DEVELOPMENT OF OBJECTIVES FOR AN EDUCATIONAL PROGRAMME TO IMPROVE CONSUMER KNOWLEDGE OF AND ATTITUDES TOWARDS NUTRITIONAL INFORMATION ON FOOD LABELS

by

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I, Diana Jane Anderson, do hereby declare that this dissertation represents my own work, both in conception and in execution.

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TO KEVIN

"SUFFERING PRODUCES PERSEVERANCE, PERSEVERANCE , CHARACTER; AND CHARACTER, HOPE (ROMANS 5:3-5)."

FORWARD

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ABSTRACT

Much attention has been given to the prevalence of diseases related to over-consumption of food, with nutritional labelling playing an increasingly prominent role in the prevention and reduction of these diseases. The development of technology and the subsequent availability of processed food have greatly contributed to these diseases, and created gaps in both distance and concept between the consumer and the manufacturer. An increasing number of food manufacturers are providing nutritional information regarding their products in order to maintain their position in the market; however, this avalanche of information is outstripping the ability of the consumer to use it effectively or to even comprehend it. This study was undertaken to identify the objectives needed for the formulation of an educational programme concerning the nutritional labelling of food containers.

The literature relating to statutory requirements, food manufacturers, the consumer and consumer bodies, factors which influence food choice, as well as nutritional educational programmes was reviewed. The needs and objectives of the various groups affected by nutritional labelling illustrated the complex and controversial nature of nutritional labelling and the problem in formulating a simple and easily understood system.

The methods used for the descriptive survey, the sample selection, the questionnaire design, and the administration of data capturing and data collection procedures were explained. The limitations of the survey as well as the criteria for the admissibility of the data were identified.

The results of the survey suggested a definite need for a nutritional labelling educational programme. Although consumers lacked nutritional labelling knowledge, they had a positive attitude towards nutritional labelling and expressed their desire for an educational programme. Those consumers who had better knowledge scores were more inclined to read nutritional labels which helped them in the purchase of food. They also had better attitudes towards nutritional labelling and education. The perceptions of nutritional labelling of food manufacturers who responded to the survey were very similar to those of the consumer. Nutritional information was considered to be one of the most useful marketing tools, second to price.

The roles of the food manufacturer, the legislator and the consumer bodies in the formulation of a nutritional labelling educational programme and its appropriate target market were discussed. A single nutritional educational programme could be used for more affluent South Africans, but the needs of South Africa's lower income consumers would also have to be identified and catered for. Objectives for such a programme were formulated and recommendations for its implementation were made. The need for the collaboration of the four parties involved in order for any significant change in diet to be achieved was stressed. Areas for further research were suggested.

EKSERP

Heelwat aandag word gegee aan die hoë voorkomssyfer van siektes wat verband hou met die oorverbruik van voedsel. Voedseletikettering speel toenemend 'n rol in die voorkoming en vermindering van sodanige siektes. Die ontwikkeling van die tegnologie en die gevolglike beskikbaarheid van verwerkte voedsel het baie tot hierdie siektes bygedra en ook 'n verwydering tussen die verbruiker en die vervaardiger geskep. Groeiende getalle voedselvervaardigers verskaf dus dieetkundige inligting oor hulle produkte aan verbruikers ten einde hul posisie in die mark te handhaaf. Dit is egter vir die verbruiker bykans onmoontlik om hierdie vloedgolf inligting te begryp en effetief aan te wend. Hierdie studie is onderneem om die parameters vir 'n dieetkundige opvoedingsprogram oor die doel van etikette op voedselhouers te identifiseer.

'n Literatuurstudie is gedoen aangaande statutêre vereistes, die vervaardiger, die verbruiker en die verbruikerinstansies, die faktore wat voedselkeuse beïnvloed en dieetkundige opvoedings-programme. Die behoeftes en doeleindes van die verkillende groepe wat deur dieetkundige etikettering geraak word illustreer die ingewikkelde en omstrede aard van voedseletikettering en hoe moeilik dit is om 'n eenvoudige en maklik verstaanbare stelsel te formuleer.

Die metodes gebruik vir die beskywende opname, die keuse van monsters, die vraelysontwerp en prosedures vir die administrasie van die dataversameling en -vaslegging is verduidelik. Die beperkings van die opname en die kriteria vir die tolaatbaarheid van die data is ook bepaal.

Die resultate van die opname toon 'n besliste behoefte aan opvoedkundige programme oor etikettering. Alhoewel verbruikers min kennis aangaande dieetkundige etikettering gehad het, het hulle tog 'n positiewe houding daarteenoor getoon en te kenne gegee dat hulle 'n opvoedkundige program sou verwelkom. Diegene met 'n hoër kennisvlak was ook meer geneig om dieetkundige etikette te lees wat hulle met voedselaankope kon help. Hulle het ook 'n beter houding teenoor dieetkundige etikettering en opvoeding gehad. Die voedselvervaardiger wat op die opname gereageer het se persepsies oor dieetkundige etikettering stem ooreen met dié van die verbruikers. Dieetkundige inligting word, naas prys, as een van die nuttigste bemarkingsmiddele beskou.

Die rolle van die voedselvervaardiger, wetgewer en verbruikers-instansies in die formulering van 'n opvoedingsprogram oor dieetkundige etikettering en die bepaling van die gepaste teikenmark is bespreek. 'n Enkele dieetkundige opvoedingsprogram kan vir meer welgestelde Suid-Afrikaners gebruik word, maar daar moet ook aan die behoeftes van verbruikers in die laer inkomstegroepe volden word. Doelwitte vir sondanige programme is geformuleer en aagevelings vir die implementering daarvan is gedoen. Die behoefte aan die samewerking van die vier belanghebbende groepe ten einde betekenis-volle veranderinge in die dieet te bewerkstelling is beklemton. Ander gebiede vir verdere navorsing is voorgestel.

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CHAPTER ONE

THE PROBLEM AND ITS SETTING

1.1 INTRODUCTION

Attention is now being given to an increasingly prevalent problem - increases in the non-communicable diseases related to the over-consumption of food (Harris, 1992). As a result of urbanisation during the last 50 years, food production and processing have shifted away from the home. This resulted in creating gaps in both distance and concept because of the development of technology and the availability of processed foods. Because manufacturers need to maintain their position in the market, they must provide information regarding their products; but this avalanche of information is outstripping the ability of many consumers to use it effectively or to even comprehend it (Bush, Clarke, Kort and Smith, 1988).

The area of nutritional information is currently a controversial one. Consumers find current label information difficult to understand and have insufficient background knowledge to interpret this information to use as a basis for making healthy food choices (Williams, 1989; Booth, 1989; Huskisson, 1990). Manufacturers question the benefits of nutritional labelling and protest about the consumer's irrational approach to food buying (Bush et al., 1988; Booth, 1989). Bush et al. (1988) and Sunderland (1990) subsequently argue that a greater emphasis should be placed on education than on information transfer. They state that if these dilemmas are not solved, they will simply be magnified.

It therefore follows that the objectives for an effective education programme need to be identified in order to improve consumer knowledge of and attitudes towards nutritional information on food labels (Farmakalidis, 1989; McNutt, 1992). This is necessary because, through effective education, the public will be empowered to make informed, rational market choices with confidence. They will be able to understand what is meant by good nutrition, choose a diet that is right for them and they will be less vulnerable to distortions of the truth regarding nutritional information

(Cashmore, 1992). Identification of objectives for an educational programme will be made by evaluating the effectiveness of nutritional information on food labels in terms of food processing companies' and the consumers' perceptions of nutritional information.

Once the public have been educated to interpret nutritional information on food labels, the food industry will be able to inform consumers more effectively of the positive advantages of developments in food technology. Consumer responses would, in turn, inform the food industry of changing consumer attitudes. By generating greater knowledge and understanding of, inter alia, particular ingredients and specific processes, the influence the food industry will have on consumers could lead to changes in attitude and hence promote a positive change in diet (Heasman, 1991).

Considering consumers' current interest in health and nutrition, as well as the great importance of these changing eating habits and preferences to the food industry, the formulation and application of an educational programme will be in the interests of both parties. It is therefore necessary to identify appropriate objectives needed for the formulation of an educational programme concerning the nutritional labelling of food containers.

1.2 THE PROBLEM

1.2.1 The Problem Statement

The purpose of this study is to evaluate the effectiveness of nutritional information on food labels in terms of the marketing tools of selected food processing companies as well as consumer perception of nutritional information on food labels in order to identify the objectives needed for the formulation of an educational programme on the nutritional labelling of food containers.

1.2.1.1 The First Subproblem

The first subproblem was to evaluate the effectiveness of nutritional information on food labels by exploring manufacturers' perceptions of labelling information as a marketing tool.

1.2.1.2 The Second Subproblem

The second subproblem was to evaluate nutritional information on food labels in terms of consumer perception in order to establish how they view the effectiveness of labelling as an agent for providing nutritional information.

1.2.1.3 The Third Subproblem

The third subproblem was to integrate the perceptions of food processing companies and consumers about nutritional labelling in order to identify the objectives needed for the formulation of an educational programme on the nutritional labelling of food containers.

1.2.2 The Hypotheses

1.2.2.1 Hypothesis One

It was hypothesised that nutritional information on food labels was not rated as an effective marketing tool by the manufacturers.

1.2.2.2 Hypothesis Two

It was hypothesised that the majority of consumers were unable to use nutritional information on food labels to assist them when purchasing food.

1.2.2.3 Hypothesis Three

It was hypothesised that the necessary determinants needed for the formulation of an educational programme on the objectives of labelling food containers could be identified.

1.2.3 The Delimitations

1. The external survey of this study was limited to South African manufacturers of cold breakfast cereals whose products are sold at supermarkets targeting middle income consumers in the Durban area.

2. The external survey of this study was limited to white married women between the ages of 18 and 55, who had attained at least a standard ten level of education, and who lived in middle income residential areas in Durban.

3. This study did not attempt to identify the type of food label format best suited to consumer needs.

4. This study did not attempt to identify the best marketing strategies for selling food products.

5. The emphasis of this study was on the effectiveness of nutritional information on selected cold breakfast cereal packages only. It did not attempt to identify the effectiveness of any other information on the package.

6. The cereal boxes used in this study to test consumer nutritional knowledge was limited to four specific brands: *Kellogg's All Bran Flakes; Kellogg's Coco Pops; Pronutro;* and *Nature's Source Ideal Mix*. These cereals were chosen for the following reasons:

   - the different cereals were targeted at various family members;
   - the variety in nutritional content and benefits of these cereals related to prevalent disease trends;
   - there were differences in format such as nutritional information given for a variety of serving sizes and/or the percentage of the R.D.A.;
   - the use of various nutritional claims and the amount of support for these claims from conventional media advertisements.

1.2.4 The Assumptions

1. It was assumed that the contribution to this study by South African manufacturers of cold breakfast cereals whose products were sold at supermarkets targeting middle income consumers in the Durban area would be positive, constructive and honest.

2. It was assumed that the contribution to this study by white women between the ages of 18 - 55, who were married, had attained a standard ten level of education, and who lived in the selected middle income residential areas in Durban would be positive, constructive and honest, and that the data would accurately reflect their knowledge and beliefs regarding health and nutrition.

3. The food labelling laws are applicable to all food products sold in South Africa. It was therefore assumed that the principles and problems associated with label interpretation by consumers in the Durban area were also applicable to the rest of South Africa.

4. It was assumed that marketing managers of cold breakfast cereals were fluent in English and that they would therefore be able to correctly interpret and answer the questions in the questionnaire.

5. Surveys showed that Afrikaans speaking people buy products with English labelling, but that English speaking people are not likely to buy products with Afrikaans labelling (Shapiro, 1993). It was therefore assumed that the English labels on the cereal boxes which were used in the study, would not disadvantage Afrikaans speaking consumers.

6. It was assumed that the marketing managers of cold breakfast cereals would understand the terms "health conscious", "moderation" and "bulk" consumers, as these terms are prevalent in the literature (section 2.3 and 2.4).

7. It was assumed that women were responsible for planning and purchasing their household grocery requirements because of

their traditional role as home makers.

1.2.5 Conceptual Clarification:

For the purpose of this study, the following concepts are clarified:

BRAND LABELLING

The articles included in the review of the related literature have used brand labelling to include not only the brand name but also descriptive labelling. Nutritional labelling falls under the classification of descriptive labelling (Stanton, Etzel and Walker, 1991). For the purpose of this study, brand labelling includes descriptive labelling.

BULK BUYERS

Consumers who cannot afford to worry about the quality of food and therefore are only concerned with getting enough food and not with the nutrient, aesthetic or social values of their food.

COLD BREAKFAST CEREAL

Precooked cereal that is consumed cold without any cooking taking place on the part of the consumer.

HEALTH CONSCIOUS CONSUMERS

Consumers who are concerned about their health, and who consume certain foods or nutrients which they believe will maintain or enhance their health and well-being, and which will help to prevent diet-related diseases. These types of foods include: foods low in fat and sodium, and high in fibre. These consumers are more extremist than the "moderation eaters".

MIDDLE INCOME

According to the South African Central Statistical Service classification, middle income people earn between R10 000 and

R49 999 per annum (Soyer, personal communication, 1993). For the purpose of this study the married woman's salary was added to that of her spouse and the average income per family was calculated. In order for the respondent to classify as a middle income earner, the average income earned had to fall within the R10 000 and R49 999 per annum category.

MODERATION EATERS

Consumers who eat moderate amounts of different types of food, and who perceive this to be sufficient to maintain their health and to prevent diet-related diseases. They are not as extremist as "health conscious" consumers are.

NUTRIENT CLAIMS

A statement about the presence or absence of (a) nutrient(s) for example *low fat*, *low cholesterol*, and *high fibre*.

NUTRITIONAL LABELLING

Any information referring to the nutritional content of the food, including:

- the list of ingredients;
- nutritional information such as kilojoule content, protein content, amount and type of carbohydrate, total fat and fatty acid content, vitamin and mineral content;
- nutritional and health or diet-related disease claims.

NUTRITIONAL PERCEPTIONS

For the purpose of this study, nutritional perceptions are defined as the knowledge and attitudes consumers or manufacturers have towards nutrition based on their perception of what is good food. These perceptions do not necessarily correspond with the principles of sound nutrition propounded by professionals in this field.

QUALITY

A product's outcome or performance according to specifications.

SUPERMARKET

A supermarket differs from a superstore or hypermarket in that it:

- is smaller in size with smaller stocks;
- is run by a different company to that of a superstore or hyperstore;
- sells mostly food and soft drinks, toiletries, cleaning agents and equipment; and offers a limited range of cooking and baking ware, crockery and cutlery, stationery, garden ware and electrical appliances.

1.2.6 *Definition of Terms:*

For the purpose of this study, the following are defined:

BALANCED DIET

A balanced diet is one that contains sufficient quantities of the five food groups to ensure nutritional adequacy when seen in context of the total food consumption (Crawley-Boevey, 1993).

EDUCATION

For the purpose of this study, education refers to the propagation of knowledge to enlighten the consumers, so that their nutritional practices will be based on informed choices. The term "education" should not be confused with the subject of education or the design syllabi for formal education programmes (Crawley-Boevey, 1993).

FOOD ADDITIVE

Any substance not normally consumed as a foodstuff by itself and not normally used as a typical ingredient of the foodstuff, whether or not such substance has nutritive value (South Africa, 1993).

FOOD LABEL

Any brand/mark or any written, pictorial or other descriptive matter appearing on, or attached to, or packed with any foodstuff, cosmetic or disinfectant; and when used as a verb (food labelling) it means to brand or mark or to provide in any other manner with any written, pictorial or descriptive matter (Lakani, 1990).

FOODSTUFF

Any article or substance (except a drug as defined in the Drugs Control Act, 1965 (Act No. 101 of 1965)) which is ordinarily eaten or drunk by man, or which is purported to be suitable, or manufactured or sold, for human consumption, and which includes any part or ingredient of any such article/ substance, or any substance used or intended or destined to be used as part of or ingredient of any such article or substance (Lakani, 1990).

HEALTH FOODS

This term encompasses both natural and organic foods, including foods believed to have special powers to promote health such as brewers yeast, pumpkin seeds and herbal teas (Hamilton, Whitney and Sizer, 1985).

HEALTH/MEDICAL CLAIMS

Diet-related disease information. A statement, suggestion/implication on food labels or in advertisements that suggests that a food can in some way help to prevent, treat/cure human disease (Lakani, 1990).

INGREDIENT

Any substance including any food additive and any constituent of a compound ingredient which is used in the manufacturing or preparation of a foodstuff, and which is still present in the final product (South Africa, 1993).

NATURAL FOODS

Altered as little as possible from their farm-grown state. In South Africa the word "natural" cannot be legally used in relation to any manufactured foodstuff or a foodstuff which contains any ingredient not in the natural form (South Africa, 1993).

NUTRIENT

That chemical substance or element found in a foodstuff or produced by a physiological process, which is essential for the maintenance of normal bodily functions (South Africa, 1993).

ORGANIC FOODS

Fertilised with natural organic matter such as manure, grown without the use of pesticides and processed without food additives (Hamilton et al., 1985).

PROCESSED

A foodstuff that has been subjected to any process which alters its original state, excluding harvesting or slaughtering and preparation by: cleaning; decapitation; de-feathering; de-haring; evisceration; portioning; removal of fish scales; blemishes; fruit and vegetable foliage or shells; sectioning; mincing; mechanically boning; removal of skin (other than fish, poultry and pigs); washing; chilling or freezing and irradiation (South Africa, 1993).

SERVING

In relation to a foodstuff, a serving means the mass, volume or number, as the case may be, which is recommended by the manufacturer (South Africa, 1993). In the case of the United States of America (U.S.A.), the Food And Drug Administration (F.D.A.) defines a serving as the amount taken on its own or as part of a meal (Mermelstein, 1993).

STAT GRAPHICS

A statistical software programme: Plus Version 6 SGPLUS Manugistics, Inc.

1.2.7 Abbreviations

B.M.A.

British Medical Association

C.O.M.A.

Committee on Medical Aspects of Food Policy

F.D.A.

Food and Drug Administration (of the United States of America)

D.R.V.

Daily Reference Value established by the F.D.A. of the U.S.A. for eight of the nutrients that did not previously have an R.D.A. value. This change corresponds with the change from the old U.S.A. R.D.A.s to R.D.I.s.

H.S.R.C.

Human Sciences Research Council

N.A.N.C.E.

National Advisory Committee on Nutritional Education

R.D.A.

Recommended Daily Allowance for specific nutrients, suggested by the Food and Nutrition Board of the United States of America. It is the recommended levels of essential nutrients, which fulfils the

nutritional needs of a healthy individual, that should be ingested per day.

R.D.I.

Recommended Daily Intake established by the F.D.A. of the U.S.A. to replace all previous R.D.A. values in order to decrease confusion. Presently R.D.I.s will retain the same value as the old U.S.A. R.D.A. values.

1.3 OVERVIEW OF THE CHAPTERS

The study consists of a theoretical sub-structure and a descriptive survey. The first three chapters lay the theoretical foundation for the study, and include information on the methodology used. Chapters four and five deal with and evaluate the results and findings of the study.

Chapter one states the problem that was researched as well as the background with respect to the investigation.

Chapter two gives an overview of the literature related to:

- domestic and international food labelling regulations;
- manufacturers' and consumers' perceptions of nutritional labelling on food containers;
- nutritional education programmes and the role of the food manufacturer, the government and various consumer organisations in these programmes.

The methodology used for the descriptive survey is explained in Chapter three. This includes the underlying rationale, and information on the questionnaire construction and implementation; sample realisation, the method of sampling and data collection; and the limitations of the survey. Various statistical techniques used in processing the data are outlined.

Chapter four covers the results of the study relating to manufacturers' and consumers' perceptions of nutritional labelling.

Chapter five places the investigation in context. A general discussion on the effect of influencing factors is offered, and recommendations are made regarding possible objectives for the development of an educational programme to improve consumer knowledge of and attitudes towards nutritional information on food labels. Areas for further research are identified.

The references, Annexures and questionnaires appear at the end of the dissertation.

CHAPTER TWO

THE REVIEW OF THE RELATED LITERATURE

2.1 OVERVIEW

In the previous chapter the importance of the study and the problem statement were discussed. The accent was placed on the necessity for educating the consumer to use nutritional information on food labels.

This chapter provides an overview of the following:

- a global perspective of nutritional statutory requirements;
- the manufacturers' perspective;
- the consumers' perspective;
- the factors influencing food choice;
- education.

An outline of developments both locally and internationally serves as a background for the findings of the study as reported in Chapter four. The importance of the study is reflected in statements regarding the necessity for consumer awareness of nutritional information and the use of this knowledge in relation to food labels.

The literature review exposes the complexity of formatting information which will not only satisfy statutory requirements, but also the needs of manufacturers and consumers. It is argued that nutritional information is particularly difficult to convey, which is why this issue has not been satisfactorily resolved despite numerous efforts to come up with a simple and easily understood system (Eastwood, Edwards and Parry, 1992).

In summary it is stated that statutory requirements, the manufacturer, consumers and consumer organisations are interacting factors that have a bearing on the type of information required on food labels.

2.2 INTERNATIONAL STATUTORY REQUIREMENTS INFLUENCING NUTRITIONAL LABELLING

2.2.1 Changes in Food Policy

The world of food is rapidly changing, not only in the scientific and technical arenas, but also in the policy arena. International organisations such as the World Health Organisation (W.H.O.) and the Food and Agricultural Organisation (F.A.O.) have stated that the world's food supply is adequate, and that they are directing their attention to an increasingly prevalent problem: rises in the non-communicable diseases related to the over- consumption of food (Harris, 1992).

Governments of first and third world countries and the various health organisations in these countries are committed to improving the quality of life of consumers by decreasing the incidence of diet-related diseases, and by improving the population's health and well being. This has been implicated by enhancing the level of nutritional knowledge through education campaigns, and by providing more accurate and reliable information about the nutritional content of the food through labelling and advertising. Other measures have included information transfer programmes in an attempt to protect consumers against unsafe food and deceptive nutrient and health claims, and the revision of food labelling regulations (Fine, 1990; Hodgson and Bruhn, 1992; Mermelstein, 1993; Steinman, 1992).

One of the methods to ensure accuracy regarding the various aspects of food labelling is through statutory control. This is implemented through labelling laws and regulations. More countries are broadening their food policies to accommodate international trade links and to avoid potential trade barriers.

2.2.1.1 Relevance of International Trade Agreements on Nutritional Labelling.

The importance of international trade agreements and their impact on movement of foodstuff from one country to another need to be stressed.

The United States of America and Canada are signatories to three principal international agreements which affect domestic food labelling policy:

- the Codex Alimentarius Commission (Codex);
- the General Agreement on Tariffs and Trade (G.A.T.T.);
- the Canada-U.S.A. Free Trade Agreement (F.T.A.).

The F.T.A. was designed for the elimination of trade barriers on goods and services between the two countries, including those created by inconsistent food labelling (Crane, Behlen and Yetley, 1990).

Two United Nations (U.N.) organisations, F.A.O. and the W.H.O., established a subsidiary body in 1962, called "Codex Alimentarius". Codex serves to facilitate fair international trade in food while protecting consumer health. Internationally established standards help to narrow the gap between developed countries and developing countries. These standards are incorporated into the member countries' domestic laws. There are more than 130 Codex members, including Australia, Canada, the United Kingdom (U.K.) and U.S.A. (Crane, 1990; Lakani, 1990).

G.A.T.T. accounts for more than 80% of the world's trade with more than 90 member countries. In 1980, participating countries agreed to engage in negotiations on the elimination of non-tariff trade barriers caused by differences in technical standards for products and services. The proposals included discussions on barriers created by inconsistent food standards and labelling requirements. Codex and other international standards are possible reference points for negotiations within G.A.T.T. (Crane, 1990).

Of increasing significance to the U.S.A.'s trade perspective is the Treaty of Rome of the European Community (E.C.) (Crane, 1990). Trade with any of the twelve member countries will affect the economy of the U.S.A.

For South Africa to trade internationally, it is important that South African labelling regulations are in line with those of its major trading partners so as not to create trade barriers (Slabber,

1993). Although South Africa has not been part of Codex in the past for political reasons, provisions are made by Codex for a non-member country to incorporate its guidelines into the domestic laws of the country and to inform Codex of its acceptance of these laws. South Africa is therefore not excluded from adopting established standards. Current regulations in South Africa are therefore virtually identical to those applicable in the European Community (Huskisson, 1990; Herbert, personal communication, 1992; Lakani, 1990; Loubser, 1992;).

It is therefore important to examine foreign legislation to see how this relates to the South African situation.

2.2.2 Food Labelling Regulations - Nutritional Labelling Comparisons of Major World Authorities

Tables 2.1 and 2.2 provide side by side comparisons of the proposed or current U.S.A., Canadian, E.C., Codex and South African positions on aspects of nutritional labelling. Comparisons are made in terms of background, scope, when nutritional labelling is required, the basis for declaring nutritional information, nutritional labelling content, daily reference intake values for labelling purposes, and nutrient and health claims. The proposed regulations for the E.C., Codex and South Africa are provided as the proposals are currently open for comment, and as revisions will probably be made. Depending on comments received, the final regulations may differ from the proposed components.

2.2.2.1 Background on the Labelling Regulations of the various Labelling Authorities

The U.S.A. currently has the most advanced food labelling regulations with other major industrial countries' proposals still in the draft stage (Table 2.1) (Eastwood et al., 1992; Harris, 1992). In the early 1970s, the U.S.A.'s F.D.A. implemented a nutritional labelling system for helping consumers to identify nutritional content of food by establishing regulations under provisions of the Federal Food, Drug and Cosmetic Act. The early recommendations focused mainly on specific nutrient inadequacies and

Table 2.1 NUTRITION LABELLING COMPARISONS BETWEEN THE VARIOUS LABELLING AUTHORITIES OF THE WORLD : OVERVIEW

	United States of America (FDA)	Canada	European Community	Codex Alimentarius Commission	South Africa
Background	NL regulations promulgated in 1973 to establish nutritional qualities of food. Little change from 1973 to 1990. Major revisions proposed in 1990, a regulations published in 1993 , to be implemented by May 1994- NL required on most foods, list of required nutrients revised, and serving sizes standardised. b,k,l.	NL guidelines published in 1988 to set out a uniform system of NL to be used in Canada. a.	Common position adopted in 1990 by EC to benefit consumer and avoid possible trade barriers. Final adoption as council directive to be reviewed by European parliament. n,p,q.	Guidelines on NL promulgated in 1985 in order to ensure NL effective, not false or misleading and that no nutri claims are made without NL.a, c.	Foodstuffs, Cosmetics and Disinfectants act, Act 54 of 1972 and subsequent regulations govern the food industry. Present regulations published in 1977. Proposed regulations gazetted in Feb 1993 to make for more standardised & uniform NL.d, e, f, g, h, i.
Scope	NL required on most foods. Foods exempt from or subject to special labelling requirements include food offered for sale by small businesses; eg food sold in restaurants where food is sold for immediate consumption; ready to eat foods that are not for immediate consumption; foods containing insignificant amounts of all nutrients subject to this rule eg. coffee and tea; dietary supplements except those in conventional form; infant formula; medical foods; custom processed fish/ game meats; food shipped in bulk form and donated foods; meat and poultry products in small packages weighing less than 1 /2 an Oz, and meat and poultry products produced and produced & packaged at retail. Exempted foods that make any claim loose that exemption.a,b,k,l .	Formulated liquid diets and infant formulas exempt - have specific regulatory requirements.a	Proposed directive concerns NL of food stuffs to be delivered to the consumer. Also applies to food stuffs for restaurants, hospitals, canteens , other mass caterers, and to foodstuffs intended for particular nutri uses. Diet integrators or food supplements, natural and other waters intended for human consumption are not implicated.a.	Guidelines apply to all prepacked foods offered to the consumer or for catering purposes. Foods for special dietary uses may have additional provisions.a.	Proposed NL required for infant foodstuffs.d,e,f,g,h, j
When required	Mandatory on most foods (exceptions cited above). a, b, k, l.	Voluntary except specific nutri info required when claims are made, vit or min are added, or in the case of foods for special dietary use.a,c.	Voluntary except where a nutri claim is made. a,c,n.	Should be voluntary except where a nutri claim is used. a,c.	Voluntary except where a nutri claim is made.d,e,f,g,h, j.
Basis for declaring amounts	Must declare nutri info on per serving basis except vit & min, the amount of each nutrient as a % of the Recommended Daily Intake (RDI) for a 2000 calorie diet, a foot note with reference values for selected nutrients based on 2000 & 2500 calorie diets and calorie conversion information. Must list no servings per container. a, b, k, l.	Must declare nutri info on per serving basis, may also declare nutri info on per 100g (ml) basis. Vit & min as % Recommended Daily Intake.a.	Proposed that nutri info be declared per 100g (ml) basis. May also declare nutri info per serving or per portion if no of portions per package stated. Vit & min as % Recommended Daily Intake.a,n.	Should declare nutri info per 100g (ml) basis, or per single portion package, or per portion if no of portions stated. Protein, vit & min in metric weight & / as % of Nutrient Reference Value.a,c.	Nutri info to be declared per 100g (ml) , per serving size, & % of recommended Daily Allowance.d,e,f,g,h, j .

Abbreviations: NL= nutritional labelling; vit= vitamin; min= mineral; no=number; info= information; nutri= nutritional; EC= European Community.

AUTHORS - a: Crane, 1990; b: Rosenburg, 1993a; c: Lakani, 1990; d: De Villiers, 1993; e: Hebert, personal comunication1992; f: Huskisson, 1990; g: Loubser, 1992; h: Slabber, 1993; i: South Africa, 1977; j: South Africa, 1993; k: Mermelstein, 1993; L: Annon, 1993b; m: Harris, 1992; n: Kirk, 1989; 0: Rosenburg, 1993b; p: Turner, 1991; q: Smith, 1993.

