict the value of a dependent variable based on one or more predictor variables. The results were able to show how convenience plays a major role on consumer response in the yoghurt industry.

### **3.2 GATHERING OF DATA**

#### **3.2.1 Establishing the attributes on questionnaires**

The attributes used were those that can be influenced or manipulated by the producer. From the literature review, consumers are looking for products that provide value for money. Their decision can easily be influenced by the product design, product information, price, quality or convenience. From the literature consumers tend to decide on the spot about the purchases and as a result, packaging is an important communication tool and have great impact on consumers' decision-making process. According to Silayoi and Speece (2004:1503), consumers are more likely to read the label to check if the product information is consistent with their needs and to assess healthiness and quality. The package has to be easy and convenient to use. From the literature review, the theory consumer-led new product development considers consumer needs as the foundation and aims at fulfilling those needs realizing consumer value. Therefore, considerations of convenience could justify the reason why consumers might opt to choose a yoghurt tub with a spoon. However, sustainability and environmental considerations are increasingly influencing consumers' decision-making. This is why we included it in the questionnaire, so to determine its effect on the consumer's buying behaviour.

### **3.2.2 Data Collection**

The primary data was collected using structured questionnaires surveys using the Likert scale, which had five response categories. The five-point Likert scale ranges from 1 = Disagree strongly; 2 = Disagree a little; 3 = Neither agree or disagree; 4 = Agree a little and 5 = Agree strongly. The questions were few with at least 30 questions; the reason being that we were constrained by time as we were targeting consumers entering the shop. Depending also on the time they will spend in the shop, some were able to fill it in but some were not. Simple English was used which was brief and focused. The questions were structured like this:

- i. Section 1 - Biography with six questions
- ii. Section 2 - Yoghurt consumption frequency with four questions
- iii. Section 3 - Product information with only two questions
- iv. Section 4 - Price and quality with only two questions
- v. Section 5 - Product Involvement with only one question
- vi. Section 6 - Purchase decisions with three questions
- vii. Section 7 - Product design with three questions
- viii. Section 8 - Convenience with six questions.
- ix. Section 9 - Comparing spoonable and not-spoonable with only three questions. On question 9.1 respondents were given two options and asked to choose their preference. This question forecast the likely acceptance of a product if brought to the market. The questions statistically deduced what product feature is mostly desired and which attributes have the most impact on choice.

Secondary data were also used from different sources such as journals, articles and internet sources from many websites about product design, attributes and consumer behaviour towards yoghurt tubs.

### **3.2.3 Research tool**

The Cronbach alpha coefficient was used to test the consistency and reliability of the items in the questionnaire. Table 3.1 below, is measuring the internal consistency of the five-point Likert scale. Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability (Santos,

1999). The alpha values represent the reliability of each studied variable (Johari & Myint, 2012:229). Cronbach alpha should be >0.5 to group them together.

Question	Alpha
3,1 & 3,2	0,04
4,1 & 4,2	0,83
6,1; 6,2 & 6,3	0,61
7,1; 7,2 & 7,3	0,68
8,1; 8,2; 8,3; 8,4; 8,5 & 8,6	0,78
9,1 & 9,2	0,00

**Table 1: Internal consistency of the Five-point Likert scale**

From Table 1, question 3,1 & 3,2 and 9,2 & 9,3 could not group them together, but the whole of question 5, 6,7 and 8 were able to. Question 3,1 & 3,2 shows a lack of strong correlation of 0,04 whereas question 4,1 & 4,2 shows a high correlation of 0,83. Santos (1999), states that it is very important to know whether the same set of items would elicit the same responses if the same questions are recast and re-administered to the same respondents. The value of alpha ranges from 0 to 1 as according to Johari and Myint (2012:232) and the nearer the value of alpha to 1, the better the reliability. The reliability of 0.50-0.60 is sufficient, although a coefficient of 0.7 or above is desirable (Johari & Myint, 2012:232). The number of items per question ranged between 2 to 6. This, therefore, shows that the participants agreed with most of the attributes to influence their buying response.

### **3.2.4 Sample selection and description**

The target population is the consumers. The sampling is non-probability sampling. The accidental sample is used, as they are readily accessible and convenient. These are consumers that would have passed through the supermarket. The research used convenience sampling at four large retail stores in South Africa specific in the East Rand. The stores were chosen for sampling variety, different preferences, and socio-economic factors. As the consumers entered the store, they were given the questionnaires to fill in and bring them back when going out of the shop. The major retail stores would provide a sample of respondents' representative of the type of consumers who know about the yoghurt or use or have used the yoghurt. The

management of the stores gave permission to approach the consumers who were using the store. Participants were advised that their participation was voluntary and that their responses were confidential. They were not allowed to write their names or any information that would identify the person who filled the form. The research allowed all participants from all race, gender types or economic background.