TABLE 2.2: NUTRITION LABELLING COMPARISONS BETWEEN THE VARIOUS LABELLING AUTHORITIES OF THE WORLD : CONTENT

	United States of America	Canada	European community	Codex Alimentarius	South Africa
Nutrition Information	per serving: serving size g or ml (cup, item etc), servings per container = no.a,b,k,l	serving size = g or ml (= cup, item, etc.). a.	per 100g (ml). a,n.	per 100g (ml) a.	per 100g (ml), per serving size d,e,f,g,h, j.
Nomenclature, order of listing	Total calories : calories from fat, calories from saturated fat; fat: unsaturated, polyunsaturated, mono-unsaturated; Cholesterol; sodium; potassium; Carbohydrate: dietary fibre, soluble fibre, insoluble fibre; sugars, sugar alcohol, other carbohydrate; protein, vit A, C, calcium, iron; other essential vit & min, order stipulated a,b,k,l. Footnote stating RDVs for fat, saturated fat, cholesterol, sodium, carbohydrate, fibre for both 2000- & 2500-calorie diet b,l, k	Group 1 format: Energy: Kcal & / Kj; protein; fat: polyunsaturates, monounsaturates, saturates, cholesterol; carbohydrate: sugars, sugar alcohol, starch, dietary fibre sodium, potassium; essential vit & min, order stipulated. Group 2 format: In addition to group 1 nutrients: Sugar, saturates, fibre and sodium a,p.	Energy: Kcal & / Kj; protein; carbohydrate of which: sugars, polyols, starch; fat of which saturates, monounsaturates, polyunsaturates, cholesterol; fibre & sodium, essential vit & min, order stipulated. a,n.	Energy: Kcal & / Kj; protein; carbohydrate of which: sugars, starch, other available carbohydrate constituent(s); dietary fibre; fat of which: polyunsaturated, saturated, essential vitamins & minerals, order stipulated. (Other vit/ min of nutritional importance to the country may also be listed.) a.	Energy, protein, carbohydrate & fat; total fat, saturated fat, polyunsaturated fat, & / monounsaturated fat; sodium and fibre; essential vitamins & minerals, order stipulated d,e,f,g,h, j.
Daily reference value	USA RDA's promulgated in 1973. Were based on National Research Council's RDAs. Change of terms for reference values from RDA to RDI: Reference Daily Intake., although still retaining the same value. Daily Reference Values (DRVs) established for eight of the nutrients that do not have RDA values.a,b,k,l	RDIs for NL were promulgated in 1988, these were based on Canadian Recommended Nutrient Intakes (RNI's) (1983). RNI's were revised in 1990.a	Common position on RDAs for NL was adopted by council of EC in Feb 1990 with the final adoption subject to review by European parliament.n.	Interim Reference RDAs for NL were promulgated in 1985. In 1989 amendment proposed to revise these values on basis of 1988 FAO/ WHO expert consultation report.a.	USA RDAs used in South Africa, same value as USA RDIs but the latest RDVs not used.f, j.
Nutrient claims	Descriptive terms defined for use on food labels. Product must have appropriate level of nutrient(s) to meet definition. k,o	Descriptive terms defined for use on food labels. Product must have particular amount of nutrient (s) to meet definition.o	Draft proposal talks about a reduction in nutrient content as the criterion, rather than a specific amount were provisions are made for nutrient claims.o.	Draft Codex guidelines allow for negative claims & gives authority to use that national governments standards.o.	A label may not claim that a product is free from a substance if all the products in the same category are free from it. d,j
Health claims	Claims allowed: calcium & osteoporosis; fat & cancer; saturated fat and cholesterol & cancer; fruits, vegetables, & grain products & cancer; fruits, vegetables, & grain products & coronary heart disease; fruits, vegetables & cancer; sodium & hypertension. k,o	Prohibited.o	Prohibited.o.	Prohibited.o.	Prohibited.d,j.

Abbreviations : nutri= nutrient; vit=vitamin; min= mineral; EC= European community; Feb= February; ref= reference; NL=Nutritional labelling, info= information; RDA= Recommended Daily Allowance; %= percentage; no=number. Bold = mandatory; plain text = recommended.

AUTHORS - a: Crane, 1990; b: Rosenburg, 1993a; c: Lakani, 1990; d: De Villiers, 1993; e: Hebert, personal comunication1992; f: Huskisson, 1990; g: Loubser, 1992; h: Slabber, 1993; i: South Africa, 1977; j: South Africa, 1993; k: Mermelstein, 1993; L: Annon, 1993b; m: Harris, 1992: n: Kirk, 1989: 0: Rosenburg, 1993b; p: Turner, 1991; q: Smith, 1993.

led to the establishment of a standard labelling format for declaration of the nutritional content of processed and packaged foods (Crane et al., 1990; Geiger, Wyse, Parent and Hansen, 1991).

The U.S.A.'s F.D.A. recently undertook an extensive re-evaluation and revision of their nutritional labelling requirements (Crane et al., 1990; Geiger et al., 1991; Mermelstein, 1992; Anon, 1993a; Rosenburg, 1993a; Rosenburg, 1993b; Zanecosky, 1993). This was due mainly to the consensus reached by the scientific community on diet and health relationships in 1988. These comments were published in the Surgeon General's Report on Nutrition and Health and in the 1989 National Academy of Science's (N.A.S.) report on Diet and Health. However, many other issues, such as the following, were contributory to the revision (Crane et al., 1990):

- requests from consumers and health care professionals (Geiger et al., 1991);
- studies conducted in the U.S.A. on the importance and usage of information contained on food labels and the consumer's understanding of nutritional information on labels. Results showed an increased use of nutritional label information by consumers (Geiger et al., 1991; Hogson and Bruhn, 1992).

This led to the signing of the Nutrition Labelling and Education Act of 1990 in the U.S.A., and in July 1990, the F.D.A. proposed major revisions to their nutrition labelling regulations to meet the provisions of the Act. These were implemented in January 1993 and were to be made effective by 8 May 1994 (Tables 2.1 and 2.2) (Crane et al., 1990; Geiger et al.; 1991; Hodgson and Bruhn, 1992; Mermelstein, 1992; Anon, 1993a; Rosenburg, 1993a; Rosenburg, 1993b; Zanecosky, 1993).

The U.S.A. Department of Agriculture's Food Safety and Inspection Service (F.S.I.S.) and the U.S.A. Department of Agriculture (U.S.D.A.) which is responsible for the labelling of meat and poultry products, generally have policy statements which are consistent with the F.D.A. regulations. For the purpose of this study, all reference to current U.S.A. regulations apply only to those of the F.D.A., and not to the F.S.I.S (Crane et al., 1990; Anon, 1993c).

Canada, Codex and the E.C. have similar labelling requirements. Canada and Codex use guidelines to ensure effective nutritional labelling, but the E.C. differs from this in that it has adopted a directive concerning nutritional labelling. Many of the regulations or guidelines of these labelling authorities are either in a draft stage or being revised, for example the E.C. has adopted food labelling regulations but is still seeking a suitable format for labelling. Final regulations to implement the directive were not been published by the required deadline of 1 October 1993. Although publication of the directive was expected shortly after this date (Kirk, 1989; Crane et al., 1990 ; Lakani, 1990; Turner, 1991; Smith, 1993) this was not implimented before December 1994.

South Africa is unique in comparison to the other countries mentioned in the study, in that it is a mixture between a developed and developing country. Its nutritional labelling laws are similar to, and based on, those of the E.C., but they are not as sophisticated as those of first world countries. According to the Food Legislation Advisory Group (F.L.A.G.) (Herbert, personal communication, 1992) there is currently very little legislation for food labelling. Lakani (1990) reports that Common Law in South Africa has a limited value in safeguarding consumers, and their protection is mostly by way of legislation and regulations. There are several problems with these laws, such as the lack of:

- enforcement;
- consumer awareness;
- education.

These issues need to be addressed in the short term. Other criticisms of South African labelling legislation include:

- South Africa's legislation is not strict enough when compared to foreign legislation;
- it is not health conscious;
- there is a need for uniformity and standardisation;
- manufacturers often find loop holes in the law and misuse them to serve their own interests;
- the confidentiality clause does not encourage the manufacturer or the consumer to report false/inaccurate

labelling as prosecution procedures and outcomes are not made public.

One of the criticisms levelled at South African legislative authorities is that the Health Department is not functioning as a unit. An example of this is the recommendation for the daily intake of salt, which involves three parties functioning independently from one another. While the House of Assembly issues a dietary guideline for the consumer to reduce salt intake in their diets to less than 5g per day (Huskisson, 1990), no provision is made for the salt content of food to be disclosed through legislation (South Africa, 1993). Many processed foods contain high quantities of salt and manufacturers are not obligated to disclose these quantities. However, when such information is disclosed, it can be revealed that a can of baked beans contains 10g of salt, despite the recommendation that the daily consumption of salt should be less than 5g per day (Herbert, personal communication, 1992).

2.2.2.2 Scope for Nutritional Labelling

Nutritional labelling is required on most foods in the U.S.A., including fresh foods (except for raw single ingredient products), whereas labelling authorities in other countries require labelling on processed foods only. The F.D.A. of the U.S.A. is also encouraging the voluntary labelling of these raw single ingredient products (Crane et al., 1990; Mermelstein, 1993; South Africa, 1993).

2.2.2.3 When Nutritional Labelling is Required

The underlining reasons why the public demands label information are:

- to have a basis for comparing one product with another;
- to have assurance that the nutritional status of the product is as advertised.

Therefore, in response to consumer needs, the U.S.A.s F.D.A. recently changed its food policy from voluntary to mandatory nutritional labelling and employs co-regulation in respect to health

claims (Table 2.1) (Crane et al., 1990; Lakani, 1990). The literature indicates that the U.S.A. enforced mandatory nutritional labelling not because of consumer apathy, but because of a growing concern for public health (section 2.2.2.1). The E.C., Canada and Codex support voluntary nutritional labelling except where nutritional and health claims are made (Kirk, 1989; Crane et al., 1990; Lakani, 1990).

After much deliberation, the South African Department of National Health and Population Development, with the help of the Food Legislation Advisory Group (F.L.A.G.), have reached the decision not to make nutritional information on all foodstuffs mandatory (De Villiers, 1993; Slabber, 1993; South Africa, 1993). Proposals gazetted in February 1993 suggest more standardised food labelling in order to achieve uniformity, but do not recommend the standardisation of serving sizes, which affects consumers' ability to make comparisons between products available on the shelf (De Villiers, 1993; Slabber, 1993; South Africa, 1993). Standardisation of serving sizes is the normal practice in the U.S.A. (Rosenburg, 1993b; Mermelstein; 1993).

Some arguments for and against mandatory nutritional labelling appear in the literature. Arguments against include the following:

- it would cost the food manufacturer a lot of money to implement (Loubser, 1992);
- unlike their American, Canadian and European counterparts, South African consumers' diet consists mainly of unprocessed foods, and it is thus argued that mandatory nutritional labelling is not necessary (Bell, 1992 Crawley-Boevey, personal communication, 1992);
- many consumers do not read nutritional information on food labels (Booth, 1989; Loubser, 1992);
- according to Hele (Executive Director of the Grocery Manufacturers Association) in Loubser (1992) a staggering amount of nutritional information already exists, and he highlighted some inconsistencies in the format of information.

Arguments in favour of nutritional labelling include:

- costs saved by preventative health measures such as nutritional information would far exceed those incurred by the food manufacturer (Loubser, 1992);
- the food industry in the U.S.A. has complained about the cost and detail of some of the F.D.A. regulations, but in general it welcomes the fact that the regulations will ensure a level playing field. The food industry will know what messages it can and cannot use, and how various terms may be used; and consumers will know what such terms mean for various products (Loubser, 1992);
- comparison between products is difficult to make as products differ in the amount and type of information given (Herbert, personal communication, 1992);
- the consumer has a right to be informed about the nutrient content of foods purchased, and has the right to choose between these products. The high incidence of diseases attributable to increased urbanisation and the consequential debate about the low fibre, high fat and high salt content of the average South African diet (Bell, 1992; Loubser, 1992; De Villiers, 1993) underlines the importance of these consumer rights.

2.2.2.4 Basis for Declaring Amounts of Nutrients

Declaration forms containing number and types of nutrients differ among the U.S.A., United Kingdom (U.K.), Canada, and Codex (Table 2.1) requirements. Canada, the E.C. and Codex require the minimum of nutritional information on food labels, i.e. a declaration of the energy, protein, fat and carbohydrate content (Codex also includes fibre). The F.D.A. differs in that it requires more detailed nutritional labelling. The amount of each nutrient must be declared as a percentage of the Reference Daily Intake (R.D.I.) for a 2000 calorie diet. A foot note with R.D.I.'s for selected nutrients based on a 2000 and a 2500 calorie diet, and calorie conversion information must appear on the food label. Conditions that demand a mandatory declaration of vitamin and mineral content are specified by some countries or commissions. The U.S.A. requires a more detailed declaration of the mineral and vitamin content than the

other first world countries (Crane et al., 1990; Mermelstein, 1993; Rosenburg, 1993a).

In South Africa information must be provided for the amount of kilojoules; protein; carbohydrate; total fat, saturated fat, polyunsaturated fat, and or monounsaturated fat (Table 2.2). Manufacturers are being encouraged:

- to provide voluntarily as much information on the label as possible;
- to concentrate on giving information on kilojoule, fat, sodium and fibre content, as these are the factors that can influence the consumer to buy or reject the product for health reasons (De Villiers, 1993; South Africa, 1993; Slabber, 1993).

2.2.2.5 Nutritional Information

Whereas the F.D.A. and Canada require that nutritional content be declared on a per serving basis, the E.C. and Codex have different requirements (Table 2.2). Serving sizes for the U.S.A. and Canada are established on commonly consumed intakes according to national food consumption surveys. The F.D.A. has standardised serving sizes making comparisons between products easier. The F.D.A and Canada also require that nutritional information be declared in metric measures. Declarations per 100g (ml) are optional for the U.S.A. and Canada and can be used to facilitate product comparison. The E.C. and Codex declare nutrient content per 100g (ml), with an option on a per serving basis (Crane et al., 1990; Mermelstein, 1993; Rosenburg, 1993b). The F.D.A. also requires nutritional information for a 2000 and a 2500 calorie diet (Annexure 7.3).

South Africa requires nutrient content to be declared on a per serving and per 100g (ml) basis, and also requires the percentage R.D.A. of each nutrient. Although this seems to exceed Canadian, E.C. and Codex requirements, drawbacks of this method include:

- too much information on the label for the consumer to read through (Herbert, personal communication, 1992);
- serving sizes are not standardised and so cross comparisons

cannot be made (Herbert, personal communication, 1992);

- consumers find it difficult to convert 100g (ml) to the size or quantity they want (Black and Rayner, 1992).

2.2.2.6 Daily Reference Values

In the past, the U.S.A. had two R.D.A. systems. It has recently changed its reference values from U.S.A. R.D.A.s to:

- Reference Daily Intakes (R.D.I.) for protein, 26 vitamins & minerals;
- Daily Reference Values (D.R.V.) for energy, fat, carbohydrate, fibre, cholesterol, sodium and potassium (Table 2.2).

To avoid confusion, the F.D.A. decided that only the term Daily Value will appear on the label, which will be inclusive of both the R.D.I.s and the D.V.R.s. These values are for adults and children four years and over; pregnant and lactating women; children four years and younger; and infants. Canada uses its R.D.I.s based on Canadian Recommended Intakes for 17 vitamins and minerals for adults and children over two years old; for children under two years; and infants. Codex and the E.C. proposals each have one set of reference values for protein (Codex only) and for vitamins and minerals (Crane et al., 1990; Anon, 1993a; Mermelstein, 1993; Rosenburg, 1993b).

The reference values used in South Africa are the old U.S.A. R.D.A.s for adults and children four years and over; pregnant and lactating women; children four years and younger; and infants (Huskisson, 1990; De Villiers, 1993; South Africa, 1993). D.R.V.s fill a gap created by having reference values for the consumer to use as a guide to judge nutrient intake for nutrients which did not previously have a reference value. The nutrients for which D.V.R.s were established, are especially relevant as far as diseases of over consumption are concerned.

2.2.2.7 Claims Concerning Nutrient Content

In order to introduce uniformity about statements concerning the nutrient claim of products, the U.S.A.s F.D.A. as well as Canada

have defined descriptive terms for label use (Table 2.2). These terms describe the actual status of the nutrient content, e.g. high in fibre. The manufacturer must adhere to the legislated specifications in order to make a nutritional claim using a descriptive term. This ensures that the product is truly what it claims to be. This is in contrast with the E.C., where the manufacturer can make a nutritional claim when there is only a slight reduction in nutrient content of the food, e.g. reduction in cholesterol. Codex allows for negative claims and for the relevant national government's standards to be used (Mermelstein, 1993; Rosenburg, 1993a; Rosenburg, 1993b).

Nutrient claims can be used in South Africa, but a label may not claim that a product is free from a substance if all the products in the same category are free from it. South Africa does not use descriptors nor does it allow the use of health claims (Table 2.2) (De Villiers, 1993; South Africa, 1993).

2.2.2.8 Health Claims

There is much controversy over whether legislation controlling the use of health messages in food labelling and advertising should be relaxed because of their value in consumer education, or made more restrictive because of their potential for misleading the consumer. Health claims are at present prohibited in the U.K., E.C. and Canada (Table 2.2). It has been argued that regulations that control the use of nutrition and health claims are often out of date and inconsistent (Anon, 1991b). The F.D.A. in the U.S.A. is relaxing its laws to allow justifiable health claims, whereas the E.C. appears to be taking the more restrictive path (Kirk, 1991; Mermelstein, 1993; Rosenburg, 1993a; Rosenburg, 1993b).

2.2.3 General Discussion

It is expected that the proposals for South African nutritional labelling will be legislated during 1995. It is envisaged that serving sizes will not be standardised as this would be too expensive for both the manufacturer to implement and for the legislators to enforce. The current display format is also to stay

the same. The Department of Health is to review its current and proposed regulations for food labelling, including format, as soon as the European Community has reached finality on this matter, before making any other changes (Huskisson, 1990; Herbert, personal communication, 1992; Loubser, 1992; De Villiers, 1993; Slabber, 1993). With reference to Table 2.1 and 2.2 it is clear that comparisons of nutrition labelling requirements among international guidelines are complex. This may have the effect that labelling provisions, while not specifically defined by some countries, may be permitted.

A real threat to any country that needs a growing and stable economy, is the introduction of trade barriers. It follows that the most serious trade barriers regarding import and export of foodstuff can occur when standards are narrowly defined or rigidly enforced, or when certain provisions are prohibited. Therefore, in order to lessen or prevent trade barriers, a global perspective of the various nutrition labelling positions is relevant to countries taking part in international trade as far as re-evaluation and revision of their legislation is concerned. (Crane et al., 1990; Rosenburg, 1993a).

South Africa is in the process of establishing a tourist industry to increase economic growth. This implies that South Africa will have to cater for sophisticated tourists from major industrialised countries who are used to advanced nutritional labelling on foodstuffs. On the other hand, the food laws in South Africa are regulated as if the country is fully developed, and these laws do not take into account the developing section of the population. This dichotomy will become more visible as the tourist trade increases in South Africa. It can be argued that the rights of consumers in the U.S.A., E.C. and Canada are better protected than the rights of consumers in South Africa, and it can be expected that tourists will insist on a similar assurance regarding standards of labelling.

Furthermore, it is not only tourists that will expect advanced nutritional labelling, but more informed South Africans will also demand better nutritional labelling than South Africa legislates. Affirmative Action will see many previously underprivileged people becoming more aware of their health and the effects of diet on

health. Therefore this group must also be taken into consideration when nutritional labelling laws are made mandatory.

2.3 THE FOOD MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING

The following factors influence manufacturers' ability to survive commercially:

- what the market needs are;
- the scope determined by legislation;
- room to manoeuvre, which is influenced by various consumer organisations.

The interaction of these factors will determine the role and survival of the food manufacturer in the market.

2.3.1 The Extent to which Nutritional Labelling is used as a Marketing Tool

The changing eating habits and preferences of consumers are of great importance to the food industry as it has to adapt accordingly (Bush et al., 1988). As consumers have become more aware of just what goes into their food, labelling has become a major consideration for food manufacturers. They are now starting to provide more information than is legally necessary in order to cater for those consumers who are concerned about their health, but this information is lacking in uniformity e.g. in the order of nutrients, the serving sizes, and types of nutrients (Farmakalidis, 1989; Tatham, 1989; Herbert, personal communication, 1992).

The food manufacturers who have recognised healthy eating as an opportunity to create a market niche have developed new and health-associated foods, and they have accepted nutritional labelling as an important marketing tool (Slattery, 1986; Booth, 1989; Bolel, 1993). Retailers have, to varying extents, developed policies to promote healthy eating habits using strategies such as nutritional labelling, stocking healthy foods, providing consumers with information on diet,

staff education and the provision of additive-free foods (Slattery, 1989). Subsequently major retailers are in a powerful position to monitor consumer preferences and consequently influence manufacturers' labelling strategies. It must be stressed that retailers are also profit driven and in many instances the feedback to manufactures will take cognizance of turnover and shelf-life of the product.

However, despite the progress being made in this direction, there are still those manufacturers who are not responding to consumer needs.

2.3.2.1 Problems Encountered with Nutritional Labelling by Manufacturers

According to Bush et al.(1988), Bell (1992) and Eastwood et al.(1992) there is great resistance to the detailed labelling of all processed foods from much of industry. Manufacturers encounter problems with:

- label space;
- language diversity;
- meteorology requirements;
- instruction, warnings, and recipe requirements;
- revealing their products' recipe secrets;
- the cost to analyse the contents of the product;
- the cost of restyling and producing a new container;
- differences in consumer perception including perception of actual and perceived risks;
- the difficulty of catering to specific needs of consumers, e.g. different allergies or particular dietary deficiencies.

All these elements listed are to some extent in conflict with the manufacturers' moral and ethical responsibility to the consumer. When a major retailer group in South Africa was asked why their no-name brands were not labelled in the way that comparable British and American firms were, the answer was that prospective customers would think twice about buying a product once they had read what was in it, especially the fat and sodium content. The attitude was that the omission of some information was simply good business (Bell, 1992). Not only are consumers kept in the dark about the ingredients of some

of the foods they eat, but their irrational buying behaviour is exploited, or they are deliberately mislead. Foods with so-called negative claims, such as 0% cholesterol in margarine when it is not a source of cholesterol, also adds to consumer confusion. Tartrazine contents in products must be disclosed in letters 2.0mm in height (South Africa, 1993); however, the rest of the nutritional information on such products is adjusted to the same height so as not to attract consumer attention. The nutritional information on some chocolate bars is often hidden in the fold of the wrapper, and manufacturers have been known to bring out new products with misleading information on the container even when they know that the regulations will force them to change this in the near future.

2.3.2 The Impact of Nutritional Labelling on Minorities

Booth (1989) argues that the impact of nutritional labelling on consumer behaviour has largely been over estimated by those who regard it as the major factor in the promotion of healthy eating. Manufacturers are wary of the benefits of labelling information as only a small minority of consumers are able to understand the information and use it. There is also no evidence that the information is used to make effective and sustained decisions resulting in healthier eating habits, therefore it does not merit the cost to go to the trouble of using nutritional labelling because so few people are actually concerned about it.

However, S.A. food manufacturers will be well advised to take cognizance of changing food consumption trends among this country's consumers. Hele in Loubser (1992), is of the opinion that nutritional labelling should remain as it is because S.A. consumers do not eat much processed food and, he argues, those who do are in the minority. Hanssen and Marsden (1987) and Heasman (1991) argue that high technology food production and elaborate chains of distribution have seen a dramatic rise in processed foods. This they agree is due to the demand for lower prices and greater convenience. Additionally, the microwave oven has increased the amount of processed food people eat. This trend has become more noticeable as people are also travelling more frequently and working longer hours, and as the

population is becoming increasingly affluent. The change from an ethnic diet to a more western eating pattern is also increasing the popularity of processed food amongst black cultures (Bell, 1992, Crawley-Boevey, 1993).

It therefore appears to be vital that the impact of minority group requirements in terms of food labelling needs to be emphasised. In the past, manufacturers catered for the masses as one large homogeneous group, but as a result of changing local needs and the accessibility of international food markets, a fragmentation of the mass market took place. In order for the manufacturer to satisfy the needs of smaller groups of people as part of his international market in the direct fashion, mass marketing has given way to niche marketing (Senaur, Asp and Kinsey 1991; Stanton et al., 1991). It may therefore be concluded that he ability to survive and remain competitive in the food industry will greatly depend on how manufacturers use their knowledge of the nutritional needs of, inter alia, minority groups, both locally and internationally.

2.3.3 Consumer Pressure and the Manufacturer

Many food processing companies are still largely in the hands of monopolies, powerful amalgamations and agricultural control boards. It is therefore an unfortunate fact that so many of the food manufacturing companies can still afford to ignore the specific nutritional requirements of the health conscious consumer. Consumer protest is also still in its infancy and as a result consumers are apathetic and consumer organisations are powerless. Consequently manufacturers can afford to suggest that people who want nutritional labelling should buy only those products which have it. Hele, executive director of the Grocery Manufacturers Association suggests that health conscious consumers should pressurise manufacturers so that more manufacturers will choose to label their products (Loubser, 1992).

One point to consider is that consumer pressure is not the answer to enforce adequate nutritional labelling. In the U.S.A. consumers initially played an important role in pressurising the manufacturer, but as a result of their limited successes, their strategy was

shifted to focus on the legislator. As a consequence, nutritional labelling was made mandatory. Public health was considered too important to leave to the possible whims or ploys of the manufacturer (Lakani, 1990; Bell, 1992; Herbert, 1992).

Hele outlined a basic procedure to follow in order to bring pressure to bear on food processing manufacturers. He suggested that the most easily understood format for South Africa's multilingual, multicultural population should be identified, and that the format should be made mandatory on basic nutrients only (Loubser, 1992).

2.3.4 The Responsibility of the Manufacturer to Inform the Consumer

Booth (1989), Eastwood et al.(1992) and De Villiers (1993) agree that nutritional labelling is justifiable largely in terms of consumers' right to know, and that it is the role of the food industry to give the consumer the freedom of choice which should be exercised against a background of sound nutritional education and availability of nutritional information about food products.

Often nutritional labelling practices are brought into effect by government and industry with no forethought for the system of opinions (and the right sort of labelling) that would have to be available to encourage consumers to eat a healthy diet. The confusion arising from the introduction of the E-numbers in the U.K. is such an example. Few people understood what an E-number signified and cited the presence of "lots of numbers" as a determinant to purchase specific foodstuffs (Fallows and Gosden, 1989; Huskisson, 1990). What people need to know and what may frighten them unnecessarily or confuse them, will always be one of the food industry's arguing points, but some manufacturers also exploit consumer ignorance by reinforcing negative attitudes. An example of this is the common concern about the use of additives in processed foods, which led to manufacturers marketing these products on an "additive free, preservative free" promotional campaign, reinforcing negative attitudes towards additives in foodstuffs (Fallows and Gosden, 1989).

2.3.4.1 The Complex Nature of Nutritional Labelling

Manufacturers argue that opportunities to promote health would be identified and exploited most effectively in the long run if food production and marketing were guided by a continuously updated scientific and professional consensus as to the impact of diet on health. The health sciences have yet to work out what healthy eating is before education and the nutritional aspects of food can be adequately planned. Food marketers would be seen as responsible with regard to the health of the consumer in so far as they support and encourage healthy eating choices for most of the products' users, based on scientific evidence. If the manufacturer undermined these opinions, then he would be seen as irresponsible by a substantial sector of the market (Booth; 1989).

Not only are the healthy eating criteria not adequately specified by current nutritional guidelines, but the results of existing attitude and habit surveys are also insufficient because there are serious gaps in the behavioural science base of state-of-the-art market research and nutritional research (Booth, 1989; Geiger et al., 1991). As a result, consumers on the whole have developed attitudes and eating habits that are not justified by what is understood of the ways to promote health. In some instances, nutritional guidelines, approved labelling and incentive advertising themes may have had harmful effects on people's health. An example of this is telling people "what not to do", but neglecting to tell them "what they should be doing", e.g. encouraging people to reduce their fat intake but neglecting to tell them to increase their fruit and vegetable intake (Booth, 1989; Heasman, 1991; Anon, 1993b). It thus follows that consumers' perception of quality changes over time as a result of added information, increased competition in a product category, and changing expectations. The dynamic nature of quality suggests that marketers must track perceptions over time and align product and promotional strategies with these changing views in order for the manufacturer or retailer to survive commercially. Nutritional labelling strategies based on customer value standards and perceptions will channel resources more effectively and will meet customer expectations better than those based only on company standards (Zeithaml, 1988).

2.3.4.2 The Manufacturer and Nutritional Education Through Labelling

Most manufacturers devote considerable time, energy and money to their own company images. These campaigns, based on the fact that they do provide good food, are effective, but the image of the manufacturer on the whole is appalling, as the perception exists that, for them, profit comes before quality (Bush et al., 1988). The food industry needs to educate and inform the public better on the positive advantages of developments in food technology, so that monitoring consumer response can place it in a better position to keep up with changing consumer attitudes. By generating greater knowledge and understanding of the particular ingredients, processes and so on, the food industry could lead changing attitudes through education and hence promote a change in diet (Heasman, 1991). Advertising, the information provided on packaging and visible cues associated with products, can be managed to evoke desired quality perceptions and can play a role in consumer education,thus resulting in disease prevention (Kirk, 1991; Mac-Innis, Mourmen and Jaworski, 1991; Eastwood et al., 1992).

2.4 CONSUMER PERCEPTIONS OF NUTRITIONAL LABELLING

The interaction of the following factors influences consumer attitudes towards and knowledge of nutritional labelling on food containers, and ultimately affects their choice of food:

- manufacturers' perceptions of consumer needs;
- the scope determined by legislation;
- the influence of consumer organisations.

The area of nutritional labelling is currently a controversial one with surveys indicating that consumers are in favour of nutritional information but do not necessarily use or understand it (Tzeggai, 1989; Farmakalidis, 1989; Senauer et al., 1991; Eastwood et al., 1992). The reason for this conflict is the difference in attitudes towards and knowledge of nutritional information. The views and practices of consumers are shaped by several factors which manifest in their needs, wants, interests, knowledge resources, skills and

concerns (Bush et al., 1988).

2.4.1 Consumer Attitudes

2.4.1.1 The Influence of Social Class on Attitudes towards Nutritional Labelling

A survey conducted by the Henley Forecasting Centre in Britain reported that a substantial number of the population was not in a social position to be concerned with what they ate, and a further number remained unaffected by the trend towards healthier lifestyles. The report showed that among those who did care about their diet, there was evidence to suggest that relatively few would put their ideals into practice. A fundamental belief among those respondents who showed some nutritional knowledge, was that as long as everything was eaten in moderation they would be all right. With rising affluence however, food became more closely associated with improving the quality of life, and needs such as image, nutrition, convenience and taste increased in importance over those of price/value and bulk (Heasman, 1991).

Concern with the nutritional content and safety of food is the prerogative of a well-fed society. The under-privileged are concerned with quantity rather than quality of food and consequently food is bought in bulk form. In a study done by the British Health Education Authority, it was found that there was confusion in the low income group about the nutritional value of some foods. Information given out was perceived by some to be confusing and contradictory, and as such their perceptions were often distorted. It was found that for some people at a low income level the need for a "healthy eating" booklet was irrelevant, but when their childrens' health was implicated, parents wanted to know more (Anon, 1990).

A large section of the South African population falls into the category of bulk buyers (Bush et al., 1990). Between five and nine million rural black consumers are illiterate and consequently are unable to read any nutritional information provided. According to the Sunday Tribune (1992) brand names and squiggles are recognised by this segment of the market, and are used to identify foodstuffs.

By exploring this trend, identification symbols could be developed as a guide for the nutritional value of foods purchased by illiterate consumers (Herbert, personal communication, 1992). It may therefore be argued that although South Africa does not have mandatory nutritional labelling, some type of control could be used advantageously to ensure that the illiterate masses have access to nutritional information and education through the association of healthy eating with these identification symbols.

2.4.1.2 Consumer Complaints Concerning Nutritional Information

In contrast with the rural situation, a 1988 survey by a South African national parenting magazine revealed that 88% of urbanised shoppers wanted more information on food labels. Consumers complained that:

- they could not rely on the label's information they found on food packages;
- the information did not reflect current nutrition, science and health concerns (Huskisson, 1990).

The most frequent complaint concerning nutritional information is that it is misleading, e.g. advertisements regarding breakfast cereal claims' that they have a high fibre content, but do not mention the products salt or sugar content (Senauer et al., 1991); or that cereal bars are advertised as a healthy snack when there is not much difference between the nutrient or energy content of a cereal bar and chocolate bar (Fallows and Gosden, 1989; Mitchel and Boustrani, 1992).

2.4.1.3 Consumer Use of Nutritional Labelling

Although studies have reported that a considerable number of consumers use information contained in nutritional labelling, other studies have found that most consumers do not habitually read the ingredient and nutritional labels while grocery shopping. This could be because consumers have a pre-knowlegde of the nutritional benefits of some foods from other sources of information, besides the food label. The use of label information can also occur after

purchase such as reading the information on a cereal box label while eating cereal in the morning (Senauer et al., 1991).

Nutritional labelling, even if not directly used by consumers, may nevertheless:

- encourage the production of more nutritious products;
- result in increased consumer confidence in the quality of food and in the food industry;
- satisfy consumers' right to know.

These benefits may explain why consumers indicate a strong desire for information when questioned in surveys, even if they do not regularly use the information in making purchases (Senaur et al., 1991).

2.4.1.4 Influences on Consumer Attitudes towards Consumer Labelling

Health promotion messages are often targeted at women because women are more involved in food provision and child care than men and are therefore responsible for their families' health and education. However, health promotion messages often conflict with dietary conventions and individual food preferences within the family, as the male partner's tastes are often dominant. Pressure from health promotion is therefore perceived negatively by women with families, and results in resentment towards and rejection of health messages. A further dilemma is created by the perceived lack of consistency in dietary advice (Mckie and Wood, 1991; McCorkindale, 1993).

Consumer attitudes are also influenced by "image" messages rather than being motivated by the strict health message due to the influence of cultural and social factors (Heasman, 1991). A case in point is the more affluent, sophisticated consumers' demand for "natural" and "organic" foods, whereas many black people consume an increasing amount of fat, sugar and refined cereals resulting from a change to a western dietary pattern. (Crawley-Boevey, 1993).

2.4.2 Consumer Knowledge

2.4.2.1 Nutritional Information

Black and Rayner (1992) report that people are more likely to draw on their own background nutritional knowledge rather than on the information presented on the food container. It has been argued that this knowledge is vague, as most consumers have a limited understanding of science and technology (Black and Rayner, 1992; Eastwood et al., 1992). Tatham (1989) states that the greater the age of the shopper, the less knowledge of food labelling such persons have. Black and Rayner (1992) also report that people do not use nutritional information on food labels to any degree unless they are following a special diet which makes it necessary to do so. Many consumers choose not to prioritise health considerations when they are making decisions about food (Black and Rayner, 1992) which could be as a result of the confusion they feel over health issues. Others may feel intimidated by the amount of information and the technical appearance of the presentation of nutritional information, or they may have difficulty making the kinds of calculations necessary to make use of that information. Schucker (1986), Bush et al.(1988) and Eastwood et al.(1992) found that consumers surveyed were of the opinion that nutrition terminology was overly scientific and not broadly understood. Consumers found certain terms such as: polyunsaturated fat, R.D.A., natural, fresh and 0% cholesterol confusing and therefore of not much use. Black and Rayner (1992) and Eastwood et al.(1992) reported that type size was small and difficult to read, and that different measuring systems appearing on the same label added to the confusion.

In a survey of British participants, Black and Rayner (1992) found that 50% of the participants claimed that they understood the following information on food labels: protein, carbohydrate, kilocalories and fat content, and dietary fibre in food. Saturated fat was less well understood than fat. Sodium and kilojoules were not understood.

When these participants were put to the test in the form of task groups, it was found that they were confused about the following:

- the relationship between energy and kilocalories;
- the relationship between salt and sodium;
- carbohydrates, sugar, fat and saturated fat;

Most participants were unaware of the following:

- the relationship between salt consumption and hypertension or heart disease;
- the link between dietary fibre and coronary heart disease.

According to Black and Rayner (1992) these responses suggest that people tend to work to basic maxims that they can apply when shopping or when they are preparing food, such as "cut down on animal fats", or "cut down on sugar". Even consumers who consider themselves health conscious do not rely on a deep understanding of nutrition and health relationships. Only basic maxims that allow consumers to make quick and easy decisions are translated into strategies such as "cut down on dairy products", "cut down on eggs" and "eat less red meat".

In a study carried out by Crawley-Boevey (1993) it was found that nutritional knowledge was poor for all South African ethnic groups. Knowledge of sources of fat and cholesterol was extremely low for all ethnic groups. Most respondents could not identify sources of saturated fat but their knowledge of sources of unsaturated fat was marginally better.

2.4.2.2 Labelling Formats

Consumers find it very difficult to use the current forms of nutritional labelling as a basis to make healthy food choices. This is because they have insufficient background knowledge to interpret the information given in the numeric form. For example the label may indicate that food may have a fat content of 10g per 100g of food, but this is unhelpful because they cannot relate this to their personal needs. What is important is that the person should have the background knowledge to calculate the number of kilojoules the fat content in a serving of food contributes to the total amount of energy, and how to use the information on labels to make the purchase to suit his requirements (Black and Rayner, 1992; Anon,

1991b and 1992). Black and Rayner (1992) found that judgments about single foods revealed that participants regularly made inaccurate assessments, as they did not know whether the numerically presented figures represented high or low nutrient levels in relation to medical recommendations. They were only successful in the comparison of foods where the differences were simple and obvious. Farmakalidis (1989) also reports consumer difficulty with numerically represented information. Research evaluating Canadian consumer understanding and usage of nutrition labels on ready-to-eat breakfast cereals revealed that consumers used the information provided on a per serving basis rather than a 100g (ml) basis. Research conducted for Kellogg Australia Pty Ltd in 1984 supports this study. The research dealt with consumer understanding of nutritional information provided on a 60g basis and a 30g basis. The 60g information was perceived as misleading, as the reference quantity was believed to be inflated by the manufacturer in order to overstate the nutrient content. The 30g information was perceived as being a fairly regular serving size (Farmakalidis, 1989). Farmakalidis (1989) recommends that nutritional information only be provided on a per serving basis because nutritional information presented per 100g has the following effects:

- it increases the complexity of the nutrition label;
- the information is not presented in a manner useful to consumers;
- the information can be misleading to consumers.

Although consumers seem to find serving sizes a better option than information presented per 100g(ml), Black and Rayner (1992) reported that British consumers complained that serving sizes used by the manufacturer did not correspond to the serving sizes that they used at home, and that they found 100g difficult to picture.

These findings are relevant to the South African context as nutritional information must be provided numerically per serving and per 100g (ml). Although consumers can make comparisons between products on a per 100g (ml) basis, because serving sizes are not standardised consumers find it difficult to make the conversion from 100g to the different serving amounts of the products being compared

(Herbert, personal communication, 1992).

Because problems have been experienced in the numerical form of presentation, other labelling formats have been investigated. In a review by Geiger et al. (1991) of nine scientifically conducted nutritional labelling studies (conducted from 1971 to 1991) it was reported that only two of the studies supported the traditional numerical labelling format and one study partially supported it. Three of the studies supported the use of bar graphs, one study the use of a pie chart and two studies the use of full disclosure or complete nutritional labelling. A study done by Lewis and Yetley (1992) showed that consumers did not find pie charts useful, which corresponds with the trend in the review of Geiger et al (1991). Lewis and Yetley (1992) also reported that consumers expressed concern that adjectival descriptors could be misleading, but Black's and Rayner's (1992) study showed that verbal banding, using words such as "high", "medium" and "low" to indicate nutrient levels, was the most consistently helpful format tested. Lewis and Yetley (1992) found that consumers considered bar graphs confusing or unnecessary when numeric values were provided, but Geiger et al.(1991) reported that the studies that tested graphics showed that the bar graph was significantly preferred and showed better consumer comprehension than the traditional format. Accordingly, graphic formats supplemented with verbal banding helped participants who did not regularly use nutritional information on food labels (Black and Rayner, 1992).

Black and Rayner (1992) found that the numeric listing format consumers considered most useful, consisted of two columns of numbers: one listing the amounts of food components present in a serving of food; and the second listing either the percentage of the label reference value for example R.D.A. or the quantity established as the label reference value. Consumers repeatedly stressed their interest in a simple label. The researchers concluded in their study that supplementing numeric nutritional information with words or well-designed graphic information could help consumers choose a healthier diet.

Another factor that deserves consideration is that consumers pay more attention to brand information if given more time to examine

it. The processing time can be reduced by using stimuli that can be processed immediately and holistically such as pictorial information (Mac Innis et al., 1991), which also holds relevance for South Africa's many illiterate and poorly educated consumers.

2.4.2.3 Nutrition and Health Claims

An analysis of the literature has revealed that consumer knowledge pertaining to nutrition and health claims is fragmented. On the one side there is a general awareness of the health claims regarding certain foodstuffs through advertising. On the other side the depth of nutritional knowledge to judge the nutritional impact of foodstuffs on health is lacking. This matter is further complicated by consumer attitude towards nutrition and nutritional claims, and the effects of knowledge acquisition and purchase behaviour.

Fullmer, Geiger and Parent (1991) reported that consumer attitudes towards placing diet-related disease messages on food labels were positive but that their knowledge of certain nutrients was low. Consumers were more familiar with the role of nutrients in the prevention and treatment of certain diseases or conditions, than with sources, classifications and recommended intakes. Understanding of health messages was relatively low (especially among less educated consumers), whereas consumer attitudes towards health messages on food labels were positive. Consumers with higher education levels had better understanding of diet-related disease messages and a more positive attitude toward health messages on food labels.

2.4.2.4 The Consumer and Nutritional Education

Although the literature indicates a need for nutritional education for the consumer, the health aspect is only one of the many factors that influence food purchase behaviour. Consumer interest in nutritional issues has grown, but individual consumers do not consider themselves in need of nutritional education. The belief that bad habits are practised by other people, and not themselves, is common. The factors that influence food choice are therefore important in the formulation of a nutritional labelling educational programme.

2.5 FACTORS INFLUENCING FOOD CHOICE

Consumer attitudes towards and knowledge of nutritional labelling affect food choice, but these factors go hand in hand with other influencing factors which play an integral part in food choice.

2.5.1 Consumer Knowledge-Attitude-Behaviour Relationship

It is evident that a dichotomy exists between consumers' awareness of nutrition and their choice of food (Senauer et al., 1991). Shepherd (1991) found that although knowledge of fat content of foods was better related to consumption of high fat content foods, sensory attitudes were more important in the choice of most of these foods. Heasman (1991) reported that although people ate more food at some meals and less at others, they also had little balance between light and rich foods consumed during the day or during the same meal. Skipped meals were often compensated for later in the day with rich, heavier meals.

Sims (1981) in Brush, Woolcott and Kavash (1986) reviewed studies examining the knowledge-attitude-behaviour relationship, and reported that the most prevalent relationship was the one that showed a positive correlation between knowledge and attitudes. Generally a weak positive correlation, or no correlation was found between knowledge and behaviour. Tzeggai (1989) and Fullmer et al. (1991) reported similar results: a positive correlation between nutritional knowledge and attitudes, but Tzeggai (1989) found no correlation between knowledge or attitudes and behaviour. A study by Brush et al. (1986) showed different results: all correlations were positive and significant among these variables.

Schucker (1986) carried out an in-store labelling programme which succeeded in demonstrating that under the right conditions food labelling appeared to facilitate information transfer once public interest had reached a threshold. These conditions included:

- focus on a few nutrients of particular interest to the public;

- placing information near to relevant and brand-specific foodstuffs;
- an extended programme, lasting for more than just a few weeks.

The shifts in purchase behaviour that were reliably detected were not evident until the second year of the programme. These findings indicate that it is possible to affect dietary choices by food labelling at the point of purchase.

2.5.2 Effect of Incomplete Information and Information Overload on Food Choice

De Chernatony (1991) hypothesised that more grocery packaging information should improve the quality of products and ensure healthy competition among companies. It should also facilitate value comparisons and, by creating better educated consumers, increase purchase satisfaction. He accepted, however, that this would assume unlimited information acquisition on the part of the individual. He also pointed out that studies had shown either no behavioural changes or adverse behavioural changes where the consumer was given more (i.e. an overload of) information.

According to de Chernatony (1991), consumers develop rational decisions based on limited cognitive capabilities used to acquire, store and process limited brand information. They soon approach a state of information overload and protect themselves by selecting a few simple information sources, such as the brand name, which is used most frequently. Other attributes used are cost, quality and the nutritional value of the food.

Shepherd (1991) theorises that although beliefs and conscious decisions are important in the initial formation of the behaviour pattern (i.e. choice of food), these give way to habit which maintains the behaviour. Subjects seem to react to but do not learn from experience. The effect of incomplete information and information overloading on consumer choices is therefore important for analysing consumer behaviour and firm strategy for food manufacturers (Zeithaml, 1988; Tallis and Gaeth, 1990).

2.5.3 Consumer Behaviour and Perceived Food Risks

Risks consumers perceive rather than actual risks influence their behaviour and they tend to choose products that would present the lowest amount of risk. Although health risks may have the greatest influence on their choice, other risks are also important. Buying the same brand is considered the most useful strategy to reduce perceived risks, and acquiring information about the product is the second most useful strategy (Mitchell and Boustani, 1991; Senaur, et al. 1991).

Bush et al. (1988) and Crawley-Boevey (1993) argue that the public's perception of risks is often inaccurate and irrational, and is perceived as being involuntary and largely unmanageable. It is claimed that consumers' risk/benefit judgments in contrast to their cost/benefit judgments made in the market place are frequently flawed. This can be attributed to an ineffective general education in science which has led to e.g. the popularity of "natural" or "organic" foods even though these foods will in some cases carry greater risks than their processed counterparts, and they tend to be more expensive. Researchers argue that such choices are the result of an attempt to manage insignificant risks. The factors that affect consumers' views of risk and benefit and hence their acceptance of food technology, concern the relationship between information and anxiety. This is represented by the curve shown in Figure 2.1.

The graph presented in Figure 2.1 reveals that if there is no information and the public is not aware of a particular situation, there is no anxiety. With a little information, anxiety rises rapidly and reaches a peak, but after the introduction of more information it falls more rapidly than it rose, approaching what is termed as the "level of mature anxiety". Activists, some scientists and some manufacturers have a clear interest in keeping the curve in the rising position. The media have maximum level of interest at the peak of anxiety, and rapidly lose interest as the level of anxiety declines. This lack of newsworthiness reduces the further supply of information and tends to maintain anxiety at a higher level than it might otherwise occupy. This curve serves to emphasise the role of education in taking science to the public. Nutritional labelling and education can decrease the level of anxiety and convert an

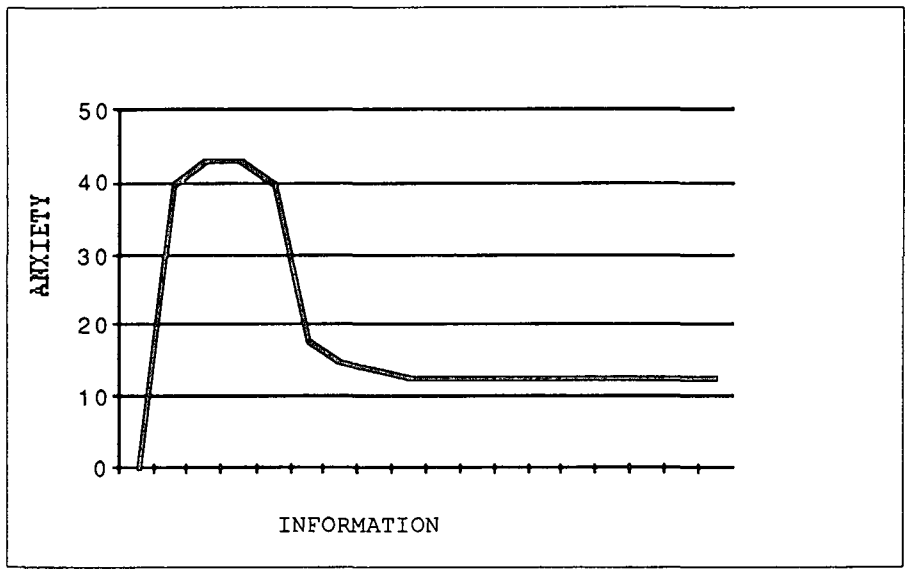

FIGURE 2.1: THE RELATIONSHIP BETWEEN INFORMATION AND ANXIETY (Bush et al., 1988)

involuntary risk into a voluntary one by providing information that permits an informed choice (Bush et al.; 1988).

The change of food consumption patterns is a continual process, subject to a multitude of factors; nutritional issues only represent one set of these influences. The increasing impact nutrition is having as a determinant of food choice is likely to accelerate as the nutrition educators message is reinforced together with product development and marketing effort (Fallows and Gosden, 1989).

2.6 NUTRITIONAL EDUCATION AND THE CONSUMER

Nutritional information is worthless without appropriate consumer education (Lakani, 1990; Somerset, 1990; Loubser, 1992). For the consumer to exercise a choice among the variety of products on offer, educational programmes are essential to ensure that consumers can understand and use nutritional information in the decision making process (Cashmore, 1992; Eastwood et al., 1992).

The quality of nutritional education is determined by the following factors:

- the perception of the manufacturer;
- resources and influence of consumer organisations;
- government policy, resources and credibility;
- consumer attitudes and knowledge;
- consumer motivation, opportunity and ability to process information.

2.6.1 First World Countries

2.6.1.1 Nutritional Education Policies

The National Advisory Committee on Nutritional Education (N.A.N.C.E.) report (1983), the Committee on Medical Aspects of Food Policy (C.O.M.A.) report (1984) and the British Medical Association (B.M.A.) report (1986) recommended changes in the diet of consumers in the U.K., which led to the implementation of the "healthy eating campaign". The introduction of local food policies, the initiation of educational programmes in schools and colleges, up-to-date public information being made available through the media, and publications and other resources are being used to reinforce interest in healthy eating (Slattery; 1986; Fine, 1990; Anon, 1991a). The success rate of this programme has been limited, for although awareness has been stimulated, consumers need to be educated about good nutrition as a whole. Although the breadth and depth of consumers' nutritional knowledge is quite considerable, the British Foundation and other health professionals still believe it can be enhanced and more easily acquired if all pupils receive adequate tuition in the subject at

school in cross-curricular teaching (Fine, 1990; Greene, 1993).

In the U.S.A. the Nutritional Information and Education Act of 1990 resulted from consumer need for and interest in nutritional information (Geiger et al., 1991; Hodgson and Bruhn, 1992). Even with the recent improvements to the food labelling requirements by the F.D.A. in the U.S.A., there is still confusion on the part of consumers, as they have little or no basic knowledge of nutrition and will never be able to select a balanced diet exclusively from a food label. Finn (1993) reports that the new label is really only a tool, and suggests that it is necessary to teach consumers to understand, interpret and apply the information. According to the U.S.A. Sugar Association (1993), the F.D.A. are to conduct a study in order to identify target audiences and to develop teaching materials for an educational programme on the revised food labels resulting from recent changes in legislation. The three areas of research are:

- Motivation - factors that motivate the consumer to read food labels;
- Educational needs - target groups and label topics;
- Skills development - identifying the most effective communications channels for helping population segments use food labels.

2.6.1.2 Nutritional Education Methods and Materials

Sutherland (1990) and Eastwood et al.(1992) agree that information alone is not sufficient to establish eating trends which are in line with today's dietary recommendations. If a change in behaviour is the desired outcome, it is necessary to encourage consumers to become actively involved with problem solving tasks which will lead to a greater understanding of dietary goals and motivation to bring about changes in eating patterns. Research has shown consistently that information perceived as self-relevant elicits voluntary attention and is processed more extensively (MacInnis et al., 1991; McNutt, 1992; Eastwood et al., 1993). Fine (1990) and Kirk (1991) also state that education on how to evaluate nutritional information and health messages should be included in a nutritional educational programme in order to make consumers aware of misinformation.

Some of the educational methods and materials used to assist staff to achieve current nutritional goals in the U.K. and the U.S. are:

- in-house training days and discussions are held which include lectures and videos to explain the possible relationship between diet and disease;
- the study of food labels;
- calculations of the staff's own nutrient intakes;
- studying recipe content;
- an in-house nutrition news letter is circulated;
- regular visits by nutritionalists are organised.

Additionally, table tents, displays, posters, leaflets and competitions are used to encourage, involve and educate the customer (Drummond, 1989; Lockie, 1991; Eastwood et al., 1992; Glanz and Erikson, 1993).

2.6.1.3 Responses to Health Education

Responses to the new trend of health awareness have been mixed. According to Drummond (1989), a household survey (1982 - 1984) reports that the U.S.A. consumer is eating healthier foods, and the country has seen a decrease in diet-related cancer (Herbert, personal communication, 1992). Nationwide Food Consumption Surveys in the U.S.A. also report that the elderly population, especially men, is responding to recommendations regarding healthier eating habits. However, Eastwood et al. (1993) report that changes in eating habits over time suggest risk avoidance especially for fat, but that little evidence of an increase in protective health practices such as an increase in fruit and vegetable consumption has been seen.

Britain and Northern Europe are beginning to see a decline in saturated fat intake, but this is far behind what has been happening in North America and Australasia (Capewell and Penn, 1986; Gregson, Tilston, Neale and Douglas 1991; Eastwood et al., 1993). According to a consumer survey done by Anon (1993c), fat intake among the U.K. population has remained stable and above the recommended levels for the last 20 years. Although consumers said that they knew what dietary changes to make and that they had implemented these changes in their diets in order to reduce fat intake, it seems that the

change was inconsequential and that consumers were compensating by increasing fat intake from other sources. This trend would explain the unchanged level of fat intake in the population overall. Eastwood et al.(1993) and Sodwa, Kendall and Jansen (1993) argue that this may be because recommendations focused too much on which foods to avoid, and too little on which foods to include in the diet.

2.6.2 South Africa

Nutritional education in South Africa is limited in comparison to first world countries. Although South African consumers are becoming increasingly aware of the effects of nutrition on health, it is clear that the consumer needs more nutritional education (Anon, 1993b; Herbert, personal communication, 1992).

Although no comprehensive study on dietary patterns has been executed in South Africa, the prevalence of overnutrition and undernutrition shows that people are either ignorant about nutrition, or that they are not applying their nutritional knowledge properly (Herbert, personal communication, 1992). This, coupled with consumer confusion over nutritional issues as well as an increasing trend of consumers using dietary supplements to compensate for inadequate diets, points to the need for nutritional education.

2.6.2.1 Sources of Nutritional Education

There are several sources that provide consumers with nutritional information. The two main sources are health professionals and industry, and the most popular medium used is the media. Nutrition knowledge is obtained verbally through talks given by those promoting vitamin supplements; or through the written media, television and radio programmes; or through food advertisements, one of the most widespread sources of food and nutrition information. These sources can be accurate, inaccurate or accurate yet misleading, and can contribute to the limited perception of health and nutrition among consumers (Bender, 1986; Booth, 1989; Huskisson, 1990; Herbert, personal communication, 1992).

Examples of nutritional education sources available to the consumer

in South Africa are the following:

- the Food Intolerance Data Bank, which is striving to correct misperceptions surrounding additives and assisting those with problems in this area;
- the Heart Foundation and the National Cancer Association, which provide the public with information concerning the relationship between diet and disease (Huskisson, 1990; Sunday Tribune, 1993);
- Shoprite Checkers distribute Consumer Sense Pamphlets to the consumer: the third pamphlet in the series is on interpreting food labels (Annexure 7.4);
- Kellogg's Nutrition Update in a South African health magazine reports on the sources and benefits of fibre, and includes serving sizes, the food pyramid and a fibre questionnaire (Kellogg, 1994);
- nutritional information is also displayed on the back of cereal boxes, e.g. Pronutro and Kelloggs (Annexure 7.4.2).

With limited sources of nutritional information South African consumers remain largely ignorant (Crawley-Boevey, 1993) and their diet remains one that is high in fat and salt and low in fibre. Many South African consumers think taste is more important than nutrition which makes the educators' task more difficult. A point to consider in nutritional educational programmes is that a change in diet is possible with the emphasis on a gradual change (McNutt, 1992; Crawley-Boevey, 1993).

2.6.2.2 Consumer Organisations' Perception of Using Nutritional Labelling as a Method to Educate the Consumer

The need for mandatory nutritional labelling to educate the consumer was stressed by consumer organisations. Steinman (Head of the Allergy Society) in Loubser (1992) stated at a S.A. Association for Food Science and Technology meeting that:

- there was little point in nutritional education without standardised nutritional labelling;
- mandatory nutritional labelling could create incentives for manufacturers to develop safer and healthier products;

- this would also present a major opportunity for health professionals to collaborate with the food industry in a connected programme of health education to reduce nutrition related diseases.

The proposed food labelling regulations were expected to be legislated in 1993 but the literature indicates that legislation was not implimented before December 1994. Herbert (personal communication, 1992) and South Africa (1993) report that although nutritional labelling will stay voluntary except in the case of claims, nutritional labelling will be more standardised. Schucker (1986) and Bush et al.(1988) agree that in order to awaken public interest right form the start, the inception of a nutritional labelling educational campaign should be initiated before labelling legislation is revised.

2.6.2.3 The Bodies Responsible for Nutritional Education

Nutritional education will not be provided by the Department of National Health, as it does not have the financial resources. Also, a government body might not have the right credibility in the eyes of all South Africans. There is probably no single body that could or should control a campaign like this, or would have the financial backing, but a campaign like this is necessary. The food industry, various consumer bodies and health professionals need to collaborate to educate the consumer (Bush et al., 1988; Tatham, 1989; Kirk, 1991).

2.6.2.4 Consumer Research for Future Educational Programmes

Learning what consumers already know, understanding their attitudes and knowledge related to diet and health before investing money and time in nutritional education, and knowing who wants to know what, can help focus efforts to provide the most important messages for each audience (Farmakadilis, 1989; McNutt, 1992). Additionally, consumer research can help health professionals develop more cost effective educational programmes. However, financial constraints could hinder this, as processing most of the data is too expensive for people in the public sector. Even the studies available to people who work in food companies and trade associations, where such

information can still be afforded, do not give the necessary picture because usually they only focus on attitudes and knowledge related to single food category/product-related business purposes (McNutt, 1992).

What is important however, is that the food industry has a responsibility to provide consumers with accurate, relevant and up-to-date compositional information so that they can make more informed food choices. The food industry should also accept at least part of the responsibility for educating consumers on how to interpret this information (Lakani, 1990; Sommerset, 1990; Eastwood et al., 1992).