### **3.2.5 Research Hypothesis**

Hypothesis 1: A product design influence consumer behaviour/response increasing sales of the product because of meeting a convenient need.

This hypothesis supports the theory by Louis Sullivan's (1896) 'form follows function'. A theory based on a principle that the shape of a product, building or object should be based on its purpose. This theory when applied to product design creates value for money.

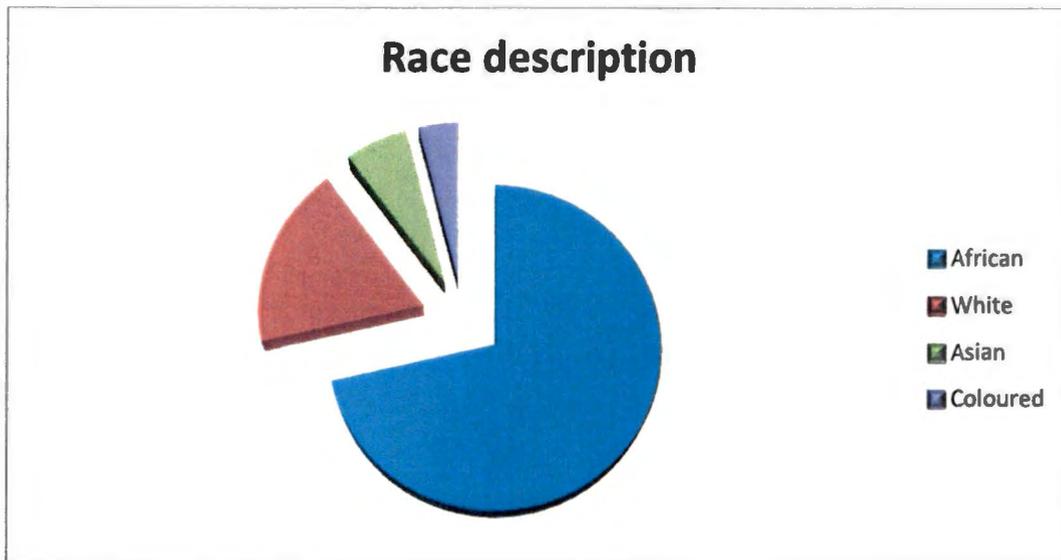
## **3.3 RESULTS AND DISCUSSION**

Data was analysed using descriptive analysis such as percentages, frequency, mean, standard deviation and correlation co-efficient. Descriptive analysis was used for consumer characteristics such as age, race, sex, marital status and occupation. Pearson's Correlation analysis was used for attributes such as product information, price and quality, product involvement and convenience. The higher the correlation coefficient, the stronger the level of association (Kusumastuti, 2012:46).

### **3.3.1 Biography**

There were 127 responses. The research is studying fewer attributes hence a bigger sample of more than 100 was ideal. From the biography data, 53% were females and 47% were males. This lines up with a statement by Nielsen (2014), that women still dominate the retail channel. Many women are responsible for household shopping, especially in the African countries.

Figure 12 below shows the race description of the participants. 70,9% were Africans, 18,1% were Whites, 6.3% were Asians and 3.9% were Coloured.