Research has shown that nutritional education alone is ineffective, and that nutritional information alone is also ineffective, but that together, they achieve impressive results (Bell, 1992). An important goal of nutritional education is to aid people in applying their nutritional knowledge effectively and in modifying their diets to attain the optimal nutritional status (Rutz, 1993). After receiving nutritional education and information, it remains for consumers to decide whether or not to modify their dietary habits (Eastwood et al., 1992).

2.7 SUMMARY

- Nutritional information is particularly difficult to convey as a result of time in formatting information which will satisfy statutory requirements as well as the manufacturer and the consumer. This has not been satisfactorily resolved despite numerous efforts to come up with a simple and easily understood system.

- Current nutritional labelling proposals which will make for more standardised nutritional labelling are still being reviewed, but it appears that nutritional labelling will not be made mandatory in the near future (Herbert, personal communication, 1992; and South Africa 1993). The South African Director of Foodstuffs and F.L.A.G. are waiting for the E.C. directive on nutritional labelling to be adopted before reviewing the South African situation.

- Although some food manufacturers are providing more nutritional information than is necessary, nutritional labelling is not perceived as an effective marketing tool.

- Interest in and awareness of nutritional issues are growing, but the current level of nutritional knowledge amongst S.A. consumers is low.

- There are many factors that affect food choice, one of these being the health aspect. Consumers have a reputation for irrational purchasing behaviour. This is due to the gap between perceived and actual risks which not only increases the difficulty for the manufacturer to satisfy consumer need, but makes the consumer vulnerable to deception from the food manufacturer.

- Major industrialised countries are now starting to realise the benefits of past nutritional educational campaigns.

- In order to awaken public interest right form the start, the inception of a nutritional labelling educational campaign should be initiated before labelling legislation is revised. (Schucker, 1986; Bush et al., 1988).

- It is necessary to learn what consumers already know, and to understand their attitudes and knowledge related to diet and health before investing money and time in nutrition education. This will focus educational efforts on the most important messages for each audience (Farmakadilis, 1989; McNutt, 1992)

- The food industry, government, various consumer bodies and health professionals need to collaborate to educate the consumer in the interests of public health.

CHAPTER THREE
METHODS

3.1 OVERVIEW

The previous two chapters focussed on the origin, logistics and the importance of the study as well as on the status quo of the development, need and desire for consumer education on the interpretation of nutritional information on food containers. Possible reasons for the lack of nutritional education and the need to identify the factors that may contribute towards rectifying the situation in the interest of effective education for consumers were also discussed.

This chapter outlines the methodology used to approach the issue in question. The questionnaire design, sample selection, administration of data capturing and data collection procedures are explained. Limitations of the survey as well as the criteria for admissibility of the data are identified.

3.2 METHODOLOGY - THE DESCRIPTIVE SURVEY

This study has a product bias and an educational bias. The aim of this study was to identify the objectives needed for the formulation of an educational programme on the nutritional labelling of food containers. These were identified by means of questionnaires (Annexures 7.2 and 7.5) using the descriptive survey method (Leedy, 1989).

The importance of determining educational needs before an educational programme can be designed is stressed by Kris-Etherton and Engelland (1986); Kunkel (1986); Farmakadilis (1989); McNutt (1992) and Crawley-Boevey (1993). Kunkel (1986) and Crawley-Boevey (1993) used a questionnaire to determine nutritional attitudes, knowledge and practices to decide on the content of a nutritional educational programme.

3.3 DATA COLLECTION FOR SUBPROBLEM ONE

The first subproblem was to evaluate the effectiveness of nutritional information on food labels in terms of the manufacturers' perception of the marketing tools used by selected food processing companies in order to establish what criteria companies consider as critical for label formulation.

The data needed for testing the hypothesis of subproblem one stated in section 1.2.2.1 were obtained from the answers of the manufacturers of cold breakfast cereals using the questionnaire (Annexure 7.2).

3.3.1 Sample Selection

The total population of South African manufacturers of cold breakfast cereals whose products are sold at supermarkets targeting middle income consumers in the Durban area was used.

The total population of manufacturers of cold breakfast cereals was as follows:

QUESTIONNAIRE	MANUFACTURER	AREA
01	Bokomo	Atlantis
02	Checkers	Johannesburg
03	Golden Harvest	Boksburg
04	Harveld	Randburg
05	Heilas Farm Style	Cathart
06	Kellogg's	Springs
07	Natures source	Durban
08	Nestle'	Randburg
09	Beckets	Wadeville
10	O.K. Bazaars	Johannesburg
11	Pick and Pay	Claremont
12	Spar	Pinetown
13	Southern Cross Products	Paarden Island
14	Vital	Kuils River

3.3.2 Administration of Data Capturing

The following supermarkets which target their products at middle income consumers were approached to establish (i) the range of cold breakfast cereals sold and (ii) the manufacturers of these cereals: Pick and Pay Supermarket, Checkers, O.K. Bazaars and Spar. Manufacturers not based in South Africa were excluded from the sample.

A questionnaire was posted on 13 September 1993 to each Marketing Manager of the cold breakfast cereal companies together with a letter of introduction to explain the purpose of the questionnaire and to solicit management participation. An instruction sheet in which the Marketing Manager was guaranteed confidentiality was also included.

The postal survey method was used because of the geographical distribution of manufacturers over a wide area. Although the interview survey method was the preferred method, it was not viable because of the expense that this method would incur.

3.3.3 Questionnaire Formulation

3.3.3.1 Objectives:

Information for the questionnaire used to test hypothesis one (section 1.2.2.1) was obtained from the following sources:

- the literature review (Chapter two);
- manufacturers of cold breakfast cereals;
- Herbert (personal communication, 1992);
- Watson (personal communication, 1993).

The questionnaire (Annexure 7.2) used to collect the data was designed to attain the following objectives:

(i) Independent variables

1. to gather the following socio-demographical information regarding the manufacturers of cold breakfast cereals:

- company name;
- name of cold breakfast cereal (top selling brand for each manufacturer);
- names of supermarkets where cereal is sold;

2. to determine the use of nutritional information on the label as well as other marketing strategies employed by the various manufacturers.

(ii) Dependent variables

3. to ascertain the effectiveness of nutritional information as a marketing tool;

4. to determine the manufacturers' perceptions of consumer attitudes towards and knowledge of nutritional labelling.

3.3.3.2 Breakdown of Sections:

To achieve the objectives listed in section 3.3.3.1, a structured questionnaire (Annexure 7.2) consisting of four sections was designed.

SECTION A : Socio-demographical data - questions 1 to 3:

- company name - question 1;
- name of top selling brand of cereal (for each manufacturer) - question 2;
- names of supermarkets - question 3.

SECTION B: Marketing strategies used by manufacturers - questions 4 to 9. The results are presented in Figures: 4.1 - 4.3.

- income group - question 4;
- use of nutritional information - questions 5, 6 and 7;
- importance of nutritional information as a marketing tool - question 8;
- target markets - question 9.

SECTION C: The manufacturers' perception of consumers' attitudes towards and knowledge of nutritional information on food labels - questions 10 to 21. The results are presented in Table 4.1.

SECTION D: The manufacturers' perception of nutritional information as a marketing tool - questions 22 to 43. The results are presented in Table 4.2.

3.3.3.3 Presentation of Data

Questions 1 to 9 of the questionnaire dealt with the socio-demographic data which are presented under sample realisation (Annexure 7.10) and in Figures 4.1 to 4.3 (section 4.2). Responses to questions 10 to 21 of the questionnaire (Annexure 7.2) gave and indication of the manufacturers' perception of consumer attitudes towards and knowledge of nutritional information on food labels. The results were recorded in Tables 4.1 (section 4.2). Questions 22 to 43 of the questionnaire determined the manufacturers' perception of nutritional information on food containers. The data is presented in Tables 4.2 (section 4.2).

3.3.3.4 Questionnaire Structure and Interpretation

The manufacturers' questionnaire was designed using the following methods where applicable: (a discussion of each method and how it was used to process the responses was given)

(i) Categorical data

Categorical type questions were used to elicit company strategical data from the manufacturer. The answers to the questions were coded and put into various categories, for example:

3.	Income group: Low income:	0 - 9 000.....1		%
	Middle income:	10 000 - 49 999.....2		%
	High income:	50 000 - and above...3		%
			3	

(ii) Rank order grid

Because question 8 was concerned with the measurement of multiple factors, the rank order grid format was a useful method of interpretation as suggested by Leedy (1985). The rank order grid was used in the manufacturers' questionnaire (Annexure 7.2) to measure the importance of the following marketing tools: brand name; brand image; price; quality; packaging; nutritional information; nutritional claims; advertising. The rank order grid was interpreted by giving the answer in each category a value from one to five (five symbolising very high and one symbolising very low).

(iii) Lickert Scale

A four-point Lickert Scale using the following responses:

- definitely agree;
- agree;
- disagree;
- definitely disagree

was used to measure the perceptions (Leedy, 1985; Fullmer et al., 1991; Roberts, personal communication, 1992; Median and Edris, 1993) of the manufacturer towards the use of nutritional information on food labels. As a rule the Lickert Scale has five options to choose from. The response, unsure, was not included in the respondents' range of choices. It was felt that the respondent should have some form of opinion as to the amount of nutritional information and its practicality that he would like on the food container. This decision did take the easy option of neutrality away from the respondent as the four point Lickert scale was interpreted by using a scale beginning at point 1 and ending at point 30:

- point 1 on the scale indicated definitely disagree;
- point 10 indicated inclined to disagree;
- point 20 indicated inclined to agree;
- point 30 indicated definitely agree.

Point 15 on the scale was therefore the mid point of the scale and represented neutrality, but this option was not available in the

questionnaire.

3.3.3.5 Coding of Manufacturers' Questionnaire

Questions 1, 3 and 8 of the manufacturers' questionnaire (Annexure 7.2) were allocated codes in an alphabetic manner. For question 1 all the names of the cold breakfast cereal companies were listed in alphabetic order. The names of middle supermarkets catering to middle income consumers were also listed in alphabetic order to assign codes for question 3.

COMPANY NAME

code

A	Bokomo *
B	Checkers Ltd
C	Royal Beech-nut (Pty) Ltd * (Golden Harvest)
D	Healthy Performance Products International * (Harveld)
E	Heilas Farm Style
F	Kellogg Company of South Africa (Pty) Ltd *
G	Natures Source
H	Nestle' (S.A.) (Pty) Ltd
I	Becketts * (Nutri Products: Pronutro and Captain Crunch)
J	O.K. Bazaars Ltd *
K	Pick and Pay Ltd
L	Spar S.A. (Pty) Ltd *
M	Southern Cross Products
N	Vital

* eight companies responded to the questionnaire but one company did not state its name

NAME OF SUPERMARKET

code

A	Checkers Ltd
B	O.K. Bazaars Ltd
C	Pick and Pay Ltd
D	Spar S.A. (Pty) Ltd

IMPORTANCE OF NUTRITIONAL INFORMATION ON FOOD LABELLING

The grid in question 8 used to measure the importance of nutritional information had alphabetic codes (A to H) assigned to each category and numerical codes for each choice within the category:

- 1 = very high;
- 2 = high;
- 3 = neutral;
- 4 = low;
- 5 = very low.

code

A	(values: 1 to 5)	Brand name
B	(values: 1 to 5)	Brand image
C	(values: 1 to 5)	Price
D	(values: 1 to 5	Quality
E	(values: 1 to 5)	Packaging
F	(values: 1 to 5)	Nutritional information
G	(values: 1 to 5)	Nutritional Claims
H	(values: 1 to 5)	Advertising

3.3.4 Sample Realisation

Questionnaires were posted to the total population of 14 S.A. manufacturers of cold breakfast cereals, of which eight manufacturers responded (Annexure 7.10). This constituted a 57% response rate which is considered reasonable especially for self-administered questionnaires followed by mail return (Stoker, 1989; Barnard, personal communication, 1993; Median and Edris, 1993; Reich, personal communication, 1993).

3.3.5 The Criteria for the Admissibility of the Data

Only the responses of South African manufacturers of cold breakfast cereals whose products are sold at supermarkets targeting middle income consumers in the Durban area were used to test hypothesis one. This was determined by using screening questions (questions 1,3 and 4, Annexure 7.2). Question 2 of the questionnaire asked each manufacturer to specifically select the company's most popular selling brand of cold breakfast cereal on which to base the answers.

The strategical questions (questions 4 to 9) of the questionnaire demanded that they could only be answered by the manufacturer when referring to this product as the basis for these answers. Only the responses of those manufactures who answered question 1, 2, 3 and 4 correctly were accepted. Of the eight manufacturers who returned their questionnaires (57%), all the questionnaires was admissible.

3.3.6 The Interpretation of the Data

The data were treated using the Stat Graphics Plus Version 6 SGPLUS. Manugistics, Inc. statistical software programme. Analysis of the responses was made after the total group selecting each response to each item was tallied before conversion to a percentage value was made (Figures 4.1 to 4.3); the Arithmetic Mean, the Standard Deviation and the Mode were calculated (Tables 4.1 and 4.2) and these values were compared; and the McNemar X^2 test was used to test for significance (Figure 4.4; and Tables 4.1 and 4.2).

Modal score was used as the main tool for interpretation (Tables 4.1 and 4.2) as it was the best prediction of what was most likely to be right when using nominal data. The McNemar X^2 test is recognised as the best way to test for a relationship between the sample means of categorical or discreet variables (Roberts, personal communication, 1992; Reich, personal communication, 1993; Stoker, 1989).

No effort was made to determine the level of significance of the difference in responses between the manufacturers of cold breakfast cereal companies as the total population was surveyed.

3.4 DATA COLLECTION FOR SUBPROBLEM TWO

The second subproblem was to evaluate nutritional information on food labels in terms of consumer perception in order to establish how they view the effectiveness of labelling as an agent for providing nutritional information.

The data needed for testing the hypothesis of subproblem two as stated in section 1.2.2.2 were obtained from the answers to the questionnaires completed by the consumers (Annexure 7.5).

3.4.1 Sample Selection

A proportional non self-weighting sample was used. The sample consisted of 400 white married women between the ages of 18 and 55, who had attained at least a standard ten level of education, and lived in middle income areas situated within the Durban Magisterial District.

The multi-stage cluster method of sampling was used (Stoker, 1989) to derive a representative sample of consumers because of the homogeneous nature of the population included in the survey. The large size of the population of consumers in South Africa and the time and financial constraints were also reasons for choosing the multi-stage cluster sampling method.

White middle income suburbs in the Durban Magisterial District were chosen as the homogeneous strata for the study. These areas were listed alphabetically in accordance with the Central Statistical Service's 1991 Population Census (Soyer, personal communication, 1993).

Table 3.1 summarises the strata composition.

Twenty middle income suburbs or strata were chosen at random from a total of 39 strata using the Stat Graphic statistical software computer programme (Annexure 7.6). The number twenty was chosen to decrease the non-response rate. Ten interviewers interviewed twenty respondents i.e. ten respondents in two areas to make up the total number of respondents of 400. A wider area was therefore covered to decrease the non-response rate in order to ensure effective representation of the population.

In the second stage of the sampling selection, each suburb was divided into smaller areas or clusters using the Central Statistical Service area listing for each suburb (Barnard, personalcommunica-

Table 3.1: WHITE MIDDLE INCOME AREAS IN THE DURBAN MAGISTERIAL DISTRICT IN ALPHABETICAL ORDER AND RANGE OF ALLOCATED NUMBERS FOR SAMPLING PURPOSES

Area	Average salary scale per annum white females R10 000 - R49 999	Cum. Size of White Females	Range of Allocated Numbers
Amanzimtoti *	2442	2442	00001 - 02442
Athlone	385	2827	02443 - 02827
Brighton	753	3580	02828 - 03580
Broadway *	1253	4833	03581 - 04833
Bulwer *	2972	7805	04834 - 07805
CBD *	5575	13380	07806 - 13380
Essenwood *	2477	15857	13381 - 15857
Fynnlands *	716	16573	15858 - 16573
Glen Hills	377	16950	16574 - 16950
Glenashley	481	17431	16951 - 17431
Glenwood	895	18326	17432 - 18326
Grosvenor *	682	19008	18327 - 19008
Hillary	296	19304	19009 - 19304
Kingsburgh *	1758	21062	19305 - 21062
Memorial Park	109	21171	21063 - 21171
Montclair *	1552	22723	21172 - 22723
Morningside *	1977	24700	22724 - 24700
Mt. Vernon *	618	25318	24701 - 25318
Musgrave *	2457	27775	25319 - 27775
Ocean View *	882	28657	27775 - 28657
Old Fort	103	28760	28658 - 28760
Parkhill *	662	29422	28761 - 29422
Part Bellair	41	29463	29423 - 29463
Bellair	310	29773	29464 - 29773
Prospect Hall	331	30104	29774 - 30104
Queensburg	3347	33451	30105 - 33451
Sea View	586	34037	33452 - 34037
Sherwood *	442	34479	34038 - 34479
Umbilo *	1916	36395	34480 - 36395
Umgeni Park *	478	36873	36396 - 36873
Van Riebeek Park	19	36892	36874 - 36892
Virginia	236	37128	36893 - 37128
Warwick	34	37162	37129 - 37162
Watervall	51	37213	37163 - 37213
Wentworth	551	37764	37214 - 37764
Westridge *	768	38532	37765 - 38532
Windermere *	1610	40142	38533 - 40142
Woodlands	844	40986	40143 - 40986
Yellow Wood Park *	703	41689	40987 - 41689
TOTAL SA		784189	

RANGE OF ALLOCATED NUMBERS: 400

* The suburbs marked with an asterisk were drawn using the Stat Graphic statistical software programme.

tion, 1993). The areas within each suburb were listed numerically in ascending order and one area was chosen at random from each suburb using the Stat Graphic computer package (Barnard, personal communication, 1993; Stoker, 1989).

Twenty homes were systematically selected within each cluster to bring the total sample number to 400 which was representative of the population.

The area chosen at Musgrave and Sherwood had to be reselected as respondents were found to be of an upper income level and therefore did not meet all the necessary criteria.

The multi-stage cluster method of sampling was preferred to other popular types of sampling such as interviewing people at supermarkets (Fullmer et al., 1991), as, in the latter instance, the response rate and the quality of the answers to the questionnaire could be affected due to people not having enough time to be interviewed while doing their shopping. The method used proved to be of special significance as far as the knowledge component of the questionnaire was concerned, as the consumer was required to use the information on the labels of the cereal boxes in order to answer the questions.

3.4.2 Administration of the Data Capturing

Ten interviewers from the H.S.R.C. were selected to carry out personal interviews in each area of the selected suburb. All interviewers participated in the pre-testing as well as in the final survey. Training took place to standardise the methodology of interviewing as well as reporting the responses of the consumer.

This training included:

- an instruction manual which included an explanation of the general purpose of the survey;
- the criteria for the selection of respondents;
- instructions regarding the completion of the questionnaire and conducting the interview;
- the relevant codes for the open ended questions;

- an Afrikaans translation of the questionnaire;
- the selected boxes of cereal to be referred to during the interview;
- instructions to take a calculator to the interview.

The cereals differed in the amount of nutritional information on the label and the nutrient content. The four selected cereals were: Kellogg's All Bran Flakes, Kellogg's Cocoa Pops, Pronutro and Ideal Mix Muesli (Annexure 7.8 and 7.9).

The interviewers did a field survey of their specific area using the particular map (Annexure 7.6) allocated to them. They counted the number of homes within the area. The number of homes was then divided by 20 to obtain the necessary interval used to systematically select homes for the interviews. The starting point was chosen by the interviewer at random. In a case of non response the interviewer was to carry out the following procedure: First left then first right, second left then second right and so on until a respondent was found.

The interviewer explained the general purpose of the survey to the respondent, informed her that the interview would last approximately 30 minutes, and guaranteed the respondent confidentiality. The interviews were conducted from 13 July 1993 to 9 August 1993.

The personal interview method was chosen for the following reasons:

- to decrease the non-response rate;
- to ensure that the responses in a given time period would be comparable because consumers are continuously exposed to information through the media;
- to ensure that the respondents answered the knowledge questions in the correct manner, by observing the nutritional information on the cereal boxes.

3.4.3 Questionnaire Formulation

3.4.3.1 Objectives:

The questionnaire (Annexure 7.5) used to collect the data to test

hypothesis two (section 1.2.2.2) was constructed using information from the following sources:

- The literature review (Chapter two);
- Herbert (personal communication, 1992);
- Crawley-Boevey (personal communication, 1993);
- Black and Rayner (1992).

The questionnaire (Annexure 7.5) was designed to attain the following objectives:

(i) Independent variables

1. to obtain the following Socio-demographical information about the respondents:

   - home language;
   - age;
   - average household income;
   - resident suburb in Durban area;
   - level of education;
   - number of people in the household who eat cold breakfast cereal;
   - type of diets followed;
   - responsibility for purchase of household groceries.

(ii) Dependent variables

2. to determine consumer attitudes towards nutritional information on food containers;

3. to determine consumer knowledge of nutritional information on food containers.

3.4.3.2 Breakdown of Sections:

A structured questionnaire (Annexure 7.5) consisted of the following sections:

SECTION A : Socio-demographical data - questions 1 to 10.
The results for these questions are presented in Figures 4.4 to 4.10.

- home language - question 1;
- age - question 2;
- average household income per annum - question 3;
- residential suburb in Durban - question 4;
- level of education - question 5;
- number of people who eat cold breakfast cereal - question 6;
- types of diets followed - questions 7 and 8;
- responsibility for purchase of household groceries - questions 9 and 10.

SECTION B: Attitudinal questions - questions 11 to 44.
The results are presented in Tables 4.3 and 4.4.

SECTION C: Questions on consumer knowledge - questions 45 to 66. The results are presented in Table 4.5.

3.4.3.3 Presentation of the Data

Questions 1 to 10 of the questionnaire (Annexure 7.5) dealt with the socio-demographic data which are presented under sample realisation (section 4.3; Annexure 7.11). Responses to questions 11 to 44 indicated the current attitudes towards nutritional information on food containers (Tables 4.3 and 4.4, section 4.3). Questions 45 to 54 were used to determine the general nutritional knowledge of consumers (Table 4.5, section 4.3). Responses to questions 55 to 66 determined the consumers' ability to use nutritional information on food containers (Table 4.5, section 4.3). Figure 4.11 (section 4.3) identified the correlation between consumer attitudes towards and knowledge of nutritional labelling.

3.4.3.4 Questionnaire Structure and Interpretation

The questionnaire administered to consumers was designed using, where applicable, the methods as indicated in this section. A discussion of each method and how it was used to process the responses is given. The consumer questionnaire pilot test is also reviewed:

(i) Categorical data

Categorical type questions were used to elicit socio-demographical data from the manufacturer and the consumer. The answers to the questions were coded and put into various categories, for example:

1.	Home language:	English.....1	%
		Afrikaans.....2	%
			1

(ii) Lickert Scale

To determine consumer attitudes towards nutritional information on food labels (Leedy, 1985; Fullmer et al., 1991; Robert, personal communication, 1992; Median and Edris, 1993), a four-point Lickert Scale was used providing a choice among the following responses in questions 11 - 44:

- definitely agree;
- agree;
- disagree;
- definitely disagree.

As a rule the Lickert Scale provides five options to choose from. The response *unsure* was not included in the range of choices as it was argued that the respondent should express some opinion regarding the amount of nutritional information and its practicality that she would like to see on the food container. This decision did take the easy option of neutrality away from the respondent, but it was also established that 1.25% of the sample who gave non-applicable responses could have experienced difficulty in understanding what the question was asking.

The four-point Lickert scale was interpreted using a scale beginning at point 1 and ending at point 30:

- point 1 on the scale indicated definitely disagree;
- point 10 indicated inclined to disagree;
- point 20 indicated inclined to agree;

- point 30 indicated definitely agree.

Point 15 on the scale was therefore the mid point of the scale and represented neutrality, but this option was not available in the questionnaire.

(iii) True/false format

To measure nutritional knowledge, the use of the true/false format for dichotomous type of questions was suggested by Kris-Etherton and Engelland (1986); Crawley-Boevey (1993) and Reich (personal communication, 1993). The true/false format is useful because of the layman's familiarity with it. To prevent guessing, the extra option of *unsure* was given in those instances where it was likely that some respondents would not know the answer.

(iv) Nutritional knowledge questions

The nutritional knowledge questions (questions 45 to 66) in the consumer questionnaire (Annexure 7.5) were structured in such a way that the respondents had to choose the cereal box on which the correct nutritional information was displayed on the food label, and then give the reason for this choice in the following question. The unsure option was offered in these questions to prevent the respondents from guessing.

Questions 65 and 66 of the consumer questionnaire (Annexure 7.5) were information type questions where a calculation was required to determine whether consumers were able to perform basic nutritional conversions, and for this reason they were not given the option of unsure.

(v) Pilot test

The questionnaire was pre-tested once. In the pre-test it was administered to twenty randomly selected consumers to establish:

- whether or not the subject matter was of interest to the prospective respondents;
- which questions needed to be re-worded;

- whether the open-ended questions could be coded;
- the appropriate statistical methods for processing the data.

The pre-test indicated that nutritional labelling was of interest to the respondents. Some of the questions in the questionnaire needed to be reworded so that they were clear and easily understood by a lay person (Wolmerans and Eksteen, 1987).

3.4.3.5 Coding the questionnaire

In order to code question 4, each suburb was given a code for screening purposes (for sampling techniques see section 3.4.1). The following codes were used:

NAME OF SUBURB:

Code		Response Rate %
A	Broadway	5,2
B	Ocean View	5,2
C	Sherwood	4,9
D	Essenwood	4,6
E	Windermere	5,2
F	Morningside	5,2
G	CBD	4,9
H	Fynnlands	5,2
I	Umbilo	4,9
J	Mt.Vernon	5,2
K	Yellow Wood Park	5,2
L	Grosvenor	5,2
M	Montclair	4,9
N	Musgrave	5,2
O	Bulwer	5,2
P	Umgeni	5,2
Q	Amanzimtoti	4,9
R	Parkhill	4,1
S	Westridge	4,9
T	Kingsburgh	5,2

A random sample of twenty completed questionnaires was used in order to code the open-ended questions, which were:

- Q 54 - definition of R.D.A.;
- Q 57 - reason for choice of cereal for heart disease;
- Q 59 - reason for choice of cereal for high energy intake;

- Q 61 - reason for choice of cereal for high blood pressure;
- Q 63 - reason for choice of cereal for iron-deficiency anaemia;
- Q 65 - answer for fibre calculation;
- Q 66 - answer for amount of carbohydrate present.

Every correct response was listed and assigned the code 1. Incorrect responses were given the code 2 and unsure responses were given the code 3. Questions 65 and 66 did not have the unsure option.

DEFINITION FOR R.D.A:

Code

1 Recommended level of nutrient intake for one day
2 Anything else
3 Unsure

REASON FOR CHOICE OF CEREAL FOR HEART DISEASE:

Code

1 High in fibre and low in fat
2 Anything else
3 Unsure

REASON FOR CHOICE OF CEREAL FOR HIGH ENERGY INTAKE

Code

1 Highest kilojoule intake
High in kilojoules
Highest energy content
High in/rich source of energy
1140 kj
2 Anything else
3 Unsure

REASON FOR CHOICE OF CEREAL FOR HIGH BLOOD PRESSURE:

Code

1 No salt
2 Anything else
3 Unsure

REASON FOR CHOICE OF CEREAL FOR IRON-DEFICIENCY ANAEMIA:

Code

1 Highest iron content/high in iron
2 Anything else
3 Unsure

ANSWER TO FIBRE CALCULATION:

Code

1 2,04g
2 Anything else
3 Unsure

ANSWER TO AMOUNT OF CARBOHYDRATE PRESENT:

Code

1 28.2
2 Anything else

3.4.4 Sample Realisation

Of the sample drawn (400 subjects) a non-response rate of 12 brought the sample size to 389 (section 4.3.1, Annexure 7.11). The reasons for the non-responses were either that some respondents refused to complete the questionnaire, or that the socio-demographic portion of the questionnaire was not complete and therefore had to be eliminated. The 389 completed usable questionnaires represented approximately 97% of the total sample. This high response rate possibly occurred as a result of the field survey techniques used by the interviewers to eliminate non-response (sections 3.4.1 and 3.4.2).

3.4.5 The Criteria for the Admissibility of the Data

Only the responses of white married women between the ages of 18 and 55, who had attained at least a standard ten level of education, and lived in selected middle income areas in the Durban magisterial district were used to test hypothesis two.

3.4.6 Interpretation of the Data

The data were processed using the Stat Graphics statistical software programme. Analysis of the responses was made after the total group selecting each response to each item was tallied before calculating percentages, Pearsons Moment Correlation (r) and McNemar Symmetry X^2 (Figures 4.4 to 4.10); the Arithmetic Mean, the Standard Deviation, the Mode, McNemar Symmetry X^2 test and Pearsons Moment Correlation (r) (Tables 4.3; 4.4 and 4.5); and Multiple Correlation (R) test (Figure 4.11, section 4.3, Annexure 7.11).

Modal score was used as the main tool for interpretation in Table 4.3 as it would ensure the best prediction of what was most likely to be right when using nominal data.

When using Pearsons Moment Correlation, the following mathematical property applies: $-1 < r \varnothing , r < +1$. The following scale is illustrative of the strength of the correlations presented in Chapter four:

1	-	Perfect positive correlation
0.80 - 0.99	-	Very high positive correlation
0.60 - 0.79	-	High positive correlation
0.40 - 0.59	-	Moderate positive correlation
0.20 - 0.39	-	Low positive correlation
0.01 - 0.19	-	No correlation

The same applies to 0 to -1, but in this case correlations are negative. For the purpose of this study, correlations with a value of 0.4 to 1 were used with a significance level less than 0.01. These figures represent correlations at a significant level even if they are at the lower end of the scale. Correlations lower than 0.4 were not reported except where relevant.

3.5 DATA COLLECTION FOR SUBPROBLEM THREE

To address the third subproblem it was necessary to integrate the perceptions of food processing companies and those of consumers about nutritional labelling in order to identify the necessary determinants

needed for the formulation of an educational programme on the objectives of labelling food containers. The questionnaires administered to manufacturers (Annexure 7.2) and consumers (Annexure 7.5) presented in Tables 4.1 (section 4.2) and 4.3 (section 4.3) in Chapter four were used to gather the data needed to test the hypothesis of subproblem three as stated in section 1.2.2.3. Because the information was compared in order to establish the perceptions of the two groups on critical issues, the evaluation was done on a question-to question-basis. Information applicable to the formulation of a nutritional educational programme was selected.

An integration of the results obtained to address subproblems one and two was done in order to determine areas of nutrition to be covered by a nutritional educational programme, and to identify the target groups at which to aim such a programme. These results are presented in Chapter five, Table 5.1 (section 5.2.2)

3.5.1 Interpretation of the Data

The data were processed using the Stat Graphics statistical software programme. Only the information which was applicable to the two groups (i.e. manufacturers and consumers) in a direct or indirect manner, was compared. The data reported in Tables 4.1 and 4.3 and relating to subproblem one and two respectively, were compared using the Arithmetic mean, the Standard Deviation, and the Mode. Modal score was used as the main tool for interpretation of the data in Tables 4.1 and 4.3. By comparison the strengths and weaknesses of an educational programme became visible and these factors were used for the identification of determinants to be included in an educational programme. The information was compared with the findings and recommendations presented in the literature review.

3.6 LIMITATIONS

The limitations of the methods described in Chapter three are listed:

1. The descriptive survey method is susceptible to distortion due to bias in the research design (Leedy, 1985). Consequently attention was given to safeguard the data from the influence of bias inherent in this method such as:

    - phrasing of questions in such a manner as to force the consumer to look at each question from two angles;
    - taking cognizance of the fact that consumer responses could be influenced by social dynamics between the consumer and the interviewer and that the content of the questionnaire could affect their answers to the questions asked in the interview.

2. Although the postal survey method is well known for its non-response rate, it is a far less expensive method than personal interviewing especially when the respondents are widely distributed as are the cold breakfast cereal manufacturers of South Africa. The manufacturers' questionnaire was therefore shortened to ensure a good response rate. This resulted in only selected attitudinal questions being present in the manufacturers' questionnaire, which were later integrated with the corresponding consumer attitudinal questions for the interpretation of the results addressing subproblem three.

3. The mediation among the manufacturer, the consumer, consumer bodies and the government.

4. A consumer population consisting of white married women between the ages of 18 and 55 who had attained at least a standard ten level of education was considered the best source for obtaining the data needed. As white consumers are a minority group in South Africa, the need to involve the larger S.A. population in studies on information and education on nutritional labelling on food containers is recognised (Huskisson, 1990; Crawley-Boevey, 1993). However, according to Shapiro (personal communication, 1993), white South Africans

are primarily the consumers of cold breakfast cereals. It was assumed that the non-representation of males would not bias the results of this investigation seriously, as women are presently more involved than men in the purchasing of food for their households (Mckie and Wood, 1991; Mckorkindale, 1993; Median and Edris, 1993). The standard ten level of education was selected as a criterion because of the complexity of the presentation of nutritional information on food labels. Respondents under the age of 18 were not selected as the responsibility among this group for food purchasing would be negligible.

5. It has been established that high levels of education and income tend to result in more positive attitudes towards nutritional labelling and, in some cases, in more nutritional knowledge (Fullmer et al., 1991; Heasman, 1991). It is for these reasons that the study focused on middle income white female consumers as a target market.

All information was treated with the strictest confidence and will only be made available, on request, to the cold breakfast cereal companies concerned.

3.7 SUMMARY OF CHAPTER 3

- This chapter outlined the procedures followed in obtaining the data through the descriptive survey technique.

- The methodology used to obtain the data relating to each subproblem was discussed. The process included an examination of the sample selection, administration of data capturing, questionnaire formulation, determining criteria for the admissibility of the data, and the interpretation of the data.

- The limitations of the survey and its susceptibility to bias were discussed.

The results of the data processing are reported in Chapter four.

CHAPTER FOUR

DATA ANALYSES, RESULTS AND FINDINGS

4.1 OVERVIEW

In the previous chapter, the methods of data collection were discussed. These included sampling methods, questionnaire design and administration, sample realisation, criteria for the admissibility of the data and the analyses of the data. The limitations of the descriptive survey method were also discussed.

In this chapter the results of the processed data are tabulated, interpreted and evaluated. Only relevant results that emerged for each subproblem and its hypothesis are dealt with.

The following results are reported:

- the extent to which nutritional information was used by manufacturers on food labels;
- perceptions about the importance of nutritional information as a marketing tool;
- manufacturers' perceptions of consumer attitudes and knowledge of nutritional labelling;
- manufacturers' perceptions of nutritional labelling;
- consumer attitudes related to nutritional labelling;
- general nutritional knowledge of the consumer.

For the purpose of this study exact Probability (P) values have been given; however P = 0,0000 does not mean that P is equal to zero, but that the significance level is very close to zero.

The responses to the questionnaires and the tabulations of the relevant McNemar X^2 test results for significance between the variables are recorded in Annexures 7.10 (manufacturer) and 7.11 (consumer).

4.2 MANUFACTURERS' PERCEPTION OF NUTRITIONAL LABELLING ON FOOD CONTAINERS.

It was necessary to determine the general perception of the food industry towards nutritional labelling as part of a needs assessment required for the identification of objectives for an educational programme concerning nutritional labelling of food containers. The manufacturers' questionnaire (Annexure 7.2) was used to gather information on the following aspects which are reported on in this section:

- the extent to which nutritional information was used by manufacturers on food labels;
- importance of nutritional information as a marketing tool;
- manufacturers' perceptions of consumer attitudes and knowledge of nutritional labelling;
- manufacturers' perceptions of nutritional labelling.

4.2.1 The Extent of the Use of Nutritional Labelling on Food Containers.

The extent to which nutritional information was used on food labels was measured by questions 5 to 7. It was important to determine each manufacturer's perceptions of the importance of nutritional labelling on food products (section 3.3.3; Figure 4.1; Annexure 7.10).

Figure 4.1 gives a breakdown of the amount of nutritional information used by manufacturers of cold breakfast cereals with regard to their best selling product; and states whether the nutritional information used by manufacturers of cold breakfast cereals was mandatory because a statement or claim was made concerning the product, or whether it was voluntary.

Figure 4.1 indicates that 75% of food manufacturers of cold breakfast cereals used nutritional information on the label of their top selling brand of cereal. Half of the food manufacturers used nutritional labelling because a nutrient claim or statement was made. The other 50% used nutritional labelling voluntarily. These results indicated that nutritional information with regard to cold breakfast

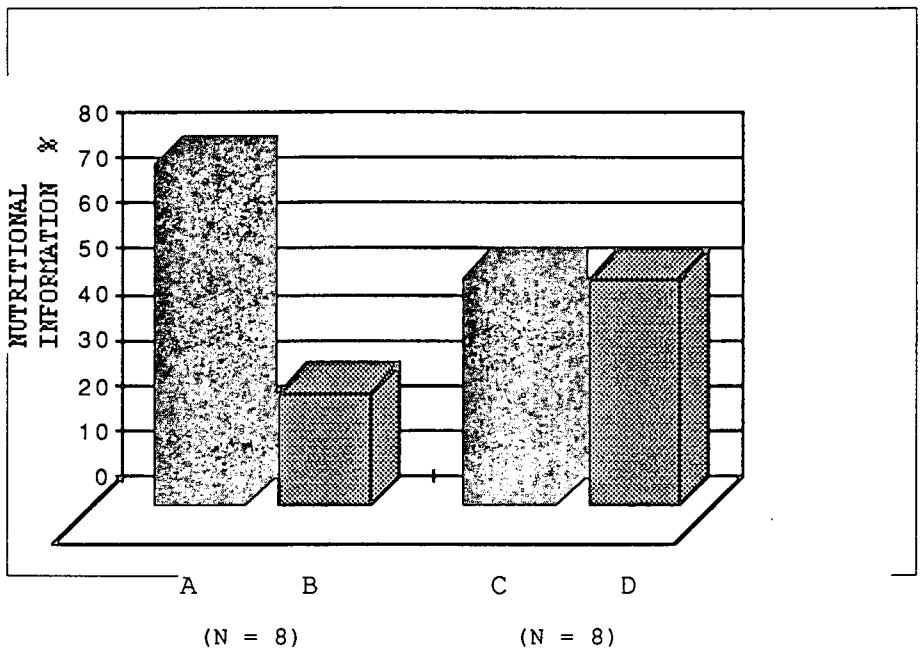

FIGURE 4.1: AMOUNT OF NUTRITIONAL INFORMATION USED ON FOOD LABELS BY COLD BREAKFAST CEREAL MANUFACTURERS IN SOUTH AFRICA (N = 8)

KEY: Nutritional information used on food labelling

A	Yes	C	Mandatorily
B	No	D	Voluntarily

cereals was considered a useful marketing tool. These results corresponded with reports by Farmakalidis (1989) and by Tatham (1989)

who stated that food manufacturers in Australia and in South Africa were starting to provide more nutritional information than was legally required.

4.2.2 Marketing Strategies Employed by Food Manufacturers

Questions 8 and 9 explored the various marketing strategies used by the cold breakfast cereal manufacturers by looking at the marketing tools used and target markets aimed at.

4.2.2.1 Marketing Elements

Question 8 was used to identify the marketing strategies of the various manufacturers in order to give an indication of the manufacturers' perceptions of the importance of nutritional labelling on food products in relation to their top selling brand. The manufactures were required to rate the following marketing elements on a scale of 1 to 5: brand name; brand image; price; quality; packaging; nutritional information; nutrition claims; and advertising (section 3.3.3; Figure 4.2, Annexure 7.10). Only the "very high" and "high" values are illustrated in Figure 4.2. The totals for the responses are recorded in Table 7.2, Annexure 7.10.

The results were scrutinised and the "very high" category was viewed in isolation. The results displayed in Figure 4.2 indicated that 75% of manufacturers selected price as the most important marketing tool for their top selling brand of cereal. This was in contrast with the low rating given to nutritional information, brand name, brand image and packaging received. However, for the purposes of this study the second choice was added to the first choice (very high and high). This changed the overall picture of manufacturers' perceptions with nutritional information increasing in importance to the same level as price. This indicated that nutritional information - although not initially considered as important as price, advertising, brand image, quality and brand name - was nevertheless one of the factors considered in the manufacturers' strategical planning for marketing top selling brands of cold breakfast cereals. A significant difference was found between the responses of manufacturers of cold

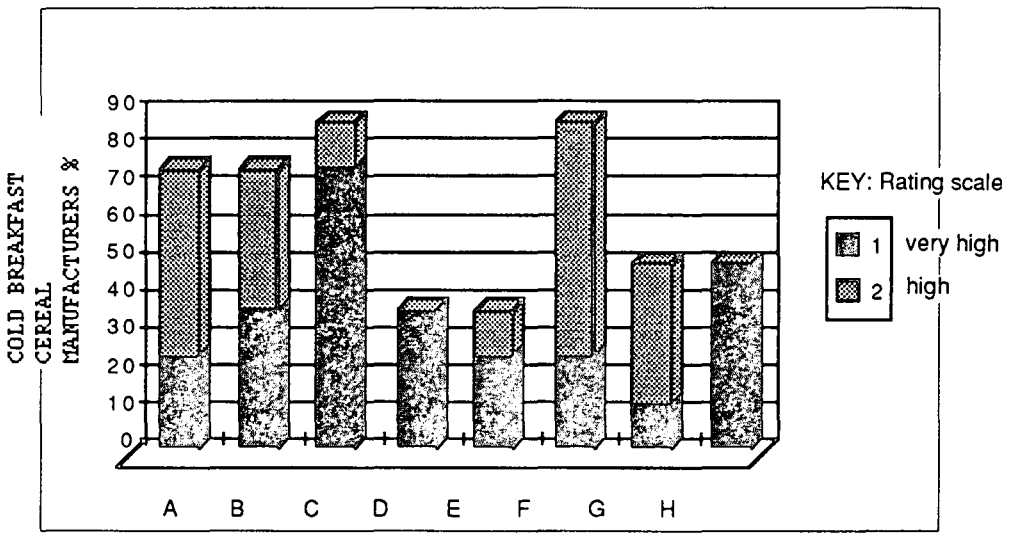

FIGURE 4.2: THE IMPORTANT ELEMENTS FOR MARKETING OF COLD BREAKFAST CEREALS USED BY THE MANUFACTURING COMPANIES (N = 8)

MARKETING TOOLS:

A	BRAND NAME	E	PACKAGING
B	BRAND IMAGE	F	NUTRITIONAL INFORMATION
C	PRICE	G	NUTRITIONAL CLAIM
D	QUALITY	H	ADVERTISING

breakfast cereals at P = 0.08 (Table 7.2, Annexure 7.10), using the McNemar X^2 test, which indicated that manufacturers considered some marketing tools as being more important than others when developing a marketing strategy for the best selling product. These results confirm what Bush et al. (1988) reported, namely that: "The South African consumer buys on price", and that the nutritional content of

food could in some cases rival price as the major influence governing food purchases. Some British studies reported similar trends (Slattery, 1986; Anon, 1993c), and in America, Tallis and Gaeth (1990) and Zeithaml (1988) found that price and quality were the most general attributes on which brands were chosen in the U.S.A. However, de Chernatony (1991) reported differently, stating that brand name was the most frequently used criterion for food purchases in Britain.

4.2.2.2 Target Markets

The different target markets for the best selling brand of cereal for each cold breakfast cereal manufacturer were identified by question 9. The responses also gave an indication of the marketing strategies used by cold breakfast cereal companies, and the importance of nutritional labelling as perceived by these companies for the various target markets in relation to their top selling product (section 3.3.3; Figure 4.3, Annexure 7.10).

Question 9 called for four variables (Figure 4.3) which were indicated by the manufacturers. Figure 4.3 illustrates that 37.5% of cold breakfast cereal manufacturers targeted their best selling product at "health conscious" consumers. The "moderation" market made up 25% of the market share, with a further 12.5% shared between "health conscious" and "moderation" target markets. "Bulk buyers" made up 25% of the market share. In the U.K. it was found that with rising affluence, nutrition increased in importance over price and bulk (Anon, 1990; Bush et al., 1990; Heasman, 1991) which is a trend similar to that observed in South Africa.

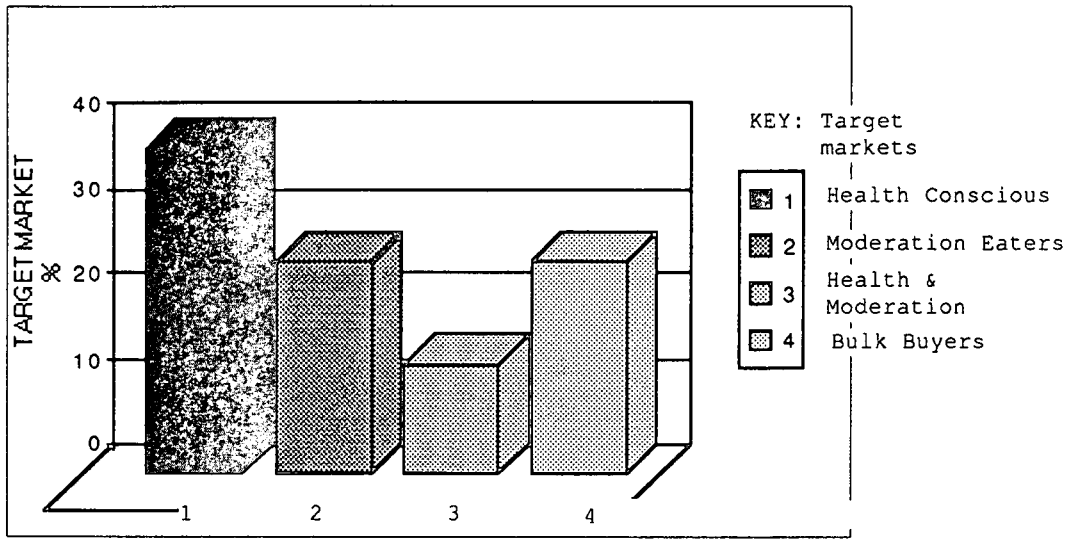

FIGURE 4.3: TARGET MARKET AT WHICH THE MANUFACTURERS' PRODUCT IS AIMED (N = 8)

4.2.3 Manufacturers' Perception of Consumer Attitudes towards and Knowledge of Nutritional Information on Food Containers.

Manufacturers' perceptions of consumer response to nutritional labelling on cold breakfast cereal containers were evaluated by questions 10 - 21 and presented in Table 4.1. These responses gave an indication of the strengths and weaknesses of a proposed educational programme from the manufacturers' point of view (section 3.3.3, Table 4.1, Annexure 7.10). A Lickert scale was used.

Table 4.1 reports on the manufacturers' perceptions of consumer attitudes and knowledge with regard to the following:

- the amount of nutritional information on food labels read by consumers;
- consumer understanding of nutritional information on food labels;
- consumer interpretation of the current label format;
- consumer need for more nutritional information;
- consumer perception of diet-related disease or health claims on food labels.

(i) The Amount of Nutritional Information on Food Labels Read by the Consumer.

A comparison of the mode values of questions 11 to 12 showed that manufacturers of cold breakfast cereals agreed that consumers read nutritional information on food labels (mode 20, c = 5), but that they did not use this information to any great extent (mode 10, c = 6).

(ii) Consumer Understanding of Nutritional Information on Food Labels

Manufacturers indicated that they believed that consumers did not have a great understanding of nutritional information on food labels and that they did not have the background knowledge to utilise this information. This is supported by the literature (section 2.3.2 and 2.3.4) which reports that manufacturers perceived that the majority of consumers lacked the understanding of nutritional information (Booth, 1989; Fallows and Gosden, 1989).

(iii) Consumer Interpretation of the Current Label Format

Although it was perceived that consumers understood the present format for nutritional information, there was consensus that consumers would benefit from products presenting a more standardised form of nutritional information.

TABLE 4.1: MANUFACTURERS' PERCEPTIONS OF CONSUMER ATTITUDES TOWARDS AND KNOWLEDGE OF NUTRITIONAL LABELLING. A LICKERT SCALE WAS USED[a] (N = 8).

Q.	Attitude	mean ± SD	mode score	mode no[c]
10.	Consumers read nutritional information on food labels when purchasing food items.	18 ± 5	20	4
11.	Consumers read nutritional information on food labels such as that on cold breakfast cereal boxes when they eat breakfast.	18 ± 7	20	5
12.	Consumers read nutritional information on food labels when planning meals at home.	10 ± 5	10	6
13.	Consumers understand nutritional information on food labels.	14 ± 5	10	5
14.	Nutritional information is important to consumers when choosing a new product.	20 ± 9	30	3
15.	Consumers would like more nutritional information on food labels to assist them in making a choice when purchasing food items.	19 ± 6	20	3
16.	Consumers do not have sufficient background knowledge to use nutritional information on food labels.	21 ± 4	20	5
17.	If more products presented a standardised form of nutritional information, consumers would be able to use this to assist them in reading food labels.	24 ± 5	20	7
18.	Consumers find the type of label format easy to understand (i.e. the way in which nutritional information is presented - in numerical fashion).	16 ± 5	20	6
19.	Consumers purchase food items out of habit and do not read nutritional information on food labels.	20 ± 5	20	5
20.	Consumers assume diet-related disease statements (eg calcium prevents osteoporosis) on food labels are accurate.	21 ± 4	20	5
21.	Consumers assume diet-related disease statements are misleading, that they are placed on the box to try and get them to by the product.	7 ± 5	10	6

a Based on a scale of 1 through 30: 1 = definitely disagree, 30 = definitely agree

b SD = Standard Deviation

c Number of respondents at modal score

(iv) Consumer Need for More Nutritional Information

Manufacturers agreed that although nutritional information was important to the consumer at initial purchase and that they wanted more nutritional information, the general perception was that consumers purchased food items out of habit and that they did not read nutritional information on food labels. This corresponds with Shepherd's (1991) study in which he reported that although beliefs and concerns were important in the initial formation of behavioural patterns, these would give way to habit, which would maintain the behaviour.

(v) Consumer Perception of diet-related disease or Health Claims on Food Labels.

Manufacturers agreed that consumers assumed that diet-related disease statements were accurate, and that they did not believe that the manufacturer was using these messages to sell the product.

(vi) General

On a scale of 1 to 30, the manufacturers' perception of consumer attitudes towards and knowledge of nutritional information on food labels had a mean score of 17.3 ± 4.7 standard deviation, which indicates a positive leaning. These results seem to underline findings of studies both in this country and overseas. Although food manufacturers were aware that some consumers used nutritional information, and that they wanted more of this type of information as they felt that they could benefit by it, there was no evidence that the information was used to make effective and sustained decisions resulting in healthier eating habits (Booth, 1989). It may therefore be concluded that manufacturers were undecided whether the inclusion of nutritional information on cold cereal containers would benefit consumers.

Furthermore, the McNemar X^2 test revealed no significant difference among manufacturers' replies to each individual question with regard to their perceptions of consumers' knowledge of and attitudes towards nutritional labelling on food containers.

4.2.4 Manufacturers' Perceptions of Nutritional Labelling on Food Containers.

Questions 22 to 43 measured manufacturers' perceptions of the effectiveness of nutritional labelling on cold breakfast cereal containers (section 3.3.3, Table 4.2, Annexure 7.10). A Lickert scale was used.

Table 4.2 explores the following aspects concerning the manufactures' perceptions of nutritional labelling:

- extent of regulatory control governing nutritional labelling;
- the need to educate the consumer to use nutritional labelling effectively;
- the need for more nutritional information;
- response to consumer health needs;
- misconceptions regarding healthy eating.

(i) Amount of Regulatory Control Governing Nutritional Labelling

Food manufacturers were inclined to agree that food labelling should be made mandatory for processed foods to facilitate purchase. Responses to question 25 (mean 18 ± 9 SD, mode 20, c = 3) revealed that slightly fewer manufacturers supported voluntary nutritional information on food labels when compared to question 24 (mean 20 ± 5 SD; mode 20, c = 4). This was somewhat contrary to what was reported in the literature (section 2.3), although Hele in Loubser (1992), head of the South African Grocery Manufacturers Association, stated that mandatory nutritional labelling for basic nutrients could be considered.

Manufacturers seemed to be satisfied with current regulations governing diet-related disease regulations as most of them neither favoured the relaxation of these regulations to educate those consumers not receptive to conventional education, nor supported the suggestion that diet-related disease statements be made more restrictive, because of the perceived potential in this for misleading the consumer.

Table 4.2 MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING. A LICKERT SCALE WAS USED[a] (N = 8)

Q.	Attitude	mean ± SD	mode score	mode no[c]
22.	Diet-related disease related information should be restricted to nutrients that may contribute to diseases such as excessive fat, cholesterol, sodium, sugar etc.	13 ± 10	20	3
23.	Diet-related disease information should be restricted to only those nutrients where sufficient scientific information is presented as to their contribution to disease.	15 ± 10	20	4
24.	Nutritional labelling should be made mandatory for processed foods to facilitate purchasing of foods.	20 ± 5	20	5
25.	Nutritional labelling should remain voluntary but manufacturers should provide more nutritional information on food labels.	18 ± 9	20	3
26.	There is a need for an educational programme to adequately equip the consumer to effectively read nutritional information on food labels.	28 ± 5	30	6
27.	More emphasis should be placed on educating the consumer to understand food labels than on providing more information of the label.	23 ± 7	20	4
28.	More nutritional information will only confuse consumers	12 ± 8	20	4
29.	Nutritional information on food packaging will increase the perceived quality of products through more effective competition as it will facilitate value comparisons.	24 ± 7	30	4
30.	Additional nutritional information on labelling is not effective for those products with a well established image such as: " low kilojoule" or "high fibre".	11 ± 6	10	4
31.	Shoppers with diet problems such as those requiring "sodium" control are already aware of products available to them.	18 ± 10	20	3
32.	The size of the container limits the amount of nutritional information that can be given.	14 ± 9	10	4
33.	Our company is continually researching consumer needs and interests.	24 ± 8	30	3
34.	Our corporate image and brand image include healthfulness as a positive attribute.	24 ± 7	30	5

a Based on a scale of 1 through 30: 1 = definitely disagree, 30 = definitely agree

b SD = Standard Deviation.

c Number of respondents at modal score.

Table 4.2: CONTINUED: MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING A LICKERT SCALE WAS USED[a] (N = 8)

Q.	Attitude	mean ± SD	mode score	mode no[c]
35.	We have responded to consumer health needs by developing new and health associated foods.	23 ± 10	30	4
36.	We have responded to consumer demand for health related information by providing nutritional information on food labels.	23 ± 9	30	4
37.	Healthy eating is a fad and the marketing applied to it is a short term reaction to the latest bout of media hype about our food.	6 ± 7	10	4
38.	Increased confusion on such issues as the merits of "natural" components and "organic" production for safety, health and eating quality will only serve to undermine the future promotion of healthy eating.	12 ± 6	10	5
39.	The health sciences have yet to work out properly what healthy eating actually is before nutritional education and nutrition aspects of healthy eating can be adequately planned.	15 ± 7	20	5
40.	Increased consumer awareness about nutrition will not necessarily mean altered food choices.	14 ± 5	10	5
41.	Regulations governing diet-related disease messages in food labelling should be relaxed because people are not receptive to conventional education.	13 ± 9	10	5
42.	Regulations governing diet-related disease messages should be made more restrictive because of their potential for misleading the consumer.	11 ± 6	10	5
43.	Something first needs to be done to educate the consumer before the use of nutritional labelling is considered.	19 ± 11	30	3

a Based on a scale of 1 through 30: 1 = definitely disagree, 30 = definitely agree
b SD = Standard Deviation.
c Number of respondents at modal score.

(ii) The Need to Educate the Consumer to Use Nutritional Labelling Effectively

Manufacturers agreed that there was a need for nutritional education; however, they also agreed that increasing the amount of information on food labels could confuse consumers, and that educating consumers to use nutritional labels before more information was added was therefore important.

Although the relationship between attitude, knowledge and behaviour had not yet been fully established because of insufficient research in the field of attitudes and habits of the consumer, and because of the complex nature of this field, manufacturers viewed the relationship between consumer attitudes towards and knowledge of nutritional information and food purchase as positive.

(iii) The Need for More Nutritional Information

Manufacturers agreed that additional information for those products with a well established image would be effective, but conceded that shoppers with diet problems were more aware of products available to them. This negates one of the reasons Bell (1992) gives for the difficulty in trying to satisfy the nutritional needs of consumers with a variety of dietary problems through nutritional labelling. Manufacturers also disagreed that the size of the container limited the amount of nutritional information that can be given. This finding was contrary to reports by Bush et al. (1988), Bell (1992) and Eastwood et al. (1992), who stated that container size was a problem cited by manufacturers and that it was one of the reasons for the resistance to providing detailed nutritional labelling of processed foods.

(iv) Response to Consumer Health Needs

The responses to questions 34 to 36 showed that, apart from corporate and brand image, market research, product development and provision of information, healthfulness was an integral part of the marketing strategy. Manufacturers disagreed that healthy eating was a fad. This indicated that nutritional information resulting in the health of the consumer was important to the manufacturer.

(v) Misconceptions Regarding Healthy Eating.

Manufacturers of cold breakfast cereals also agreed that diet-related disease information on food labels should be restricted only to those nutrients where there was sufficient scientific evidence as to their contribution to disease. Manufacturers did not view consumer misconceptions about "organic" and "natural" foods as an undermining factor in the future promotion of healthy eating, but believed that the health sciences were yet to work out what "healthy eating" was. This corresponds with reports which stated that food manufacturers were frustrated by the confusion surrounding healthy eating criteria, which were not adequately specified by nutritional guidelines (Booth, 1989; Geiger et al., 1991).

(vi) General

The total mean score was 17.27 ± 5.6 standard deviation on a scale of 1 to 30. This result was similar to the mean score for Table 4.1 and indicates a positive leaning of manufacturers' perceptions regarding nutritional labelling.

4.2.3.3 Significant Relationships between the Variables

No statistical significance was found between the variables using the McNemar X^2 test, as the sample of manufacturers was too small. Cross tabulations of the independent variables and attitudes; and attitudes against attitudes were studied and reported on using the mode values where relevant.

Cross tabulations of question 5 with various attitude questions showed that those food manufacturers who used nutritional information made up the total modal number. This was expected as 75% of the food manufacturers in the sample provided nutritional information on cold breakfast cereal containers (Annexure 7.10).

Cross tabulations of relevant attitude questions showed the following: The total of the modal numbers was made up of manufacturers who provided nutritional labelling on their top selling brand (n = 8) (Tables 7.5 to 7.10, Annexure 7.10). The responses are given according to the highest modal number per modal score:

- Six manufacturers who were inclined to agree that consumers did not have sufficient background knowledge to use nutritional information on food labels definitely agreed that there was a need for nutritional education (questions 16 and 26);
- Five manufacturers who were inclined to disagree that consumers understood the nutritional information on food labels were inclined to agree that consumers did not have sufficient background knowledge to use nutritional information on food labels (questions 13 and 16);
- Three manufacturers definitely agreed that there was a need for a nutritional educational programme to equip consumers to use nutritional labelling information, and that there was a need to educate consumers before increasing the amount of nutritional information on cold breakfast cereal containers (questions 26 and 43);
- Three manufacturers were inclined to disagree that nutritional information should remain voluntary, but agreed that regulations that govern nutritional claims should be made more restrictive (questions 25 and 42);
- Four manufacturers were inclined to agree that nutritional labelling should be made mandatory but were inclined to disagree that regulations governing diet-related disease claims should be made more restrictive (questions 24 and 42);
- Three manufacturers who were inclined to agree that nutritional labelling should be made mandatory were inclined to disagree that regulations governing diet-related disease claims should be relaxed (questions 24 and 41).