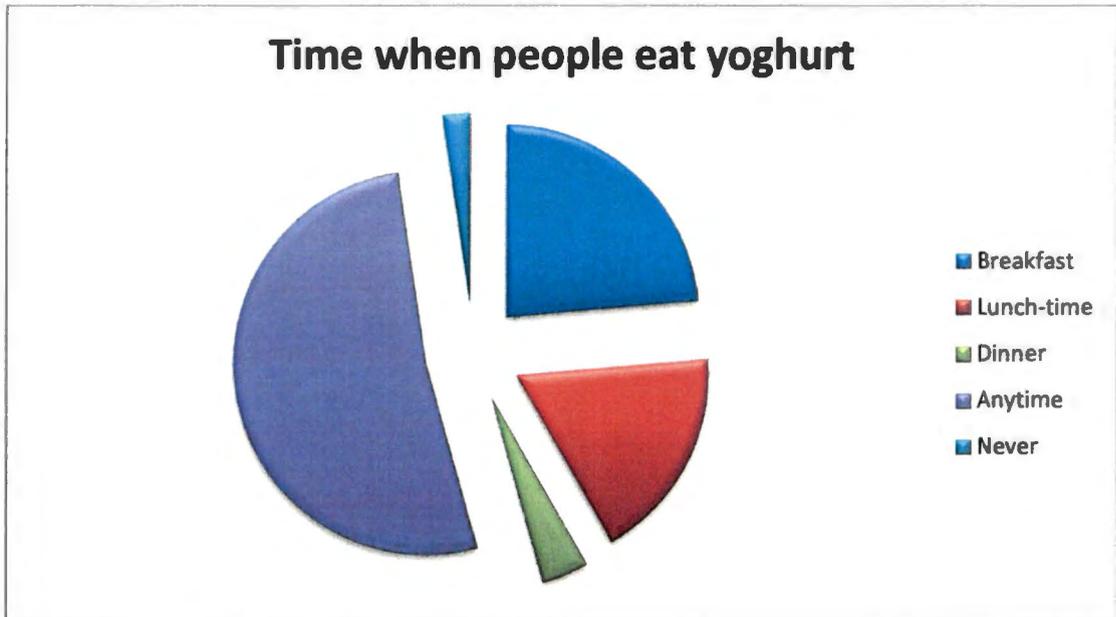


**Figure 12: Race description**

The sample was relatively in the middle-aged years, with 41,7% in the 30 to the 39-age category, 33,1% in the 21 to 29-age category and 18,9% in the 40 to 49-age category. No one was below the age of 15 showing clearly that the majority of retailers are adults and a working class. This also lines up with the fact that 95,3% of the sample were employed, 0,8% were students and only 3,1% were unemployed. Amazingly 52% of the sample were single, 43,3% were married and 2,4% were divorced. The sample characteristics fairly represent the population in South Africa.

### 3.3.2 Yoghurt consumption

From the findings, most people live in a household with four persons. The sample with 2-3 children below 18 in a household was 42,5%, which was the highest, followed by one child with 24,4%. Surprisingly the findings also showed that the frequency of yoghurt consumption is 33,1% – once a week, 26% – 2/3 times a week and 19,7% – once a month. The highest percentage of people at least eat yoghurt once a week and only 2,4% never eat yoghurt. This proves that people are becoming aware of the benefits of yoghurt as according to the literature review. The figure below shows the time people eat yoghurt.

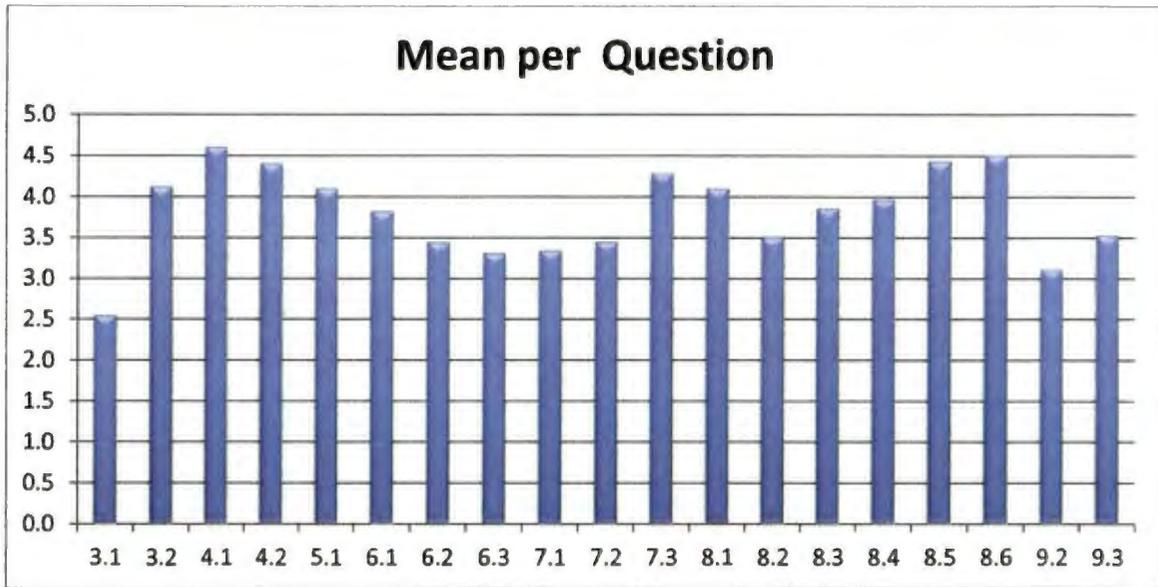


**Figure 13: Time when people eat yoghurt**

From the results, as shown in Figure 3 above, 52% eat yoghurt anytime and 23,6% at breakfast. Only 3,9% takes yoghurt at dinner. This shows that yoghurt has become part of a snack in which people could enjoy any time. Having 23,6% of working people taking yoghurt at breakfast shows clearly the importance of a spoonable yoghurt tub.

### **3.3.3 Comparisons of other attributes**

From the findings as shown in Figure 4, product information plays the least role as compared to other attributes in consumer response with a mean of 3 where people neither agree or disagree whether product information is important. This lines up with Silayoi and Speece (2007:1499), who state that consumer acquisition of low involvement products is often done without carefully examining product information hence the information on the package will carry less value. However, should information on benefits be included on the packaging, it may increase the sales. As according to the literature, people are still progressing into buying yoghurt. Therefore, awareness of yoghurt benefits will yield great rewards.



**Figure 14: Mean per Question**

From Figure 14 above, the highest mean was 4.1 question on price and quality and lowest was 3.1 question on product information. Another attribute with the lowest mean is where spoonable yoghurt is regarded as waste and rubbish, which is question 9.2. The sample neither disagreed nor agreed with the statement, which says spoonable yoghurt constitute as an additional issue regarding waste and rubbish. Other attributes were not much different from each other. Price and quality had the highest mean of 5 (as shown by Figure 4) where people strongly agreed with the best quality for best price.

In Section 8 convenience was analysed. 50,4% strongly agreed that they normally buy yoghurt to eat at home, and only 7,1% strongly disagreed. On question 8,2: 37,8% agreed strongly that they buy yoghurt to eat it while on the road, and 19,7% disagreed. Those that disagreed, I am sure they were those people that buy yoghurt to eat at home. On a statement of carrying yoghurt to school or work, 48,8% buy yoghurt to carry to school/work and 10,2% disagreed supporting earlier statistics that the majority of participants eat yoghurt at breakfast. 66,1% strongly viewed a spoon as convenient, and 73,2% strongly agreed that spoonable yoghurt is very convenient for children. These statistics clearly shows that introducing a spoon on a yoghurt tub will be convenient to children, to those that take yoghurt to work or those that want to eat it while on the road. Question 9.1 was asking for people to choose between a spoonable and non-spoonable yoghurt tub, 74% agreed with a spoon on yoghurt and 26%

disagreed. The majority of the participants agreed with a spoon, and 33% agreed strongly that they would still buy spoonable yoghurt even if the price increases than the normal yoghurt tub. These findings clearly show how convenience plays a major role in consumer behaviour, and as long as it is convenient, the price is not a hindrance.

Product design results were a bit surprising considering how the literature review values it on consumer response. The participants neither agreed nor disagreed with enjoying yoghurt product that has superior designs. However, 57,5% participants want a yoghurt tub that is easy to open and easy to handle whereas only 4,7% disagreed. Noticeably from the statistics, participants are looking for value for money on yoghurt and best quality for best price. These findings support The Means-end theory which states that people do not buy products for the products' sake, but for the benefits that the consumption can provide. Table 2 below shows the response of participants for a purchase decision.

	1 Disagree Strongly	2 Disagree a little	3 Neither agree or disagree	4 Agree a little	5 Agree strongly	Mean	SD
<b>Purchase Decision</b>	11,0	7,1	12,6	27,6	41,7	3,8	1,3
<b>I compare...</b>	14,2	13,4	16,5	26,0	29,9	3,4	1,4
<b>I compare...</b>	17,3	8,7	18,9	36,2	18,9	3,3	1,3

**Table 2: Response to purchase decision**

According to the Table 2 above, 41,7% agreed to a yoghurt brand being important to them and only 11% strongly disagreed. By having the mean at 3.8 shows, the majority agreed with the yoghurt brand being important. 29,9% agree strongly in deciding the brand to buy before going to the store as they are loyal to their brand, whereas 14,2 disagree strongly with that statement. Interestingly also was that only 18.9% agreed strongly on buying a brand which is on promotion yet 17,3% disagree strongly. This is a very small difference between those that agree and those that do not agree with promotions hence the mean 3,3. Again these findings agree with the literature that people are more comfortable with their familiar brands, they are loyal to their brands especially to the yoghurt industry.

Table 3 below, shows the mean and standard deviation for each of the attributes i.e. product information, price and quality, product involvement, purchase decision, product design, convenience and spoonable/non-spoonable tub.

Question	Number of Items	Mean	Standard Deviation
3	2	3,3	1,5
4	2	4,5	0,9
5	1	4,1	1,1
6	3	3,5	1,4
7	3	3,7	1,2
8	6	4,1	1,3
9	2	3,3	1,5

**Table 3: Mean and Standard Deviation of each attribute**

From Table 3, the highest mean like question 4 (with 4,5) shows the positive level of participants agreeing with the best quality for best price. The low standard deviation reflects a low difference in responses per question, suggesting a fairly homogeneous response as can be seen by question 4 (with 0,9). As for Question 3 & 9, we cannot group them together and get a mean for them, because they did not have a high Cronbach alpha.

### **3.3.4 Frequency correlation of attributes**

Table 4 below shows frequency correlation of attributes. According to Johari and Myint (2012:229), Pearson's Correlation analysis finds a relationship between the dependent and independent variables and it is the statistical tool that can be used to describe the degree to which one variable is linearly related to another.