In summary, most manufacturers agreed that consumers lacked nutritional knowledge and understanding, and that there was a need for nutritional education before further developments in the nutritional labelling sector were considered. Manufacturers were satisfied with diet-related disease or health claim regulations but seemed to favour mandatory nutritional labelling.

4.3 CONSUMER KNOWLEDGE OF AND ATTITUDES TOWARDS NUTRITIONAL LABELLING ON FOOD CONTAINERS

The general perception of the consumer towards nutritional labelling is an important part of a needs assessment required for the formulation of an educational programme on the objectives of food containers. The consumers' questionnaire (Annexure 7.5) was used to gather information on the following aspects which are reported on in this section:

- consumer sample realisation;
- consumer attitudes related to nutritional labelling;
- general nutritional knowledge of consumers.

For the purpose of this study, correlations greater than 0.4 were chosen (moderate positive correlations) because of time constraints and the significance of the correlation.

4.3.1 Consumer Sample Realisation

To confirm delimitation 2 (section 1.2.3) which was to limit the external survey of the study to white married women between the ages of 18 and 55 who had attained at least a standard ten level of education, and lived in middle income residential areas in Durban (referred to as "consumers"); and to exemplify the typical survey respondent, the sample realisation for the independent variables (section 3.4.) is illustrated in Figures 4.4 to 4.10.

Questions 1 and 2 identified the home language and age of the consumer sample (section 3.4.3; Figure 4.4, Annexure 7.11).

More English speaking people (72.4%) than Afrikaans speaking people (27.6%) responded to the questionnaire. There was a significant difference between the scores at P = 0.02 using the McNemar X^2 test for variance (Table 7.16, Annexure 7.11). This was expected as more English speaking people live in the Durban Magisterial District (Soyer, personal communication, 1993). More women in the age group of 26 to 35 years (35.7%) responded to the questionnaire than any other

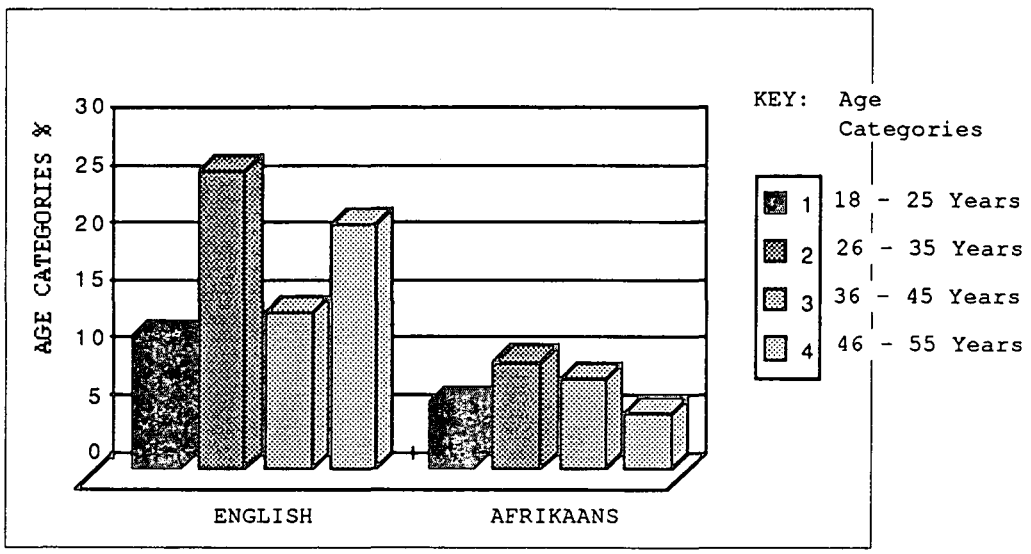

FIGURE 4.4: HOME LANGUAGE ACCORDING TO AGE CATEGORY (n = 388)

age group in each category.

The income level of the middle income consumer sample was measured using question 3 (section 3.4.3; Figure 4.5, Annexure 7.11).

Most of consumers (50.4%) earned an income of R40 000 to R49 000.

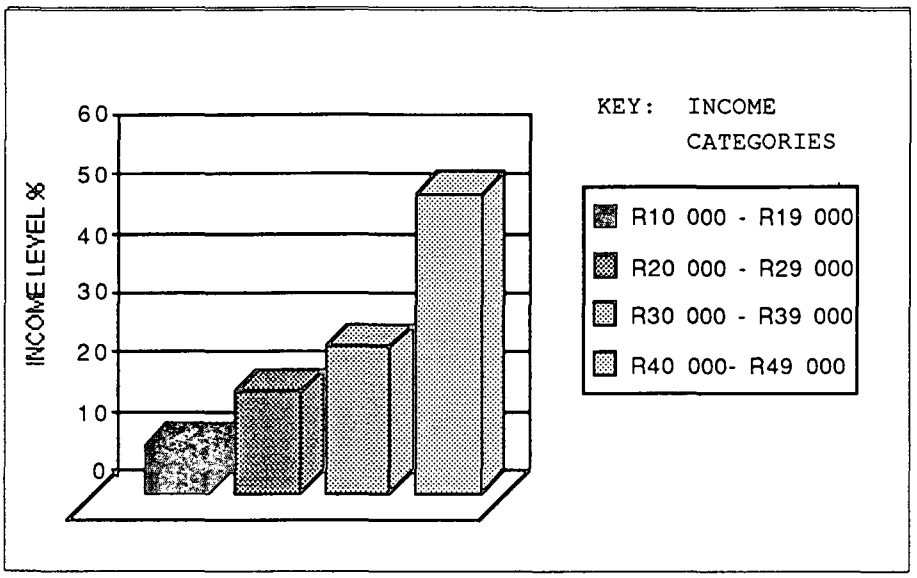

FIGURE 4.5: CONSUMER INCOME LEVEL (n = 388)

Question 5 identified the level of education of the consumer sample (section 3.4.3; Figure 4.6; Annexure 7.11).

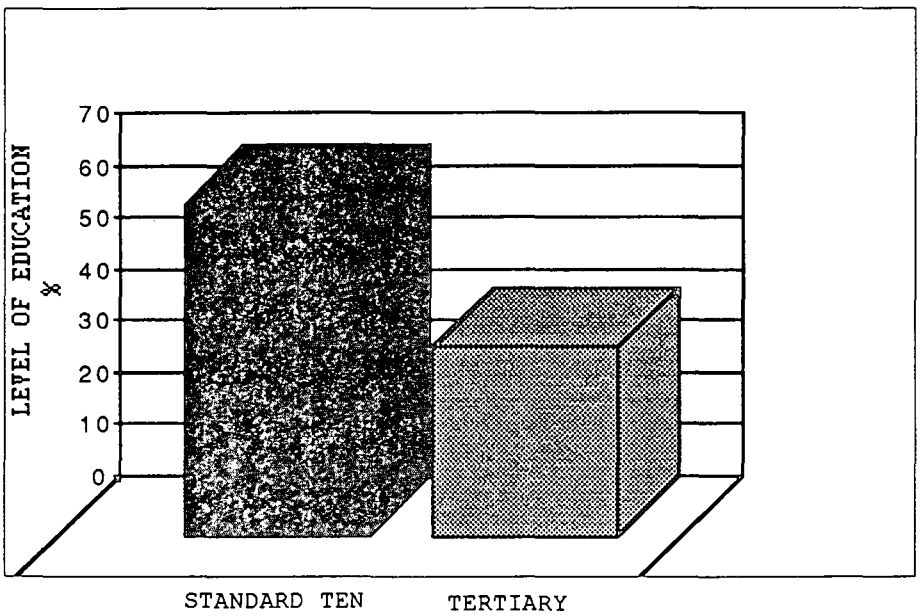

FIGURE 4.6: LEVEL OF EDUCATION OF CONSUMERS (n = 388)

Figure 4.6 shows that that 63.4% of the consumer sample had a standard ten level of education, while the remaining 36.6% had a tertiary level of education.

Question 2 and question 6 measured the number of consumers who ate cold breakfast cereal in the household more than once a month according to percentage per specific age categories (section 3.4.3, Figure 4.7, Annexure 7.11). The total percentage of responses is equivalent to the sample total (n = 388).

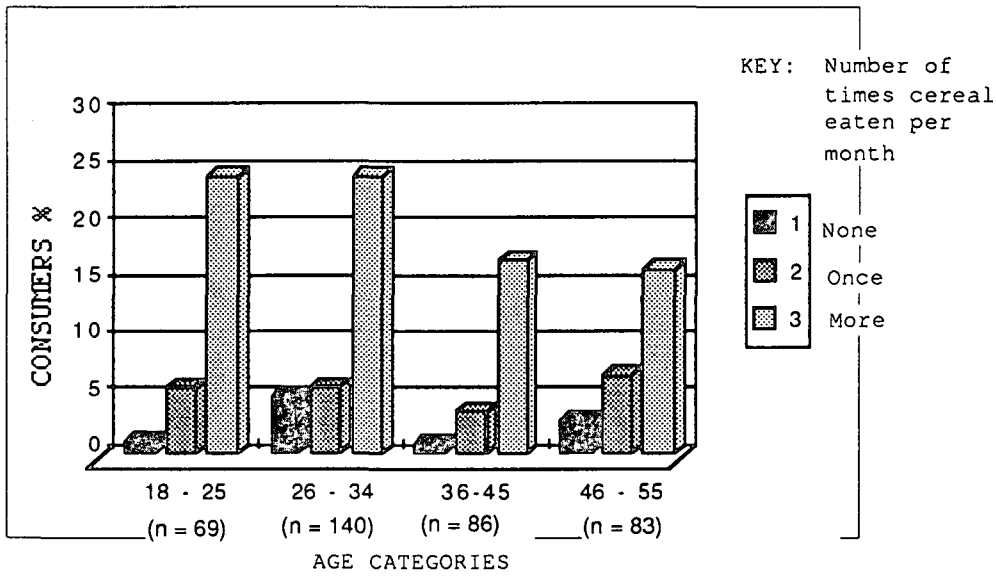

FIGURE 4.7: NUMBER OF PEOPLE WHO EAT COLD BREAKFAST CEREAL ACCORDING TO SPECIFIC AGE CATEGORIES (n = 388)

Even though the percentage representation of respondents was remarkably different for each age category, no significant difference was found among the responses of different age categories and the quantities of cold breakfast cereal eaten.

Sixty eight percent of the sample ate cold breakfast cereal more than once a month, which indicated that most of the middle income consumers in the sample did not perceive this product to be an expensive item.

The number of consumers who ate cold breakfast cereal in the household more than once a month was measured for the two specific

language categories using question 1 and question 6 (section 3.4.3, Figure 4.8, Annexure 7.11).

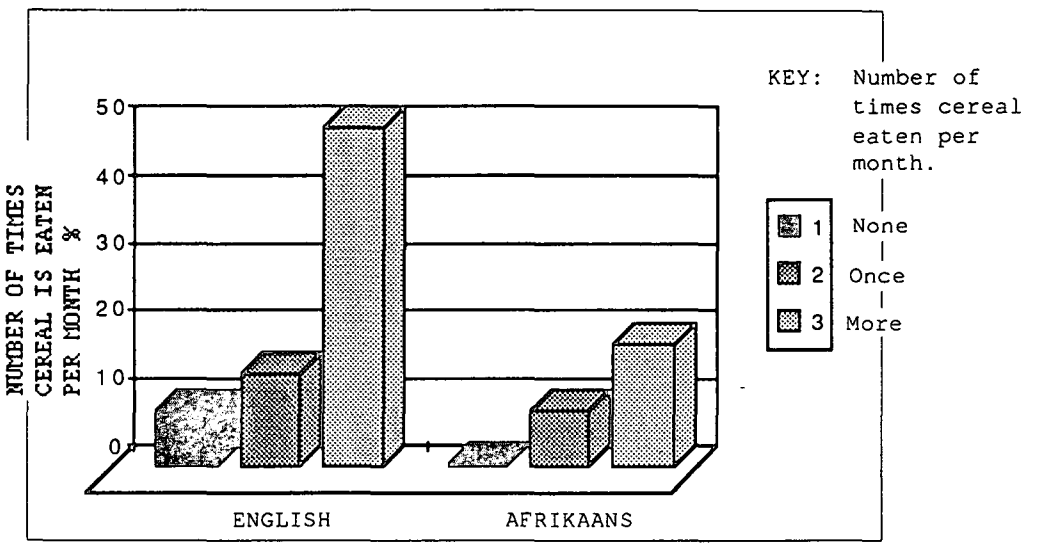

FIGURE 4.8: NUMBER OF CONSUMERS WHO EAT COLD BREAKFAST CEREAL ACCORDING TO SPECIFIC LANGUAGE CATEGORIES (n = 388)

There was a significant difference between these scores at P = 0.01 (Table 7.17, Annexure 7.11) with slightly more English speaking consumers (69%) eating cold breakfast cereal more than once a month than Afrikaans speaking consumers (64%). Fewer English speaking consumers (19%) ate cold breakfast cereal less than once a month compared to Afrikaans speaking consumers (30%) whereas 11.5% of the English consumers in comparison to 5.4% of the Afrikaans consumers never ate the product.

Question 7 and 8 explored the number of people who follow special

diets and the type of diet followed (section 3.4.3, Figure 4.9, Annexure 7.11). Question 8 in the consumers' questionnaire was a screening question and therefore not all consumers answered this question.

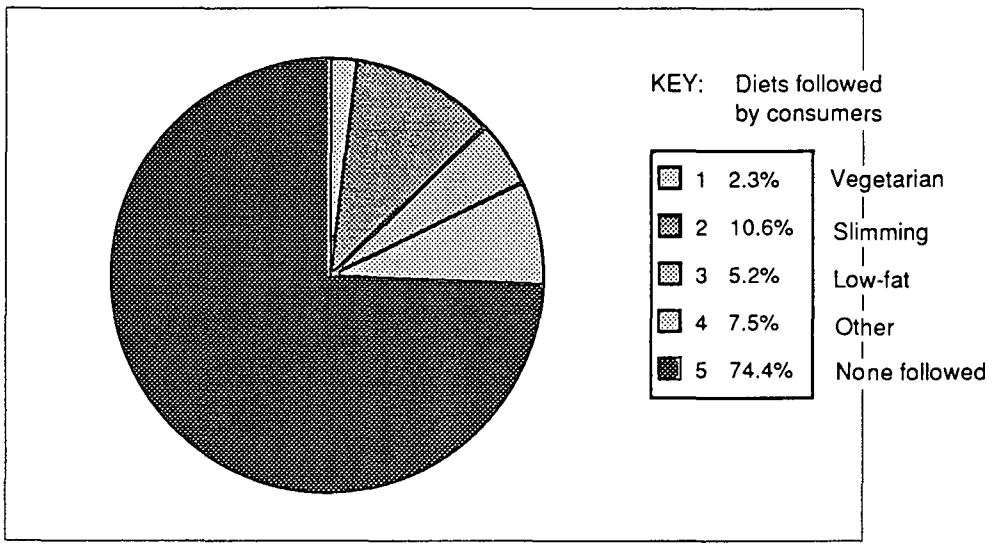

FIGURE 4.9: TYPES OF DIET FOLLOWED BY CONSUMERS (n = 388)

Most of the consumers were not following a specific type of diet (74.3%). The consumers who were following some type of diet included: "slimming" as the most popular (10.6%), "low fat" (5.2%), "vegetarian" (2.3%) and "other" (7.6%). Religious types of diets were not followed by any consumers in the sample (choice three).
A moderate positive correlation between questions 5 and 7 showed that the number of consumers with a standard ten level of education who were on a special diet was similar to the number of consumers with a tertiary level of education who were also on a special diet

(r = 0.4243).

The number of consumers who were responsible for the household purchase of groceries and also made all the decisions about what groceries to buy, was identified using question 9 and question 10 (section 3.4.3, Figure 4.10, Annexure 7.11).

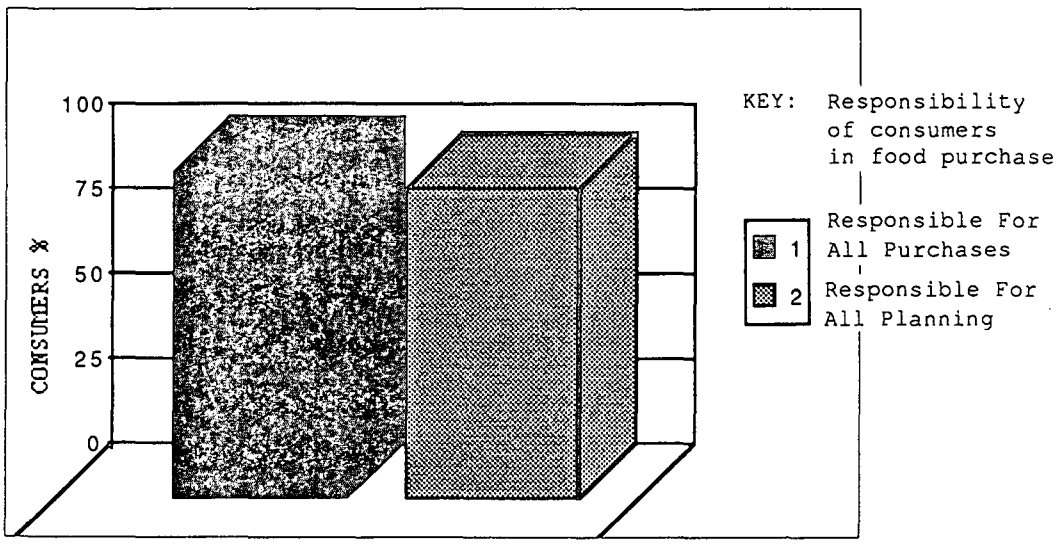

FIGURE 4.10: RESPONSIBILITY OF CONSUMERS IN THE PLANNING AND PURCHASING OF HOUSEHOLD GROCERIES (n = 388)

Most consumers were responsible for the planning (92%) and purchasing (96.4%) of the household groceries while very few consumers did not make all the decisions about what to buy (7.7%) or were not responsible for purchasing household groceries (3.6%). These results

were expected because it was assumed that the woman still fulfilled the traditional role of caretaker of the family.

From the results it was concluded that the typical survey respondent was a white female between the ages of 26 and 35 years, who earned an income of R40 000 to R49 000, lived in the Durban magisterial district, had a standard ten level of education, ate cold breakfast cereal more than once a month, did not follow a special type of diet, and was responsible for the planning and purchasing of household groceries.

4.3.2 Consumer Attitudes towards Nutritional Information

4.3.2.1 Consumer Attitudes Towards Nutritional Information

Questions 11 - 44 evaluated aspects of consumers' perceptions of nutritional labelling on food products which indicated the strengths and weaknesses of a nutritional educational programme from consumers' point of view (section 3.4.3, Table 4.3; Table 7.11, Annexure 7.11).

Responses reported in Table 4.3 were rated on a four-point Lickert Scale (section 3.4.3.4). These categorical values were converted using a rating scale of 1 through to 30. Modal score was used as the main tool for interpretation and mean scores and standard deviations were given for each question.

Table 4.3 reports on the following aspects concerning consumers' attitudes towards nutritional labelling:

- reading nutritional labels;
- understanding and using nutritional information;
- understanding nutritional label formats;
- factors which influence food choice;
- diet-related disease or health claims;
- the regulation of nutritional information;
- nutritional education.

(i) Reading Nutritional Labels

Responses to questions 11 to 14 revealed that consumers agreed that they read food labels (mode 20 (c = 133)) as well as nutritional information when purchasing food items (mode 20 (c = 113)). They also read information at home such as the labels on cold breakfast cereal containers (mode 20 (c = 116)), but disagreed that they used the information when planning meals or daily nutrient intake (mode 1 (c = 171)). This corresponds with overseas literature which reports that consumers maintained that they used nutritional information on food labels (Farmakalidis, 1989; Senaur et al., 1991; Eastwood et al., 1992). On the other hand, Black and Rayner (1992) reported that British consumers were found to follow basic maxims when deciding what to eat and did not use nutritional information to any great extent.

(ii) Understanding and Using Nutritional Information

Consumers agreed that they understood nutritional information and that they had a sufficient background of nutritional knowledge to interpret the information on food labels. A high positive correlation was recorded for these questions (r = 0.6654). This is contrary to what the literature of overseas studies reports (Farmakalidis, 1989; Tzeggai, 1989; Senaur et al., 1991; Eastwood et al., 1992; American Meat Institute, 1992).

Consumers agreed that although nutritional information was important when choosing a new product, they disagreed that it helped them in the purchase of food. A significant difference was recorded using the McNemar X^2 test (P = 0.0000) (Table 7.18, Annexure 7.11). Consumers who stated that nutritional information helped in the purchase of a new product also wanted more standardised nutritional information (r = 0.4647). A high positive correlation was recorded for consumers who said that they read nutritional information on food labels and consumers who said that nutritional information assisted them in the purchase of food (r = 0.6973).

Table 4.3: CONSUMERS ATTITUDES TOWARDS NUTRITIONAL LABELLING. A LICKERT SCALE WAS USED.[a] (n = 388)

Q.	Attitude	mean ± SD[b]	mode score	mode no[c]
11.	I read food labels when purchasing food items.	18 ± 10	20	133
12.	I read nutritional information on food labels when purchasing food items.	15 ± 11	20	113
13.	I read nutritional information on food labels at home, such at that on cold breakfast cereal boxes, when I eat breakfast.	16 ± 11	20	116
14.	I read nutritional information on food labels when planning meals at home.	11 ± 10	1	171
15.	Nutritional information on food labels assists me to make a decision when purchasing food items.	15 ± 11	1	110
16.	I understand nutritional information on food labels.	22 ± 9	30	177
17.	The size of the print on the labels is to small to read.	15 ± 12	1	122
18.	Nutritional information is important when purchasing a new product.	22 ± 9	30	199
19.	I use nutritional information to plan my daily energy intake and / or other nutrient intake.	11 ± 10	1	175
20	I would like more nutritional information on food labels intake assist me in making a choice when purchasing food items.	15 ± 11	20	108
21.	I have sufficient background knowledge to use the nutritional information on food labels.	21 ± 10	30	175
22.	If more products presented a standardised form of nutritional information, I would be able to use this to help me in understanding food labels.	20 ± 9	20	145
23.	I find the present label format easy to understand (i.e. the way the nutritional information is presented).	20 ± 9	20	159
24.	Choosing the correct foods can have an influence on reducing the incidence of some diseases and therefore adequate nutritional information on food labels is very important.	25 ± 7	30	252
25.	Nutritional labelling does not reflect current nutrition,science and health concerns.	15 ± 9	10	131
26.	It is important to choose foods which contribute to a healthy lifestyle and therefore nutritional information on food labels is necessary	26 ± 8	30	241
27.	As long as everything is eaten in moderation I will be all right.	12 ± 11	1	132
28.	I buy on price and do not compare the nutritional content of different foods.	16 ± 10	20	125
29.	I purchase food items out of habit and do not read nutritional information on food labels.	16 ± 20	20	108
30.	The food label is the appropriate place for diet-related disease messages.	23 ± 8	30	208
31.	If a diet-related disease statement appears on a food label, I assume it is accurate.	24 ± 8	30	216

a Based on a scale of 1 through 30: 1 = definitely disagree, 30 = definitely agree

b SD = Standard Deviation.

c Number of respondents at modal score.

Table 4.3: CONTINUED: CONSUMERS ATTITUDES TOWARDS NUTRITIONAL LABELLING. A LICKERT SCALE WAS USED [a] (n = 388)

Q.	Attitude	mean ± SD	mode score	mode no[c]
32.	Diet-related disease statements are useful.	25 ± 7	30	232
33.	Diet-related disease statements are misleading.	11 ± 8	10	172
34.	Diet-related disease statements are placed on the box to try and get me to by the product.	13 ± 10	10	112
35.	Diet-related disease related information should be restricted to nutrients that may contribute to diseases such as excessive fat, cholesterol, sodium, sugar.	16 ± 11	20	117
36.	Diet-related disease related information should be restricted to only those nutrients where there is sufficient scientific information as to their contribution to disease.	21 ± 10	30	172
37.	I don't think any type of diet-related disease related information should appear on food labels.	8 ± 9	30	212
38.	Suppose a product were both high in both fibre and salt content. If a manufacturer makes a statement concerning the benefit of the high fibre intake, the manufacturer should also make a statement concerning the risks of a high salt content.	26 ± 8	30	269
39.	Nutritional labelling should be made mandatory for processed foods to facilitate the purchase of these foods.	24 ± 9	30	221
40.	Nutritional labelling should remain voluntary but more manufacturers should provide more nutritional information.	16 ± 10	20	123
41.	There is a need for an educational programme to adequately equip the consumer to effectively read nutritional information on food labels.	22 ± 9	30	169
42.	Effective education will help consumers to read labels and this will help in the decision process when purchasing food items.	22 ± 9	30	185
43.	Effective education will help consumers to read labels and this will in turn help decrease diet related diseases.	22 ± 9	30	177
44.	More emphasis should be placed on education rather than on information.	18 ± 10	30	121

a Based on a scale of 1 through 30: 1 = definitely disagree, 30 = definitely agree

b SD = Standard Deviation.

c Number of respondents at modal score.

(iii) Understanding Nutritional Label Formats

Consumers agreed that they wanted more nutritional information, and that although the present format of nutritional information was easy to understand, products with a more standardised form of nutritional information would help them. This corresponds with what Senaur et al. (1991) reported. He said that when questioned in surveys, consumers indicated a strong desire for information even if they did not regularly use the information when making food purchases. In this study, a significant difference of P = 0.065 (Table 7.19, Annexure 7.11) showed that consumers who said that they understood the present format of nutritional information wanted a more standardised form of nutritional labelling in order to understand the information on nutritional labels. These results seemed to imply that although consumers thought that they understood the information, they wanted the information to be more standardised for better comparison.

According to the literature overseas and in South Africa, Black and Rayner (1992), Anon (1992), Farmakalidis (1989) and Herbert (personal communication, 1992) consumers had difficulty using the numerical format which is currently in use.

Consumers definitely disagreed that the size print of information on food labels was too small. This differs from Black, Rayner (1992) and Eastwood et al. (1992) who stated that consumers found the type size too small and had difficulty reading the food label.

(iv) Factors which Influence Food Purchase

Consumers agreed that correct food choice was important to ensure good health and that nutritional information on food labels was therefore important. However, they also agreed that habit and/or price were important criteria for food purchase. A significant difference was recorded at P = 0.028 (Table 7.20, Annexure 7.11) which showed that consumers who did not buy on price agreed that the correct choice of food could reduce diet- related diseases. A moderate positive correlation (r = 0.5380) was also recorded for these questions which indicates that although consumers seemed to be health conscious, price was an important factor in food purchase. Price also had a moderate positive correlation with habit

(r = 0.5701). Zeithaml (1988) and Tallis and Gaeth (1990) stated that price and quality were the most general attributes on which brands were chosen in America, but according to Bush et al. (1988), price was an important criterion for South African consumers. He also stated that nutritional information could rival price in certain instances. Slattery (1986) and Anon (1993c) supported this statement. Shepherd (1991) theorised that although beliefs were important in the initial purchase, these gave way to habit.

Eating in moderation appears to be a fundamental belief among Britons as reported by Heasman (1991). He also found that the respondents in the surveys he did showed some nutritional knowledge. In South Africa the situation seems to be different. In this study, consumers definitely disagreed that they ate everything in moderation and those consumers who disagreed with the moderation concept were highly in favour of more nutritional education (r = 0.7585).

Consumers agreed that current nutritional labelling reflected nutrition, health and science concerns. These findings differed from the results of a 1988 survey by a South African national parenting magazine, which stated that consumers perceived the information as not being reflective of these concerns (Huskisson, 1990). In this study food labels were viewed as the appropriate place for health claims which were regarded as useful and accurate. Respondents agreed that if a manufacturer made a claim concerning the virtues of a product, he should also inform the consumer of any risks associated with the product. A significant difference of P = 0.026 (Table 7.21, Annexure 7.11) showed that those respondents who disagreed that diet-related disease messages were misleading, definitely agreed that the manufacturer should fully inform the consumer as to the contents of the food. This seemed to indicate that consumers had confidence in the food manufacturer to inform them of the health benefits of food products. These findings differ from reports by Fallows and Gosden (1989), (Huskisson, 1990) and Senauer et al.(1991), in which consumer mistrust of food manufacturers was underlined.

(v) Diet-related disease or Health Claims

Consumers who agreed that the food label was the appropriate place

for diet-related disease information made up 81.7% of the sample (Table 7.11, Annexure 7.11). Consumers agreed that diet-related disease statements should be restricted to those nutrients that may contribute to disease (56.4%), and also agreed that this restriction should allow for only those nutrients where there was sufficient scientific evidence to allow for such a claim (75.2%). According to Fullmer et al. (1991), consumers were positive towards these types of claims. She stated, however, that consumers who thought that the food label was a good place for messages on diet-related disease related messages, changed their opinions when they learned that the scientific community was not in agreement as to the cause of some of these diseases.

(vi) The Regulation of Nutritional Information

More consumers definitely agreed that nutritional information should be made mandatory (84.9%) than those who were inclined to agree that it should remain voluntary but that manufacturers should give more information (56.6%) (Table 7.11, Annexure 7.11). This indicated that consumer organisations' request for mandatory nutritional information (Loubser, 1992; Herbert, personal communication, 1992; Bell, 1992) was representative of consumers' views.