From Table 4 below:

- i. 0,1 regarded as a small correlation.
- ii. 0,3 regarded as a medium correlation.
- iii. 0,5 regarded as a large correlation.

		Price & Quality	Purchase Decision	Product Design	Convenience	Product info	Add waste (9,2)	Buy spoonable even its expensive (9,3)	Product involvement (5,1)
Price & Quality	Pearson Correlation	1	,150	,226 <sup>*</sup>	,279 <sup>**</sup>	<b>,524<sup>**</sup></b>	,126	,128	,419 <sup>**</sup>
	Sig. (2-tailed)		,093	,011	,002	,000	,159	,150	,000
Purchase Decision	Pearson Correlation	,150	1	<b>,642<sup>**</sup></b>	<b>,455<sup>**</sup></b>	,122	-,019	,376 <sup>**</sup>	,243 <sup>**</sup>
	Sig. (2-tailed)	,093		,000	,000	,171	,836	,000	,006
Product Design	Pearson Correlation	,226 <sup>*</sup>	<b>,642<sup>**</sup></b>	1	<b>,408<sup>**</sup></b>	,108	<b>-,082</b>	,241 <sup>**</sup>	,239 <sup>**</sup>
	Sig. (2-tailed)	,011	,000		,000	,226	,359	,006	,007
Convenience	Pearson Correlation	,279 <sup>**</sup>	<b>,455<sup>**</sup></b>	<b>,408<sup>**</sup></b>	1	,056	<b>-,030</b>	,165	,338 <sup>**</sup>
	Sig. (2-tailed)	,002	,000	,000		,533	,740	,064	,000
Product Info	Pearson Correlation	<b>,524<sup>**</sup></b>	,122	,108	,056	1	,167	,089	,224 <sup>*</sup>
	Sig. (2-tailed)	,000	,171	,226	,533		,061	,320	,011
Add waste(9,2)	Pearson Correlation	,126	-,019	-,082	-,030	,167	1	,000	,028
	Sig. (2-tailed)	,159	,836	,359	,740	,061		,997	,756
Buy spoonable even its expensive (9,3)	Pearson Correlation	,128	,376 <sup>**</sup>	,241 <sup>**</sup>	,165	,089	,000	1	,223 <sup>*</sup>
	Sig. (2-tailed)	,150	,000	,006	,064	,320	,997		,012
Product involvement (5,1)	Pearson Correlation	,419 <sup>**</sup>	,243 <sup>**</sup>	,239 <sup>**</sup>	,338 <sup>**</sup>	,224 <sup>*</sup>	,028	,223 <sup>*</sup>	1
	Sig. (2-tailed)	,000	,006	,007	,000	,011	,756	,012	

**Table 4: Correlation of attributes**

From Table 4, it can clearly be seen that there is a strong/ large correlation between price quality and product information (,524) and product involvement (,419). This shows that the more important the price and quality, the more important the product information and product involvement is for the participant. The strongest relationship was between purchase decision and product design with (,642) convenience and purchase decision is on (,455) and convenience and product design (,408). The relationship with medium strength was between the importance of yoghurt and convenience with (,338); price and quality and convenience with (,279) and product information and yoghurt regarded as waste with (,268). The relationship with the lowest strength was between product involvement and yoghurt regarded as waste with (,028); convenience product info (,056). Other attributes have negative correlation like product

design and yoghurt regarded as waste with (-,082). Negative correlation shows a negative relationship between attributes. The more important the product, the less important it is to be regarded as waste.

### 3.3.5 Binary Logistic Regression

According to Hall (2015), regression is a complex statistical technique that tries to predict the value of an outcome or dependent variable based on one or more predictor variables. In our case, we used binary logistic regression to predict that consumers are likely to choose spoonable yoghurt tubs based upon different attributes like convenience, product design, price and quality or their biography status. The model is that there is a relationship between the dependent variable (usefulness of a spoon) and independent variables.

Observe			Predicted		
			9.1		Percentage Correct
			1	2	
Step 0	9.1	1	0	33	0,0
		2	0	94	100,0
<b>Overall Percentage</b>					<b>74,0</b>

a. The constant is included in the model.

b. The cut value is .500

**Table 5: Beginning Block**

From the Beginning Block table, we can see that our prediction is possible with 74% likely to support the model.

#### Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	54,319	29	,003
	Block	54,319	29	,003
	Model	54,319	29	,003

**Table 6: Omnibus Tests of Model Coefficients**

Table 6 shows the chi-square percentages with 54% predicting significance in our model.

The model summary below explains the variation, concentrating more on the Nagelkerke R<sup>2</sup> results.