(vii) Nutritional Education

Consumers agreed that education was needed to help them to understand nutritional information and that a greater emphasis should be placed on education than on more nutritional information on food labels. High positive correlations were found between questions 41 and 42 ($r = 0.7585$) and 43 and 44 ($r = 0.6329$), a finding which supports consumers' need for more nutritional education.

(viii) General

The total mean score was 18.29 ± 4.8 standard deviation on a scale of 1 to 30 which suggests a positive leaning of consumer attitudes towards nutritional labelling. A more positive figure would be expected according to the literature (section 2.3 and 2.4), even though seven of the questions in the questionnaire were formatted in a negative fashion in order to create a balanced questionnaire

without bias.

4.3.2.2 Correlations Between Consumer Attitudes

Based on the information presented in Table 4.3, the results can be grouped into three categories (section 3.4.3, Tables 4.3 and 4.4):

- comprehension;
- factors which influence food choice;
- nutritional education.

(i) Comprehension

Consumers who "read" nutritional information were highly correlated with both those who "understood" it ($r = 0.6654$); and those who "used" it to assist them in making food purchases ($r = 0.6973$). A low positive correlation was recorded between consumers who "understood" nutritional labelling and those who "used" nutritional labelling to assist them in food purchase ($r = 0.2230$, $P = 0.0258$). This seemed to indicate that although consumers "used" nutritional information when purchasing food, they experienced difficulty with "understanding" this information.

Moderate positive correlations were recorded for consumers who said that nutritional labelling was important in the purchase of "new foods" and "reading" ($r = 0.4741$) or "understanding" ($r = 0.5792$) nutritional information on food labels as well as with the "use" ($r = 0.4128$) of nutritional labelling in general purchase of foods. Consumers who "used" nutritional labelling generally when purchasing food had a lower understanding ($r = 0.2230$, $P = 0.0258$) than consumers who used it when purchasing "new" products ($r = 0.5792$), but the results reported that they "read" nutritional information more often ($r = 0.6973$ compared to $r = 0.4741$).

A stronger correlation was recorded for consumers who wanted "more information" on food labels and those who "read" nutritional labels ($r = 0.6412$), than for consumers who actually "used" nutritional information ($r = 0.5158$) on food labels when purchasing food. No correlation was recorded for consumers who wanted "more information" and for those who "understood" it. Consumers who wanted "more

	Read	Use	Understand	New product	More information	Standard information	Format	Health	Moderation	Price	Habit	Education need	Education purchase	Education disease	More education
Read	1	0.6973	0.6654	0.4741	0.6412	0.4534									
Use	0.6973	1	0.223	0.4128	0.5158	0.4884					-0.4787				
Understand	0.6654	0.223	1	0.5792			0.5286								
New product	0.4741	0.4128	0.5792	1	0.565	0.4647					-0.5143				
More info	0.6412	0.5158		0.565	1	0.5833					-0.5788				
std info	0.4534	0.4884		0.4647	0.5833	1									
Format			0.5286				1								
Health								1		0.538		0.4447			
Moderation									1			0.7585			
Price								0.538		1	0.5701				
Habit		-0.4787		-0.5143	-0.5788					0.5701	1				
Education need								0.4447	0.7585			1	0.7585	0.46	0.4059
Edu - purchase												0.7585	1	0.6329	
Edu - disease												0.46	0.6329	1	
More education												0.4059			1

information" were also correlated with those who wanted a more standardised form of nutritional information (r = 0.5833).

Consumers who wanted "more nutritional information" on food labels claimed to use nutritional information more often than those who did not want more of this kind of information. Moderate positive correlations were found for both "increased information" and nutritional information used to plan "daily nutrient intake" (r = 0.4170), as well as when "planning meals" (r = 0.4722). Consumers who wanted more information also thought that the food label was the right place for information on diet-related diseases (r = 0.5158).

A higher correlation was recorded for consumers who wanted a more "standardised" form of nutritional information and those who "used" nutritional information (r = 0.4884) than for consumers who "read" this information on food labels (r = 0.4534). Again there was no correlation for "standardised" information and "understanding" the information. These consumers also seemed to "use" nutritional labelling more for general food purchasing than for buying "new" products.

A moderate positive correlation was recorded for understanding the present "format" of nutritional labelling (r = 0.5286) and "understanding" nutritional information on food labels. No other correlations were recorded for "format". This implies that the consumers who wanted a better format to display nutritional information also understood nutritional information. Consumers who did not understand nutritional information wanted an increase in the amount of nutritional information and more standardised information.

(ii) Factors which Motivate Food Choice

Moderate positive correlations between "price" and "health" (r = 0.5380), and "price" and "habit" (r = 0.5701) showed that although consumers regarded "price" and "habit" as important factors in food purchasing, nutritional information for "healthy" food choice could rival "price" under certain conditions. This corresponds with reports by Slattery (1986) and Anon (1993c).

"Price" had a higher correlation with "habit" (r = 0.5701) than with "healthy" food choice(0.5380), but "habit" had no correlation with "healthy" food choice. This seems to imply that consumers, overall, were price concious. This finding reflects the position of consumers in the present economy, and that "habit" shoppers are more price conscious than "healthy" shoppers. "Healthy" shoppers seem to consciously use nutritional information in the purchasing decision and do not buy food habitually, whereas "habit" shoppers are not "health" conscious at all. Other results which reflect this finding are that "habit" had a moderate negative correlation with nutritional label "usage" in general (r =-0.4787) and with "new" products (r =-0.5143); and also with the need for "more nutritional information" on food labels (r =-0.5788). No correlation was recorded for: "health", "price", "habit"; and "moderation". "Health" (r = 0.4447) and "moderation" (r = 0.7585) consumers also wanted more nutritional education, whereas "price" and "habit" consumers did not. This indicates that "moderation" consumers, although not health conscious to the extreme, still wanted more nutritional education. "Price" and "habit" consumers seemed not to be interested in an increase in nutritional education.

(iii) Nutritional Education

High correlations were recorded for consumer "need" for education and the belief that this would help in food "purchase" (r = 0.7585) and the reduction of diet related "disease" (r = 0.4600). The "need" for more nutritional education had a moderate positive correlation with wanting "more nutritional education" and not only more information on food labels (r = 0.4059). The need for "more nutritional education" rather than only an increase in nutritional information on food labels was not correlated with nutritional education and food "purchase" or education and "diet-related disease". This indicates that consumers not only wanted "more education", but also an "increase in the amount of nutritional information" available on food labels.

4.3.2.3 Relationship between Nutritional Attitudes and the Independent Variables

Home language, age, income level, level of education, number of times

a month cereal was eaten a month, type of diet followed, and responsibility for the planning and purchasing of household groceries were the independent variables used to appraise nutritional attitudes.

Using the McNemar X^2 test for significance, no correlations or significant relationships were found between the independent variables and consumer attitude for nutritional labelling.

Tzeggai (1989) and Black and Rayner (1992) found that age significantly correlated with nutritional attitudes. Anon (1990) and the American Meat Institute (1992) also reported that consumers with lower incomes usually did not read labels. No correlation was found between attitude and home language as suggested by Shapiro (personal communication, 1993). Diet did not affect attitude as reported by Black and Rayner (1992), neither did the consumption of breakfast cereals or the responsibility for household grocery shopping.

4.3.3 Consumer knowledge of Nutritional Information and Influencing Factors

The current level of consumer nutritional knowledge needed to be assessed in order to identify the necessary determinants for an educational programme.

4.3.3.1 Consumer Knowledge of Nutritional Information on Food Labels

The level of nutritional knowledge with regard to nutritional information on food labels amongst consumers was measured using questions 45 - 66 (section 3.4.3, Table 4.5; Table 7.12, Annexure 7.11) and the cereal boxes in Annexure 7.8. A comparison of the nutritional information displayed on the cereal boxes used in the survey is given in Table 7.1 (Annexure 7.9).

Questions 45 to 54 were general questions regarding nutritional labelling. Questions 55 to 66 had to be answered using the nutritional information on the labels of specified cereal boxes (section 3.4.2, Annexures 7.8 and 7.9).

Table 4.5: CONSUMER KNOWLEDGE OF NUTRITIONAL INFORMATION ON FOOD LABELS[a] (n = 388)

Q.	Knowledge	correct %	incorrect %	unsure %	mode score	mode no[b]
45.	The order of ingredients present in a product are listed in:	24	37	39	3	152
46.	Glucose, fructose, galactose and lactose are the names of different types of:	87	6	7	1	339
47.	Margarine contains cholesterol.	28	61	12	1	235
48.	Vegetable oils such as palm oil, coconut oil and palm kernel oil contain saturated fatty acids.	31	24	45	3	176
49.	Words such as monosodium mean that the product should be avoided by people on a salt restricted diet.	45	10	45	1	176
50.	Organic foods contain the same chemical compo- sition and pesticide residue as other foods:	10	50	40	2	193
51.	Enriched foods have nutrient additives added to them which are not normally in the product:	72	8	21	1	279
52.	The recommended minimum daily intake of dietary fibre per day is:	63	26	11	1	246
53.	What does R.D.A. stand for?	76	11	13	2	293
54.	What does R.D.A. mean?	39	41	19	2	166
55.	Which product has the higher protein content?	63	28	9	3	245
56.	If your spouse had heart disease, which cereal would you choose?	45	36	19	1	176
57.	State the reason for your answer:	16	61	23	2	237
58.	Your child uses allot of energy. Which cereal would you use?	75	19	6	3	290
59.	State the reason for your answer:	60	31	9	1	232
60.	If you had high blood pressure, which cereal would you use?	47	21	31	5	122
61.	State the reason for your answer:	27	36	37	3	143
62.	If you had iron-deficiency anaemia, which cereal would you use?	26	57	19	3	161
63.	State the reason for your answer:	64	14	22	1	247
64.	Pronutro has no sugar content:	43	43	14	2	168
65.	Ideal mix muesli crunch has 6,7g of dietary fibre per 100g. How much fibre will you consume if you eat 30g of muesli?	56	44	_	1	217
66.	Calculate the amount of carbohydrate present in a serving of Kellogg's Coco Pops:	65	35	_	1	251

a Based on a scale of 1 through 3: 1 = correct; 2 = correct; 3 = unsure.

b Number of respondents at modal score.

(i) General Category

In the general category, questions 46, 51, 52, and 53 were well answered (over 60% of consumers answered correctly). These questions included consumer knowledge of types of sugars, definition for the term enriched, recommended daily intake of dietary fibre, and what the letters R.D.A. stand for (which was printed on the cereal boxes). Fullmer et al. (1991) and Black and Rayner (1992) reported low knowledge of fibre among American and British consumers respectively, whereas 63% of consumers in this study knew what the correct recommended daily intake of dietary fibre was (Annexure 7.11).

Questions that were poorly answered were 45, 47, 48, 49, 50, and 54. These included knowledge of: order ingredients are listed in; the cholesterol content in margarine; saturated vegetable oils; composition and pesticide residue of "organic" foods; and the definition for R.D.A. Consumers thought that R.D.A. was the *required* amount of nutrients in the diet instead of the *recommended* amount of nutrients in the diet. Black and Rayner (1992) also reported confusion in this area amongst British consumers. The American Meat Institute (1992) reported that although 70% of consumers believed that there was a difference between the saturated and unsaturated fat levels in food, only 35% believed that it was important to know these differences. The literature frequently refers to consumer misinformation and confusion with regard to "organic" foods (Hamilton et al., 1985). Black and Rayner (1992) found that consumers were confused over the terms "natural" and "fresh". He also found confusion over the term "0% cholesterol". Question 49 was correctly answered by 45% of consumers which indicated that not many consumers knew that salt is the common term for sodium chloride. This was similar to what Black and Rayner (1992) found.

(ii) Specific Category using Nutritional Information Panels

The category where consumers used the nutritional information on cereal boxes to answer questions, questions 55, 58, 59, and 66 was well answered. These questions related to: protein content; energy content and reason for choice; and a calculation. Black and Rayner (1992) reported good consumer understanding of protein and energy information. Most consumers chose the incorrect answer for question

62 (choice for high iron content in a cereal), but the reason they gave was correct. All Bran Flakes contained the highest amount of iron, and this was clearly stated on the box in the form of a nutritional claim. This indicated that consumers did not take much notice of nutritional claims. The answer to question 66 did not have to be calculated, as the consumer could find the information on the cereal box. The answer to question 65, which was not answered as well as question 66 had to be calculated using a calculator.

Questions 56, 57, 60, 61 and 64 were not well answered. These questions were: the reason for the choice of cereal for heart disease; high blood pressure, and the reasons for these choices. Consumers knew about the association between fat and heart disease (not specifically saturated fat), but few knew about the fibre connection, and only 16% answered correctly that both fat and fibre were the significant criteria. Question 64 stated that Pronutro had no sugar content. A total of 43% of consumers agreed with this statement even though sugar was listed as one of the ingredients. The results for questions 57, 60 and 61 reflected Black's (1992) findings, but Fusillo in Fullmer (1991) reported a good knowledge among American consumers (95%) with regard to salt and high blood pressure.

No correlations were found between the knowledge questions.

The correct responses were divided into classes (Tables 7.14 and 7.15, Annexure 7.11) to give the frequency of correct responses per number of questions, e.g. four consumers answered one question right. The frequency distribution per class revealed that 12.5% consumers answered between one and five questions correctly; six and seven questions were answered correctly by 21%; most consumers (28.8%) answered between eight and nine questions correctly; 19.8% consumers answered 10 and 11 questions correctly and 18% answered between 12 and 16 questions correctly. No person had a total score of 100%.

4.3.3.2 Relationships between Nutritional Knowledge and the Independent Variables

Home language, age, income level, level of education, number of times a month cereal was eaten in one month, type of diet followed, and

responsibility for the planning and purchasing of household groceries were the independent variables used to appraise nutritional knowledge.

The significance between knowledge scores and the independent variables was tested by using the McNemar x^2 test for variance. Age was significant at P = 0.04 (Table 7.22, Annexure 7.11). The tabulation showed that the 18 to 25 year old age group had the least nutritional knowledge (17.6%), but that the 26 to 35 year old age group had a better knowledge score (35.7%) than the 36 - 45 year old age group and the 46 - 55 year old age group. This corresponds with Tatham's (1989) and Tzeggai's (1989) findings, which state that the greater the age of shoppers, the less knowledgeable they are on nutritional matters.

Level of income was also significant at P = 0.09 (Table 7.23, Annexure 7.11) which indicated that as the level of income rose, so did the level of nutritional knowledge. This corresponds with the finding reported by Anon (1990), Bush et al. (1988), and Heasman (1991) (section 2.4.1.1).

Level of education was not shown to be significant in this study. However, Fullmer et al. (1991) reported differently, stating that American consumers with more than a high school education had a greater knowledge of fibre content ($P < .001$) and a greater understanding of health claim messages ($P < .003$). Tzeggai (1989) reported no correlation between nutritional knowledge and education or gender for American consumers. Crawley-Boevey (1993) also found no correlation between education and nutritional knowledge for South Africans.

4.3.4 Correlation between Consumer Attitudes towards and Knowledge of Nutritional Information on Food Labels.

Questions 10 - 42 and 43 - 58 measured the correlation between consumer knowledge and attitudes respectively (section 3.4.3, Figure 4.11; Annexure 7.11). These responses gave an indication of the strengths and weaknesses of an educational programme from the

consumers' point of view.

Responces to the attitude questions are reported in Table 4.3 (section 4.3.2, Table 7.11 Annexure 7.11). These questions were summed to make a single variable. A rating scale of 1 to 30 was used for each question, the total possible score ranging from 34 to 1020. The mean score for the 34 questions was 616,3008 ± 40.8 standard deviation.

The knowledge questions were taken from Table 4.4 (section 3.4.4, Table 7.12, Annexure 7.11). These questions were grouped into five classes (Tables 7.14 and 7.15, Annexure 7.11) to make five variables according to their frequency distribution. This was done to obtain classes with similar means which were used to measure the correlation between consumer attitudes towards and knowledge of nutritional information on food labels. The responses to the questions were only taken as correct if a correct answer could be given to the succeeding question, e.g. question 56 asked the respondent to choose the most correct cereal for a person suffering from heart disease. Question 57 then asked the respondent to give a reason for the answer given in question 56. The total of 388 respondents answered 16 out of the 17 questions correctly.

The low positive multiple correlation of R = 0.2905 was significant at P = 0.0000. As nutritional knowledge increased, attitudes towards nutritional information on food labels became more positive. Even though the correlation coefficient was low, it was significantly different from zero. The sample size of 388 people also rendered this correlation significant. This was in comparison with an attitude-knowledge correlation reported by Fullmer *et al*. (1991). Their findings also related to nutritional information on food labels, where they obtained a low positive correlation coefficient of R = 0.2. They stated that a higher correlation could be obtained with a larger sample size. Their sample size was n = 241 which was smaller than the sample size used for this study (n = 388). Positive correlations between consumer knowledge and attitude have been reported in studies done overseas by Sims *in* Brush *et al*.(1986), Brush *et al*.(1986), Schucker (1986), Tzeggai (1986) and Fullmer *et al*.(1991).

Significant relationships were found using the McNemar X^2 test for variance between knowledge treated as a single variable, and the following attitude

questions (Tables 7.24 to 7.27, Annexure 7.11):

- Q 12 : P = 0.04;
- Q 15 : P = 0.06;
- Q 42 : P = 0.04;
- Q 43 : P = 0.01.

These results indicated that those consumers who had high nutritional knowledge scores were more inclined to read nutritional labels which helped in the purchase of food. The findings also showed that the higher the consumers' nutritional knowledge score, the more important they regarded the education of consumers in terms of nutritional labelling for food purchasing and disease prevention purposes.

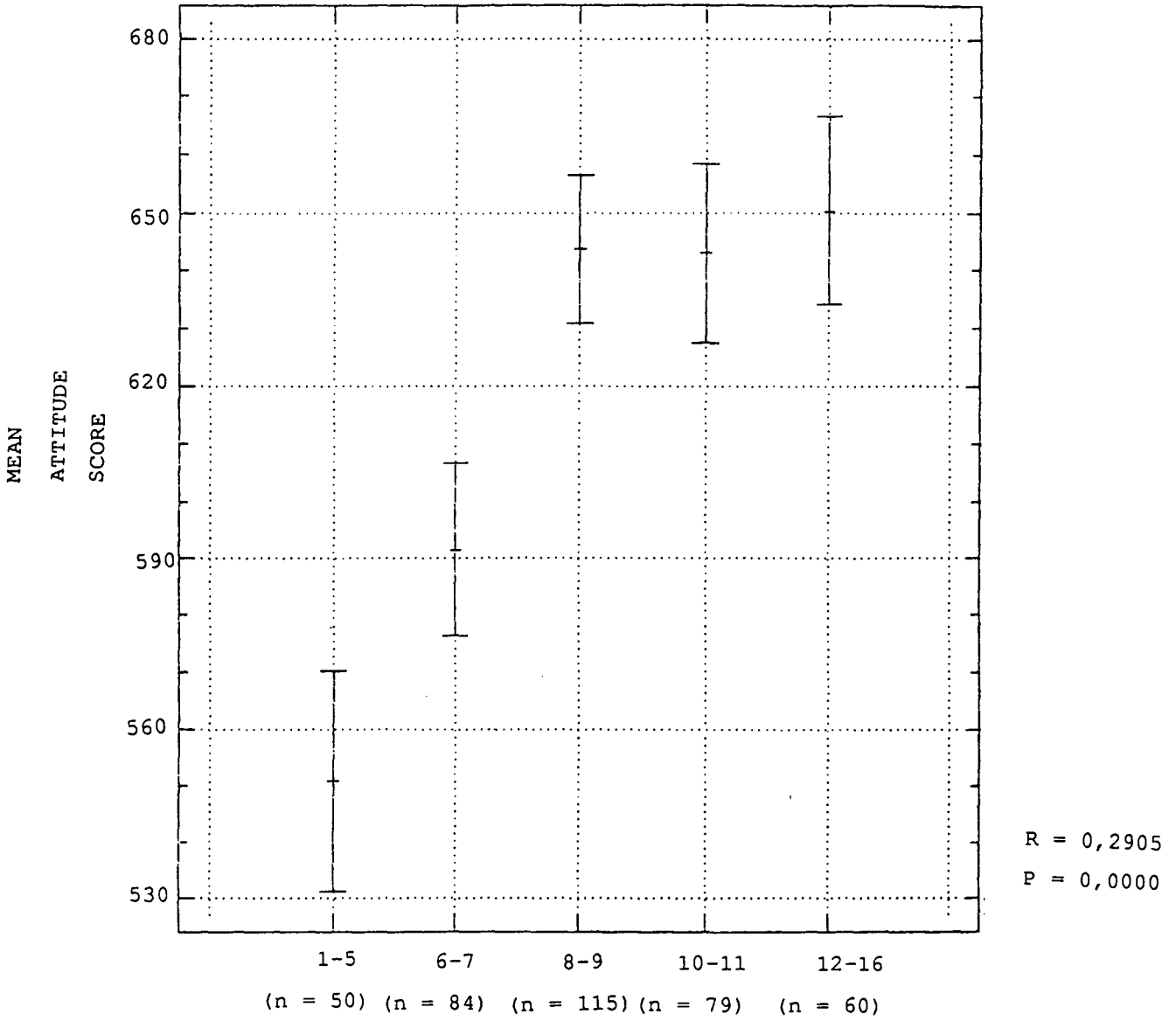

Figure 4.11: MULTIPLE CORRELATION BETWEEN CONSUMER KNOWLEDGE OF AND ATTITUDES TOWARDS NUTRITIONAL LABELLING (n = 388)

Knowledge scores were combined into four groupings for statistical analysis (Annexure 7.11). Groupings on the horizontal scale represent the number of respondents who scored in that grouping. The higher the score, the greater the knowledge; eg. 13% respondents answered five questions correctly. The vertical scale indicates the consumers' attitude towards nutritional information on food labels. The higher the score the more positive the attitude.

4.4 SUMMARY

THE MANUFACTURERS' PERCEPTIONS:

- Nutritional information was considered a useful marketing tool by cold breakfast cereal manufacturers.

- Nutritional information, although not initially considered as important as price, advertising, brand image, quality and brand name, was nevertheless an important factor in the strategic planning for top selling brands of cold breakfast cereals.

- The "health conscious" market made up the largest target market for cold breakfast cereals.

- Manufacturers perceived consumers to read nutritional information on food labels but they did not think consumers understood this information to any great depth.

- Manufacturers agreed that more standardised nutritional labelling would be beneficial to the consumer.

- Although manufacturers perceived nutritional information to be important to consumers at initial purchase, and that consumers wanted more nutritional information, they agreed that these practices would eventually give way to habit which would maintain consumers' purchasing behaviour.

- Manufacturers were satisfied with the regulatory requirements governing health claims, but supported mandatory nutritional labelling.

- Manufacturers were in favour of nutritional education for the consumer, and agreed that consumer education was more important than more nutritional information on food labels.

- Healthfulness was an integral part of the manufacturers' corporate strategies.

- Manufacturers believed that the concept of healthy eating needed to be clarified before nutritional education and the nutritional aspects of healthy eating could be adequately planned.

THE CONSUMERS' ATTITUDES AND KNOWLEDGE:

- Consumers in the 26 to 35 age category, and those who had a higher income, had a significantly better knowledge of nutritional labelling.

- Consumers claimed that they read and understood nutritional information on food labels, but that they did not use it to any great extent.

- Although price is the most important variable in the purchase of food, nutritional information and habit were also significant.

- Consumers who wanted more nutritional information and better standardised nutritional information on food labels, did not understand nutritional information on food labels. Those consumers who did understand nutritional information on food labels were satisfied with the present label format.

- Consumers found diet-related disease messages an acceptable form of nutritional information.

- Although consumers had confidence in the food industry, they favoured mandatory nutritional labelling.

- Consumers agreed that education was needed to help them to understand nutritional information and that a greater emphasis should be placed on education than on more nutritional information on food labels. They also agreed that an increase in nutritional information was important.

- Consumers had a good general knowledge of types of sugars, definition for the term enriched, recommended daily intake of dietary fibre, and what the letters R.D.A. stand for.

- General questions on: order ingredients are listed in, the cholesterol content in margarine, saturated vegetable oils, composition and pesticide residue of organic foods, and the definition of R.D.A. were not well answered.

- Specific knowledge of labelled information on the cereal box with regard to protein and energy content was good and the reason given for this choice was acceptable.

- Consumers did not do well in choosing the correct cereals for both heart disease and high blood pressure and they could not give acceptable reasons for their choice.

- The question involving a calculation and a conversion was not well answered.

- A significant low positive correlation was recorded between consumer attitudes towards and knowledge of nutritional labelling.

- Consumers who had better nutritional knowledge scores were more inclined to read nutritional labels which helped in the purchase of food. Also, the higher the nutritional knowledge score was, the higher the perception was of a need for nutritional labelling education to help in the purchase of the correct types of food which could have an influence on disease prevention.

CHAPTER FIVE

GENERAL DISCUSSION AND RECOMMENDATIONS

5.1 OVERVIEW

In the previous chapter the results of the processed data were presented, interpreted and evaluated.

In Chapter five, the results and findings are integrated and evaluated using other research and currently published criteria. A discussion of the findings follows in order to identify the objectives needed for the formulation of an educational programme concerning the nutritional labelling of food containers. The research process is reviewed and recommendations for further research are made.

5.2 INTEGRATION OF THE RESULTS

The required information to identify the objectives needed for the formulation of an educational programme on the objectives of labelling food containers as well as the target market for this educational programme was collected from the responses to the questionnaires as described in Chapter three. The results are presented in Chapter four, sections 4.2 and 4.3.

The results of this study reported on the food manufacturers' and the consumers' perceptions regarding nutritional information on food labels. The needs and objectives of these two groups together with the statutory requirements required for nutritional labelling, clearly illustrated the complex and controversial nature of nutritional labelling and the problems involved in formulating a simple and easily understood system. The results need to focus on the implications of the following elements:

- the consumer who must choose between a variety of food products while maintaining a healthy lifestyle;
- manufacturers who try to entice the consumer to buy their

product which would satisfy consumer needs in a competitive market, while still making a profit in a competitive market;

- statutory requirements which should protect the consumer while encouraging free enterprise;
- consumer organisations which protect consumers' rights and influence the manufacturers' marketing activities.

The impact of these elements needs to be discussed in order to fulfil the aim of this study (section 1.2), which was to identify the objectives for the formulation of an educational programme concerning the nutritional labelling of food containers.

5.2.1 The Need for an Educational Programme on Nutritional Labelling.

The results of subproblem two (section 4.3) indicated a lack of consumer knowledge as far as nutritional labelling is concerned. Consumers had a positive attitude towards nutritional labelling and also expressed their desire for a nutritional labelling educational programme. This suggests that there is a definite need for an educational programme to adequately equip the consumer with the means to make informed, rational market choices with confidence.

5.2.1.1 Consumer Attitudes Towards Nutritional Information on Food Containers.

Consumer attitudes had a positive leaning at total mean score 18.29 ± 4.8 SD (section 4.3.2) which shows that consumers were in favour of nutritional labelling. Integration of the results revealed that the following elements constitute consumer attitude:

(i) Comprehension

This study revealed that although consumers used nutritional labelling, there was no guarantee that they understood the information. This is consistent with findings in the literature (section 2.4) for South Africa and first world countries.

Although more consumers read nutritional information on food labels

while purchasing food, 57.8% claimed to read the information at home. This implies that when the consumer has more time available, the information is processed more extensively (section 4.3.2).

Greater usage of nutritional labelling for new foods as compared to food purchase in general, implies that the consumer was interested to find out what new foods contain. Although it was found that beliefs were important when initially purchasing food, these gave way to habit (Shepherd, 1991). This was expected because of the time constraints placed on consumers when making food purchases. Confidence in the food industry to inform consumers about the contents of products was also implied (section 4.3.2).

The need for more information, and also for more standardised information was evident, and showed that there were labelling issues that were not being addressed. Consumers who wanted more nutritional information on food labels (13%) seemed to be inclined to use this information to a greater extent, e.g. for planning daily energy intake and when planning meals at home. This underlines consumers' need for more nutritional information and also for personalised information. This study revealed that as consumer understanding of nutritional information increased, so did their understanding of the nutritional labelling format (section 4.3.2). It is therefore argued that the gap between using and understanding nutritional labelling needs to be closed by the provision of better quality and quantity of nutritional information on food containers to facilitate comparison between products.

Consumers viewed diet-related disease statements in a positive light which implies consumer confidence in the manufacturer. Consumers were in favour of scientific evidence to support these statements and they believed the food manufacturer should make a full disclosure about his product, for example: positive statements made about a product should be accompanied by statements of any negative aspect/s of the product. Those consumers who wanted more nutritional information favoured the food label as the appropriate place for diet-related disease statements, and therefore as a source for providing more nutritional information.

The issue of extra payment for the privilege of more standardised

nutritional information on food labels was not investigated in this study. American literature indicates that the consumer wants more extensive nutritional information only if they don't have to pay for it (American Meat Institute, 1992).

(ii) Factors which Influence Food Purchase

The influence of factors such as price, habit, health consciousness, and eating in moderation on food purchase indicated that consumers were generally price conscious. This was expected in the light of the current economical situation. These findings correspond with a report by Bush et al. (1988) on South African consumers, in which they stated that price was more important to "habit" consumers than to "health" conscious consumers. He also reported that under certain circumstances, the health aspect became a more important criterion, a statement which was supported by Bush et al. (1988), Slattery (1986), and Anon (1993c) in both South African and overseas studies. Habitual shoppers were not health conscious in contrast to health conscious consumers who did not buy groceries out of habit. This indicates the health conscious consumers' active role in seeking product information (section 4.3.2).