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	91.196 <sup>a</sup>	,348	,510

**Table 7: Model Summary**

Table 7 above, shows that the explained variable ranges from 34,8% to 51%. Using Nagelkerke R<sup>2</sup>, 51% of the outcome will be affected by the predictor variables or will be explained by the predictors. Nagelkerke value shows the strength of the association of the model. The Hosmer and Lemeshow have a significance of 0,328 showing that our model is a good model.

The classification table in logistic regression evaluates the accuracy of the model. Table 8 shows that 84,3% was correctly predicted by our model.

			Predicted		
			9.1		Percentage Correct
			1	2	
Step 1	9.1	1	20	13	60,6
		2	7	87	92,6
Overall Percentage					84,3

a. The cut value is .500

**Table 8: Classification table**

Of the 33 responses on the spoonable tub from Table 11, the model identifies 20 of them as not likely to have one. Similarly, of the 33 who did choose the spoonable tub, the model identifies 13 as likely to have one. However, 84,3% is the measure of the model that we can rely on most heavily in logistic regression as it predicts accurately.

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Price & Quality	-,730	,457	2,550	1	,110	,482
Question	Purchase Decision	-,183	,407	,201	1	,654	,833
	Convenience	1,177	,438	7,239	1	,007	3,245
	3.1	-,129	,194	,442	1	,506	,879
	3.2	,149	,285	,275	1	,600	1,161
	9.2	-,216	,219	,974	1	,324	,806
	9.3	,048	,218	,049	1	,826	1,049
	1.1 (1)	,174	,685	,064	1	,800	1,190
	1.2			1,373	4	,849	
	1.2(1)	-,332	,821	,163	1	,686	,718
	1.2(2)	-1,548	1,368	1,281	1	,258	,213
	1.2(3)	-,067	1,399	,002	1	,962	,935
	1.2(4)	-44,556	48885,657	,000	1	,999	,000
	1.3	,225	,455	,243	1	,622	1,252
	1.4			1,211	4	,876	
	1.4(1)	-,914	,831	1,211	1	,271	,401
	1.4(2)	-23,092	40192,970	,000	1	1,000	,000
	1.4(3)	20,462	27826,832	,000	1	,999	
	1.4(4)	20,481	40192,969	,000	1	1,000	
	1.5	,290	,316	,844	1	,358	1,337
	1.6			,000	3	1,000	
	1.6(1)	44,179	44282,486	,000	1	,999	
	1.6(2)	22,937	40193,118	,000	1	1,000	
	1.6(3)	21,791	69616,351	,000	1	1,000	
	2.1	,522	,408	1,643	1	,200	1,686
	2.2	-,294	,433	,461	1	,497	,745
	2.3	,207	,350	,351	1	,553	1,230
	2.4			9,880	4	,043	
	2.4(1)	1,713	1,116	2,358	1	,125	5,548
	2.4(2)	-2,837	1,504	3,560	1	,059	,059
	2.4(3)	-,198	,768	,067	1	,796	,820
2.4(4)	2,889	2,267	1,624	1	,203	17,969	
Constant							
	Constant	-27,230	40193,118	,000	1	,999	,000

**Table 9: Significance of attributes**

In comparing attributes, logistic regression helps to identify the attributes that are statistically significant to the usefulness of a spoon. The Table 9 below, shows that convenience is statistically significant with (0,07), to the usefulness of the spoon. Table 12 findings, supports the objective of this understudy. It also supports the literature review that innovation plays a major role in the yoghurt market by meeting a convenient need. Introducing a yoghurt tub that comes with a spoon will meet a convenient need. It will cater for school children and work people. Other attributes like product information, price and quality, race, marital status or occupation failed to be considered. Surprisingly time to eat yoghurt does have a relationship with the usefulness of the spoon with a significance of (0,043) as shown in Table 12. The model used in binary logistic regression proved to be a good model, and it showed that the attributes like convenience and time to eat yoghurt, have a significance in influencing the usefulness of a spoon (Sig. =0.07 & Sig. 0.043). Other attributes turn out to be of no significance in relating with the usefulness of a spoon. The negative sign (-,730) on price and quality shows an inverse relationship with the dependent variable.

### **3.4 CONCLUSION**

The research methodology used provides a better and clearer understanding of the research. It measured attributes such as product design, product information, quality and price on consumer response. Non-probability sampling was used and the primary data was collected using structured questionnaires. The data was analysed through descriptive analysis on consumer characteristics such as age, race, sex, marital status and occupation. Frequency correlation of attributes were also used and binary logistic regression. The Cronbach alpha coefficient was used to test the consistency and reliability of the items in the questionnaire. The alpha values showed the reliability of each studied variable. The results support Means-end theory which states that people do not buy products for the products' sake, but for the benefits that their consumption can provide. The findings support our literature review which states that consumers are always looking for value for money for each product they buy. Therefore by providing products that meet consumer needs, will not only increase loyalty but will also boost product sales. In my next chapter, I will give conclusion and recommendations identified in this research. I will also be able to identify limitations of the research and give recommendations for future research.

## **CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS**

### **4.1 INTRODUCTION**

The general objective of this study was to unveil the power of product design on consumer behaviour. That is to identify whether the design of the yoghurt spoon influences the reaction of the consumer. The intention of the understudy is to increase the consumer behaviour on a product namely yoghurt. Therefore, the study intended to investigate the convenient need of a spoon on a yoghurt product. My hypothesis was that yoghurt that comes with a spoon will increase its sales because of meeting a convenient need. Other secondary objectives of this research were:

- i. To unveil the power of product design on consumer behaviour.
- ii. To conceptualise the possibility of a spoon on a yoghurt.
- iii. To identify and conclude if the consumer wants a yoghurt with a spoon.

From the literature review it was discovered that the consumer decision could easily be influenced by the product design, product information, price, quality or convenience. This chapter presents the conclusion and recommendation resulting from the research outcome.

### **4.2 CONCLUSION**

The conclusion derived from this study shows that there is significance in convenience and consumer response toward a product i.e. yoghurt tubs. Convenience is statistically significant to the usefulness of the spoon. However, there is also the relationship between the times of eating yoghurt with the usefulness of a spoon. The study provides several important findings such as there is a correlation between price and quality and product information/involvement. An increase in quality and price is associated with an increase in product information/ involvement. The strongest relationship was between purchase decision and product design. The better the product design, the greater the purchase decision. Consumers are looking for products that give them value for money. This was shown by a high mean showing a positive level of participants agreeing with the best quality for best price. This finding supports the Means-end Theory, which is the basis of this research that states that people do not buy products for the products' sake but the benefit that the consumption can provide. Therefore, in

giving them the option to choose, many consumers chose a yoghurt tub that comes with a spoon.

The finding also supports Consumer-Led New Product Development theory, which considers consumer needs as the foundation of product development and aims at fulfilling those needs thus providing consumer value. Therefore, considerations of convenience justified the reason why consumers opted for a yoghurt tub with a spoon. There is an inverse relation between the usefulness of a spoon and price and quality. Other attributes like product information, race, marital status or occupation failed to be considered as they turned out to be of no significance in relating with the usefulness of a spoon.

Another interestingly important finding was that consumers want a yoghurt tub that is easy to open and easy to handle. This implies that packaging has to serve a purpose; it is not just to captivate the eye or draw attention but also to assist a consumer to enjoy the contents inside easily. I think this finding can be generalised to the larger consumer population in South Africa and everywhere.

This study demonstrates that consumers are looking for value for money and introducing a spoon to the yoghurt tub will not only increase sales, but it will increase the well-being of consumers due to benefits that come with eating a yoghurt. Interestingly, the study portrayed that brand is very important in the yoghurt industry. The majority of consumers agreed strongly in deciding the brand to buy before going to the store, as they are loyal to their brand. This shows how important marketing is in the yoghurt industry. Companies would need to invest in advertising to increase their sales.

### **4.3 RECOMMENDATIONS**

- i. The spoon needs to be introduced in the yoghurt industry. It will meet a convenient need and will be very effective especially in Service Stations where convenience is the primary factor.
- ii. Information about yoghurt benefits should be included on the packaging so as to increase the awareness of its benefits. The more the people know of its benefits, the greater the sales.

- iii. The brand is very important in the yoghurt industry. The majority of consumers decide on what brand to buy before going to the store. Therefore, marketing is very important. Companies have to invest a lot of capital in product advertising to bring awareness of their brand to the consumers. This could be the reason why Danone or Nutriday are successful brands.
- iv. The packaging will need to be easy to use and easy to handle and will need to avoid leaving a mess on customers. Some squeezable tubs from the literature review can mess ladies' lipstick.
- v. Yoghurt is considered as part of a snack these days. From the research, the majority of consumers eat yoghurt anytime. Retailers can promote a yoghurt by combining with a breakfast snack or lunch snack that the working class normally buys, but at a reduced price.
- vi. When introducing a spoon to the yoghurt tub, it has to be recyclable to promote a green environment and reduce production costs. This will also avoid waste and will be accepted by the consumers gladly. The spoon would need to be folded so as to fit in easily on the lid yet big enough to empty the contents without messing the eater, especially for the 250g containers.
- vii. Retortable barrier tubs will be the best option for a spoon. The material provides longer shelf life, highly lightweight, is reclosable and a cost saver in the supply chain. They achieve extremely low oxygen transmission rate and will allow spoon innovation to be possible unlike using foil.
- viii. Recommend the yoghurt with the design below but it has to be:
  - i. Retortable barrier tubs
  - ii. IML covering the whole container to reduce light penetration.

- iii. The retortable tubs can be molded with a spoon, covered by a foil on top as shown by Figure 15.



**Figure 15: Retortable tub**

Underneath the foil is a spoon, but this container is for an ice cream in Zimbabwe. If we apply the same principles, but with correct materials and requirements as discussed above, the spoon innovation will work.

#### **4.4 LIMITATIONS AND RECOMMENDATION OF FUTURE RESEARCH**

- i. The research was only done in the East Rand and specific to four major retailers. Therefore, it is a limited universum and cannot generalise the findings to every consumer in South Africa. Other retail shops were not approached.
- ii. Secondly, the time to fill in the questionnaire was very limited to consumers. Their intention was to buy something quickly in the shop and not to fill in the questionnaire. Although they were kind to fill them, some were complaining about the time while filling in the questionnaire. This may lead us to question the integrity of their answers. To address these typical issues, future studies might include interviews and observations. Researchers can design the product first then test the market and observe the response.
- iii. The research concentrated mainly on convenience, product design, product information, and price and quality of consumer response towards yoghurt tubs, but there are other attributes like durability, product attributes or after use of the

yoghurt tub that can also affect consumer response towards a yoghurt tub. The research centred more on the usefulness of the packaging, basing on Means-End-theory but future studies can consider the visual aspects of product design or cognitive interaction affecting consumer response on a yoghurt tub.

- iv. The research concentrated on consumers above 15 years of age. It would have been interesting to know also what the pre-school kids think and other school children thinks. Approaching the schools would have also expanded the data.
- v. Future research can focus more on flavours of yoghurt and consumer responses. Improving or increasing the flavours can also increase sales of yoghurts.

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## APPENDIX A: OTHER DESIGNS OF YOGHURT

x. Lilla Bolecz



xi. Kalleh – yoghurt packaging



xii. Toni's yoghurt



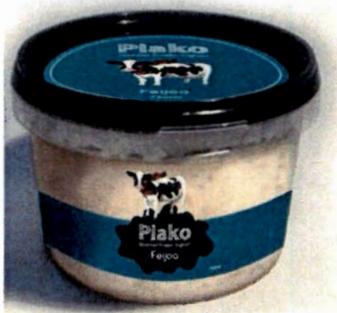
xiii. Duud's yoghurt



xiv. Banana yoghurt for him



xv. Piako yoghurt



xvi. MousseTube Yoghurt



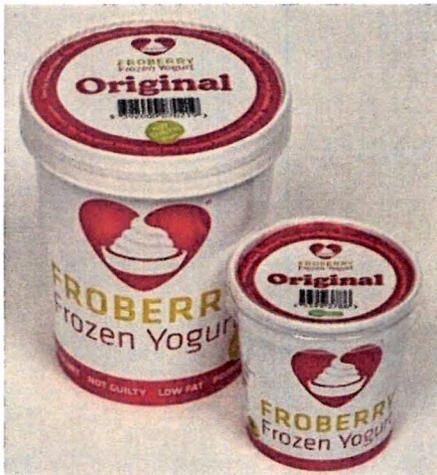
xvii. Smyth's Yoghurt



xviii. A snacking package design



xix. Froberry frozen design packaging



xx. Package design of organic yoghurt



xxi. Nutifood yoghurt



xxii. Nancy's yoghurt



xxiii. Yakult Semisolid yoghurt



## APPENDIX B: LETTER FROM LANGUAGE EDITOR



Dynamic Language &  
Translation Specialists

Antoinette Bisschoff  
71 Esselen Street, Potchefstroom  
Tel: 018 293 3046  
Cell: 082 878 5183  
antoinettebisschoff@jweb.co.za  
CC No: 1995/017794/23

Thursday, 07 July 2016

To whom it may concern,

**Re: Letter of confirmation of language editing**

The dissertation **Consumer response towards yoghurt that comes with a spoon: Product design and consumer behaviour** by **Fadzai Kamungozi (24801399)** was language, technically and typographically edited. The citations, sources and referencing technique applied was also checked to comply with NWU university guidelines. Final corrections as suggested remain the responsibility of the student.

**Antoinette Bisschoff**

Officially approved language editor of the NWU since 1998  
Member of SA Translators Institute (no. 100181)

**Precision ... to the last letter**



**Dynamic Language &  
Translation Specialists**

Antoinette Bisschoff  
71 Esselen Street, Potchefstroom  
Tel: 018 293 3046  
Cell: 082 878 5183  
antoINETTEbISSchoff@mweb.co.za  
CC No: 1995/017794/23

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Yours sincerely,

**Antoinette Bisschoff**