Moderation and health conscious shoppers indicated their desire for education regarding nutritional labelling. Although moderation shoppers could not be seen as health extremists, they were nevertheless interested in their personal health (section 4.3.2). It is argued that moderation shoppers work within certain boundaries to decrease health risks and that they need to feel confident in their purchase of food. Although the perceived risk for food choice was not as great for moderation consumers as it was for health conscious consumers, it was nevertheless significant. Since the emphasis of this study focused on the use of nutritional information on food containers, the impact of brand name was not investigated. The importance of brand name for moderation consumers was demonstrated by American and British consumers. Brand name has been reported to be the most useful strategy for attracting consumers, and acquiring information about the product the second most useful strategy (Mitchell and Boustani, 1991; Senaur et al.; 1991). As expected, "price" and "habit" shoppers were not interested in a nutritional educational programme on food labelling (section 4.3.2).

(iii) Consumer Need for Nutritional Labelling Education

Consumers expressed their need for more nutritional education to equip the consumer to read food labels which would help in the purchase of food and ultimately, in the prevention of disease. Consumers seemed to believe that more emphasis should be placed on education than on the provision of more information, but that more information was needed (section 4.3.2). The literature reports that nutritional information that is perceived as self relevant elicits voluntary attention and is processed more extensively.

The consumers' positive attitude towards and interest in nutritional information, as well as their apparent lack of confusion regarding nutritional labelling issues, showed that consumers did have an understanding of the purpose of nutritional labelling.

5.2.1.2 Consumer Knowledge of Nutritional Labelling

As the questions testing nutritional knowledge were not well answered overall (section 4.3.3), the gap between "using" nutritional labelling and "understanding" it reflected the conflict between the difference in attitude towards and knowledge of nutritional labelling.

(i) Format

Questions on format revealed that most consumers did not use the list of ingredients or nutritional claims as an informational tool. Comparisons using the numerical method of 100g (ml) were not well received which corresponds with reports by Black and Rayner (1992), and Farmakalidis (1989) for British and Australian consumers respectively. The calculation involving the conversion (question 65, Table 4.4, section 4.3.3) was poorly executed. Consumers had some idea what the purpose of the Recommended Daily Allowance (R.D.A.) was, but the perception that the R.D.A. represented the "required" and not the "recommended" level of nutrients to be used as a guideline for nutrient consumption was evident.

(ii) Terminology

Respondents had some knowledge of nutritional terminology, for example the different terms used to indicate the presence of sugar in food. The South African regulations concerned with labelling of food containing sugar were recently amended (South Africa, 1993) to prevent manufacturers from misleading the consumer. In the past, consumers were unaware that "sugar" is the common name for sucrose (Herbert, personal communication, 1992), with other forms of sugar being exclusive of this term. The media coverage during the period when the regulations were changed could have had an impact on increasing consumer knowledge in this respect.

The term "sodium", which commonly appears on food labels, was not well known, whereas the term "enriched" was known by 72% of the respondents. A high confusion rate was noted as far as the composition of organic foods was concerned as reported in the literature for South Africa and first world countries (sections 2.3.4, 2.4.2.1 and 2.5.3). Shucker (1986), Bush et al. (1988), Black and Rayner (1992) and Eastwood et al. (1992) also reported confusion with terms such as polyunsaturated and saturated fat, R.D.A., natural, fresh, 0% cholesterol, sodium, kilojoules, carbohydrates, and sugar in this country and overseas.

(iii) Functions of Nutrients

As far as the functions of nutrients were concerned, consumer knowledge was fairly good except for the function of fibre in preventing heart disease and the association of salt with high blood pressure. This was consistent with reports by Black's and Rayner's (1992) British consumers.

(iv) Sources of Nutrients

Sources of nutrients, such as cholesterol and saturated fats, were not well known. Although Pronutro was recognised for its high energy content, it seems very likely that consumers drew on their past experience in answering this question. Reasons for this may include:

- nutrient claims and information listed numerically were not well used in other instances;
- Pronutro has been well advertised as a high energy breakfast cereal in the past.

Black and Rayner (1992) also reported that consumers were confused as to the relationship between energy and kilocalories. Another indication of consumers relying on their own knowledge and not reading the label is that All Bran cereal is widely advertised as a high fibre cereal but not as being high in iron. The consumer did not know that this cereal had the highest iron content.

(v) General

Although consumers had some nutritional knowledge, they did not have a good knowledge in any particular area, such as sources or functions of nutrients. Their knowledge seemed fragmented and the influence of both education and misinformation through advertising was noted. This was consistent with reports by Fullmer et al. (1990) on American consumers. The difference in the serving sizes or the way in which the information was given could have influenced three of the questions specific to the cereal label. These questions, which were not well answered, related to the fat, fibre, sodium and iron content of the cereals. Herbert (personal communication, 1992) commented on consumer inability to compare products because of the lack of uniformity in serving sizes or a standard measure to use for comparison in South Africa.

Black and Rayner (1992) reported that Britons tended to work to basic maxims when shopping for food such as "cut down on animal fats", as they did not have the general nutritional knowledge and the knowledge to use nutritional labels in food choice. These basic maxims were translated into strategies that allowed consumers to make quick, easy decisions, e.g. "cut down on dairy products". According to Eastwood et al. (1992) and Sodwa et al. (1993) this could lead to the consumer cutting out valuable nutrients in the diet such as calcium, because of the reduction in dairy products; or a redistribution of food in the diet, e.g. eating a low fat main course which would be compensated for later by a rich dessert.

The results of this study indicated that as consumer knowledge increased, so did label usage and the desire for more nutritional education to aid food purchase and disease prevention (section 4.3.4). The positive correlation between attitude and knowledge (section 4.3.4) indicated that an effective nutritional educational programme can motivate consumers to make more use of nutritional labelling to make healthier food choices and subsequently change their eating habits. Positive correlations between consumer knowledge and attitude, or knowledge and attitude and behaviour have been reported universally by Sims *in* Brush (1986), Brush *et al.*(1986), Schucker (1986), Tzeggai (1986) and Fullmer *et al.*(1991). This indicates that it is possible to affect dietary choices through food labelling.

5.2.1.3 Sources of Nutritional Information

Sources of nutritional information to establish the type of media that can be used most effectively in a nutritional educational programme were not investigated in this study because of time constraints. However, the indication of consumer need for better quality and quantity of nutritional information, the positive attitude towards diet-related disease claims, and their confidence in the food industry indicated that the container was regarded as an important source of nutritional information and education. An important fact to consider in this regard, though, is that if the nutritional label is presented in too much detail, the product's promotional value may decrease, and consumer interest in any other nutritional information on the box may be adversely affected (American Meat Institute, 1992; Black and Rayner, 1992). Since the execution of the study, two of the four cereal boxes used in the survey have displayed nutritional information on the back of the container (Annexure 7.4) for the purpose of educating the consumer about the various nutrients and encouraging them to eat a balanced diet. Of the four cereal boxes used in the study, only All Bran Flakes displayed this type of information on the container (Plate 7.1, Annexure 7.4).

Although the media is a good source of information, the dualism between balanced nutritional news and speculative food fadism news is prevalent and likely to remain so, as the consumer is interested

in any information on food and nutrition (Eastwood et al., 1992; Herbert, personal communication, 1992; Crawley-Boevey, 1993).

Reports from the H.S.R.C. interviewers together with the results of this study (section 5.2.4) indicate that consumers rely on television advertisements for a substantial amount of their product knowledge. However, Crawley-Boevey's (1993) study focused attention on the distinction between the influence of television on the more affluent consumer, as opposed to the impact radio has on the greater proportion of Black households in South Africa. Magazines and newspapers have a reputation for inaccurate reporting as far as nutritional information is concerned. Pamphlets such as the labelling pamphlet shown in Annexure 7.4 are taken home by a large number of consumers but the effect of the available information on food purchase is unknown (Lakani, 1990).

In-store nutritional information from sources such as Table tents; displays; posters; leaflets; competitions; giveaways such as nutritious food samples, cooking books and recipes, has been used in overseas food stores and to a limited extent in South Africa. According to Probart (1993), in-store nutritional educational has not been consistent in demonstrating change in food buying behaviour because of the following reasons:

- lack of consistency in nutritional information from store to store;
- lack of resources;
- limited consumer exposure;
- difficulty in gaining consumer attention as point of purchase education materials compete with food product advertising clutter and the time the consumer has available for food purchase.

An American study which had the desired effect of changing eating habits used brand specific information placed near the product, which gave information on a few nutrients of particular interest to the public. The success of this strategy was dependent on the length of time for nutritional information exposure, and shifts in purchase behaviour were not detected until the second year of the programme (Schucker; 1986).

Although media such as cereal boxes, television, newspapers and magazines and in-store promotions can all be used to convey information to the public, the poor nutritional knowledge of the consumer emphasises the need for an alternative strategy to provide nutritional information. The literature indicates the need to actively involve the consumer with problem solving tasks in order to better understand dietary goals and to motivate them to bring about changes in their dietary patterns. The importance of self-relevant information (MacInnis et al., 1991; McNutt, 1992; Eastwood et al., 1993) as well as the need to evaluate nutritional information effectively (Fine, 1990, Kirk, 1991) must also be stressed.

Examples exist of active involvement of the public in nutritional education, both locally and overseas. Van Den Berg and Jurgens initiated a nutritional educational programme in Black Schools in selected areas in South Africa after the introduction of a fortified staple food which had not sold as envisaged (Lakani, 1990). Part of this educational programme was the promotion of a home garden to increase the consumption of ascorbic acid. Nutritional education is also integrated into the different school subjects. Integration is used in British schools as part of their Healthy Eating Campaign to motivate people to apply this knowledge in their lives and to acquire considerable breadth and depth of nutritional knowledge. There is, however, no indication in the literature of the formulation of an educational programme that actively involves the greater public. According to Lakani (1990), the Van Den Berg and Jurgens educational programme was not targeted at adults because their eating patterns are resistant to change. This underlines the importance of active involvement of the consumer in nutritional education and the need for the formulation of such a programme.

Another source of nutritional information is health professionals. In the past the medical profession was not very involved or interested in issues related to nutrition. This, however, is changing with more scientific papers related to nutrition being published and therapeutic diets being used alongside medicines. The medical profession has an important influence on dietary habits and nutritional care, and could therefore make a considerable contribution to the changes in dietary habits in the future (Herbert, personal communication, 1992).

5.2.2 The Role of the Food Manufacturer

The opportunity to educate the consumer at point of purchase on a continual basis exists for the food manufacturer and retailer. During the shopping expedition, attention is focused on the food being purchased. This provides an opportunity to convey nutritional knowledge and create an awareness of health through nutritional labelling and information on the container; other in-store information (section 5.2.1.4) as well as through conventional media.

5.2.2.1 The Food Manufacturers' Perceptions

Cold breakfast cereal manufacturers were generally in favour of nutritional labelling. The results of the investigation into the first subproblem indicated that the manufacturers (Annexure 7.2) were in favour of mandatory nutritional labelling (section 4.3). A substantial number of these manufacturers also used nutritional claims. The study found that Manufacturers generally provided nutritional labelling on the containers of their products. A reason for this could be the accessibility of the nutritional information when the cereal is eaten with the cereal box present at the breakfast table (mode = 20), which would add to the product's marketability (questions 12 and 13, Table 5.1, section 7.10 and 7.11). As seen from the results of this study, more than half of the consumers surveyed read nutritional labels at home (section 4.3.2).

The food manufacturers' perceptions of nutritional labelling on food containers can therefore have a considerable influence on consumer attitudes towards and knowledge of this information. At the same time consumer knowledge and attitudes are of great importance to the food industry, with customer satisfaction a priority in order for the company to remain commercially viable.

Table 5.1 illustrates certain aspects of the perceptions of nutritional labelling on food products from the manufacturers' and the consumers' point of view. The manufacturers' responses to questions 10 to 21 and the consumers' responses to questions 11; 13; 14; 16; 18; 20; 21; 22; 23; 29; 31; 33; & 34 are listed (section 3.4.3, Annexures 7.10 and 7.11, Table 5.1).

Table 5.1: MANUFACTURERS' (N = 8) AND CONSUMERS' (n = 388) PERCEPTIONS OF NUTRITIONAL LABELLING ON FOOD PRODUCTS. A LICKERT SCALE WAS USED[a]

Q.	Attitude	mean ± SD		mode score		mode no[c]	
		Manufac	Cons	Manufac		Cons	
10/12	Consumers read nutritional information on food labels when purchasing food items.	18 ± 5	18 ± 10	20	4	20	133
11/13	Consumers read nutritional information on food labels such as that on cold breakfast cereal boxes when they eat breakfast.	18 ± 7	16 ± 11	20	5	20	116
12/14	Consumers read nutritional information on food labels when planning meals at home.	10 ± 5	11 ± 10	10	6	1	171
13/16	Consumers understand nutritional information on food labels.	14 ± 5	22 ± 9	10	5	30	177
14/18	Nutritional information is important to consumers when choosing a new product.	20 ± 9	22 ± 9	30	3	30	199
15/20	Consumers would like more nutritional information on food labels to assist them in making a choice when purchasing food items.	19 ± 6	15 ± 11	20	3	20	108
16/17	Consumers do not have sufficient background knowledge to use nutritional information on food labels.	21 ± 4	21 ± 10	20	5	30	175
17/22	If more products presented a standardised form of nutritional information, consumers would be able to use this to assist them in reading food labels.	24 ± 5	20 ± 9	20	7	20	145
18/23	Consumers find the type of label format easy to understand (i.e. the way in which nutritional information is presented - in numerical fashion.	16 ± 5	20 ± 9	20	6	20	159

a Based on a scale of 1 through 30: 1 = definitely agree, 30 = definitely disagree.
b SD = Standard Deviation.
c Number of respondents at modal score.

Table 5.1: CONTINUED: MANUFACTURERS' (N = 8) AND CONSUMER' (n = 388) PERCEPTIONS OF NUTRITIONAL LABELLING ON FOOD PRODUCTS. A LICKERT SCALE WAS USED.[a]

Q.	Attitude	mean ± SD		mode score		mode no[c]	
		Manufac	Cons	Manufac		Cons	
19/29	Consumers purchase food items out of habit and do not read nutritional information on food labels.	20 ± 5	16 ± 20	20	5	20	108
20/31	Consumers assume diet-related disease statements (eg calcium prevents osteoporosis) on food labels are accurate.	21 ± 4	24 ± 8	20	5	30	216
21/31 & 34	Consumers assume diet-disease statements are misleading, that they are placed on the box to try and get them to by the product.	7 ± 5	12 ± 9	10	6	10	137

a Based on a scale of 1 through 30: 1 = definitely agree, 30 = definitely disagree
b SD = Standard Deviation.
c Number of respondents at modal score.

Any significance between the replies of the consumer and the manufacturer could not be measured using the McNemar symmetry x^2 test, as the sample of food manufacturers was too small in relation to the sample size of consumers and any comparisons would lead to distorted results.

The manufacturers' perceptions of nutritional labelling were similar to those of the consumers (Table 5.1) with the following exceptions:

- manufacturers perceived consumers to use nutritional information to a greater depth than the consumers claimed;
- consumers claimed that they understood nutritional information and had sufficient background knowledge to interpret this information, whereas manufacturers perceived that consumers had limited understanding and background knowledge;
- consumers had a more positive attitude towards the accuracy of diet-related disease statements than the manufacturer perceived the consumers to have.

However, 43% of the manufacturers approached did not respond to the questionnaire (section 3.3.4). This strongly suggests the presence of product bias associated with the food industry in the literature (section 2.3).

5.2.2.2 Factors for planning Corporate and Product-specific Strategies

Manufacturers need to take cognizance of the following factors in the planning of corporate and product-specific strategies:

- consumers want better quality and quantity of nutritional labelling information;
- health claims are favoured as a good source of information;
- although consumers use nutritional labelling, lack of understanding and diverse label information hinder their effectiveness;
- consumers expressed confidence in the food industry, but full disclosure of products' nutrient content and mandatory nutritional labelling were favoured;
- although South African consumers are price conscious, in some cases health concerns may rival price in food purchase;
- consumers are confused about terms such as "organic food" and negative claims such as "0% cholesterol";
- fragmented nutritional knowledge and misinformation cause irrational purchase behaviour.

5.2.2.3 Dilemmas Facing the Food Manufacturer

The food industry is said to be unethical, driven by marketers interested in what sells, and by accountants interested in profit. Consumers have a reputation for irrational buying behaviour, but often consumer needs are exploited, such as the demand for natural and organic foods, which is encouraged by food manufacturers. These unethical practices not only lead to confused consumers, but also create an uneven playing field for the manufacturer.

(i) Consumer Behaviour and Perceived Food Risk

One of the dilemmas facing the food manufacturer is the need be

to protected against every reasonable risk, and some unreasonable ones, while still maintaining a profitable operation, and these may in fact call for some contradictory measures. Nutritional health and information is a difficult area for the manufacturer, as it covers both consumer perception of what is required and consumer perception of the issues of the day. Confusion may be compounded by misinformation arising from a variety of sources such as media emphasis, public and political opinion, and by perceived risk and perceived benefit (Eastwood et al., 1992). The majority of consumers are not experts in the technical areas required for the estimation of food risks. Oversimplifications and superficialities such as "junk foods", "all natural", "poisons" and "organic" have become code words that substitute for information and reason. These code words have great appeal and result in a high profit margin. This leads to exploitation of consumers for commercial, social and political purposes and also to a set of perceived risks quite different to the objective and to real risks (Bush et al. 1988). The results of this study indicated that consumers were confused about issues that were used to exploit their purchasing behaviour in the past such as "organic foods" and the use of negative claims, e.g. "margarine contains 0% cholesterol". However, the manufacturers questioned did not believe that the use of controversial terms such as "natural" and "organic" would undermine the future promotion of healthy eating (section 4.2.4).

Manufacturers are confronted with the dilemma of either exploiting consumers' perceived risks and thereby adding to consumer fears and misapprehensions, and through that exploitation seek competitive advantage and profit or, alternatively, providing effective labelling and education, thereby pursuing the route of attempting to remove consumer fear and misconceptions. The latter approach will convert involuntary risks into voluntary risks (Bush et al., 1988; Booth, 1989; Huskisson, 1990). It has been shown that Australian consumers, for example, have the benefit of full labelling information, yet are more concerned about food additives despite being educated about fibre intake which would benefit their health, but which is not well received. Such gaps between consumer education and their perceived risks need to be addressed.

The manufacturers' continued success in the market is dependent on existing and new health food products being significantly healthier and not just perceived as healthy, or an erosion of trust will result (Mitchell, 1991). Consumers questioned in this study indicated their confidence in the food industry, but they required the full disclosure of both positive and negative aspects of foodstuffs. Scientific evidence and legislation were also factors that the consumer favoured. Food marketers need to develop a corporate image and brand images that include healthfulness as a positive attribute alongside and compatible with other attractions and values. As consumer attitudes and knowledge of healthy eating improve and their confidence in industry grows, the appeal for mandatory nutritional labelling should diminish.

5.2.2.4 Target Market

Shapiro (1993) stated that white consumers were the main consumers of cold breakfast cereals in South Africa. Cold breakfast cereals were also seen as an expensive food item, popular for its convenience value (Crawley-Boevey, personal communication, 1993) and therefore attractive to this affluent minority group. According to the findings of this study, it seemed that most of the cold breakfast cereal manufacturers surveyed were catering to their target markets' needs (section 4.2 and 4.3.2), which is evident in the presentation of the nutritional label, which seems primarily to serve the needs of affluent women who are responsible for the purchase of household groceries.

Although women are mostly responsible for grocery shopping, the rise in the number of singles and single parent families has seen an increasing number of men doing the grocery shopping (Stanton *et al.*, 1991). The inclusion of men in a nutritional labelling programme could encourage them to take a more responsible role for their health (section 2.4.1.4). As it may be assumed that men's nutritional knowledge is similar to that of women (Tzeggai, 1989), because no correlation has been found between nutritional knowledge and gender (section 4.3.3.2), such a programme would be beneficial to men as well.

A single nutritional labelling educational programme could be used

for more affluent South Africans, but the needs of South Africa's illiterate population and those who are too poor to be concerned with the quality of food they eat, also need to be identified and catered for. Research has shown that people who read nutritional information on food labels are well educated, very concerned and in the minority (Bell, 1992). South Africa has a first world food industry with the majority of the population being third world. It can be argued that the value of food labelling lies in convenience foods, which excludes the poor segment of the population because they eat a simple diet and are therefore not at risk for diseases of over-consumption such as heart disease, diet-related cancer and allergies (Herbert, personal communication). Low income groups are however at risk for dietary deficiencies and malnutrition. Additionally, this group is also susceptible to deception on the part of unscrupulous manufacturers. It therefore follows that if it is necessary to secure the rights of consumers in sophisticated countries, then it is of greater necessity to secure the rights of the disadvantaged and the semi-literate (Lakani, 1990). It is morally unjust to use the illiterate situation of the under-developed as an excuse for not developing an internationally responsive labelling strategy.

According to Sunderlund (1992) brand names and squiggles are used by the illiterate segment to identify foodstuffs. Pictorial information could be developed for the benefit of this group which could also be advantageous to other sectors of the population because of the limited processing time required. This could eliminate the linguistic problem although English, the language most used on food labels today, is the second language of most South Africans.

Consumers often feel that generalised education and information do not apply to their individual situation. Programmes should therefore be specific, and aimed at tackling the issues relevant to the target group (Eastwood et al., 1992). A compromise between general and specific information needs to be sought, for example key issues for the affluent consumer include:

- reduction in body weight;
- reduction of fat in the diet;
- the inclusion of more fibre;

- using salt sparingly.

However, the affluent consumer is very concerned about information on food additives which concern only 2% of the population and this information can be obtained from the Food Intolerance Data Bank.

Because consumers have indicated a need for more personalised nutritional information, focusing the most important messages for each audience or market niche can help professionals develop more cost effective educational programmes. This method of educating consumers could have possible disadvantages as education could become product specific and disregard the total health aspect of healthy eating and disease prevention.

5.2.2.5 The Benefits of Nutritional Labelling and Education

Nutritional labelling and the education of consumers will be beneficial to both the manufacturer and the consumer. Continual rise in medical costs and the evidence of diet-related disease will maintain consumer interest in diet-related disease relationships and in nutritional labelling. Advantages of nutritional labelling and education include:

- customer satisfaction;
- good promotion for store;
- fits with the grocery business;
- increased profitability;
- tourists will have access to information at an equivalent standard to that in their own countries;
- a level playing field for the manufacturer with a consumer less susceptible to deception;
- contribution to public health.

One of the arguments against nutritional labelling is that it is time consuming for the consumer to process, but the amount of time and money the consumer spends on health maintenance (i.e. exercise, diet, and health food) negates this. Once consumers have been informed and educated, and their beliefs have given way to habit, they still retain the knowledge and awareness to maintain sound eating patterns and to make informed choices.

Points of contention over the cost of nutritional labelling include:

- analysis of the nutrient content is expensive;
- enough trained chemists and laboratory space to analyse nutritional content are not available in South Africa;
- changes to the labelling container will add to the expenses;
- consumers are not prepared to pay extra money for improved nutritional labelling;
- space on the container to print labels is limited (Herbert, personal communication, 1992).

However, an argument in favour of nutritional labelling can be offered for each of the above points:

- nutrient content analysis cost is insignificant when measured against profit returns (Herbert, personal communication, 1992). An analysis programme such as the Foodfinder Dietary Analysis software programme of the Medical Research Council of South Africa could be used at minimal expense to the manufacturer, as the use of this programme does not require the facilities or the specialised manpower necessary for chemical analyses;
- manufacturers frequently change their product containers and labels for promotional purposes. Added to this, the actual cost of the food is only about 30% of the total price, and the container costs only about half this amount whereas the rest of the expenses are made up of retailing and advertising costs (Herbert, personal communication, 1992);
- Nutritional labelling could be a very effective promotional tool with returns on investment being realised in increased sales (Schucker, 1986; Herbert, personal communication, 1992.) It has been suggested that provision be made for labels to be printed only on containers that are meaningful sources of nutrients which would eliminate the need to label small containers (Herbert, personal communication, 1992).

Effective nutritional labelling and education lead to informed, rational market choices on the part of the consumer, and therefore a healthier population. Misinformation will be limited and the manufacturer will be able to better communicate advantages of

developments in food technology and so keep up with changing consumer attitudes. Nutritional labelling and education can decrease the level of anxiety and convert an involuntary risk into a voluntary one by providing the consumer with information that permits an informed choice (Bush et al., 1988).

In order for the consumer to follow the dietary guidelines such as the reduction of salt intake, nutritional labels must provide this information and the consumer needs to be educated as to the minimum amount of salt needed per day. South African consumers do enjoy foods with a high salt content, as argued by many manufacturers, but this is an acquired taste which can be changed. Even if nutritional labelling is not used directly by some consumers, it will encourage the provision of more nutritious products, increase in consumer confidence in the food industry and satisfy the consumers' right to know (Senauer et al., 1991). "Effective nutritional education does not teach a set of rules to guide all eating behaviour, but empowers learners to take responsibility for their own decisions and behaviour" (Parham, 1993).

Too much labelling information could cause an information overload which may lead to adverse or no behavioural changes. Standards of living can be increased through educational programmes, for example through in-store literature about healthy eating, but this could be seen as further "noise" complicating the purchase decision. One of the factors affecting the success of brands in the future will be the effectiveness with which their benefits are communicated to consumers.

Educational programmes should not only focus on the quantity of facts but instead address the quality of grocery information (de Charnatony, 1991). The emphasis should be on a few nutrients that the consumer is interested in at the time. Changes should be made when appropriate, for example when scientific consensus is reached as to new discoveries or when consumer interests change. To be effective, any system of food labelling should act as the cornerstone of a public education policy (Huskisson, 1990).

5.2.3 The Influence of Statutory Requirements

As technological advancements are made in the field of processed foods, the role of legislation in food labelling can help to clarify consumer confusion. However, confusion can increase if the demands for information are not supported by continually updated legislation. Legislators have a responsibility to be continuously aware of consumer needs and how these relate to changes in legislation. (Fallows and Gosden, 1989; Eastwood et al., 1992).

The purpose of legislation in S.A. is to protect consumers against misrepresentation and falsification, to allow consumers to make a free choice of food and to protect them against food which may harm their health. If consumers do not understand the information on food labels and therefore cannot use it to plan a balanced diet, their health could be harmed. This becomes increasingly significant with the trend of increased consumption of convenience foods as seen in the U.S.A. (Herbert, personal communication, 1992; Loubser, 1992).

South African legislation is not as sophisticated as that in more developed countries (section 2.2). Changes to the legislation in these countries have been brought about to inform consumers what they are eating and to influence them to eat a healthier diet as part of a wider healthy eating campaign. It is too soon to measure the effects of these recent improvements with most attention being focused on the United State's comprehensive mandatory approach.

South Africa has its own unique health needs which will have to be catered for and evaluated. Proposed South African labelling regulations do not allow for the standardisation of serving sizes. The expense involved in standardising serving sizes (which is the route the U.S.A. has taken) makes it an unlikely occurrence. This method is also unrealistic where different serving sizes are used in practice e.g. children eat a smaller serving of breakfast cereal than adults eat of muesli. Instead, the proposed South African regulations require the use of 100g (ml) serving size and percentage R.D.A. when a nutritional claim is made (South Africa, 1993). This allows the consumer to compare products and also to know how much of a nutrient he is getting without having to make a calculation. If no claim is made, provision is made for the manufacturer to give nutritional

information voluntarily per 100g (ml), and if he wishes, information per serving and % R.D.A. per 100g (ml). Negative aspects of this system include:

- the manufacturers' serving size is smaller than the serving sizes the consumer uses;
- increased complexity of the food label (Black and Rayner, 1992; Farmakalidis, 1989);
- manufacturers don't have to give any nutritional information except when using a nutritional claim.

Although the proposed regulations satisfied the various parties belonging to F.L.A.G., if implemented, they will have to be assessed to determine their impact on consumer needs and health.

From the results of this study, the following factors need to be considered when legislation is reviewed in the future:

- consumer interest in the use of health claims to provide information;
- consumers favoured the implementation of mandatory information;
- consumers found comparison between products difficult;
- as consumer knowledge increased, their attitudes towards the present label format improved;
- misconceptions of terminology were prevalent (section 4.3.3).

Further changes to South African labelling regulations will not be made before the E.C. proposals have been implemented. The E.C. proposed labelling regulations are similar to South Africa's (section 2.2); however, without mandatory nutritional labelling or the co-operation of the food industry to provide more and more uniform nutritional labelling as well as consumer education, the quest to motivate the consumer to eat a balanced diet will become increasingly difficult. Advances in technology and the demand for convenience food increasing the amount of processed food available to the consumer and consequently the amount of information not understood by the consumer, will aggravate the situation.
Although people with low incomes are more interested in the quantity of food rather than in the quality, these consumers do eat some

convenience foods and will need protection because of their susceptibility to deception by unscrupulous manufacturers who serve this target market. This sector of the population could also benefit from improved nutritional labelling and a nutritional educational programme could cater for their specific needs such as informing them of deficiencies in their diets of protein, certain B vitamins and Vitamin C.

The South African Government of National Unity's health care policy focuses on primary health care, which includes heart disease, one of the diseases of over-consumption. Consumer organisations are interested in making nutritional labelling mandatory in view of the high incidence of diseases attributable to increased urbanisation and the low fibre, high fat and high salt content of the average South African diet. South Africa has one of the highest heart attack death rates, with hypertension affecting about three million people, and escalating fast. The National Cancer Association believes that 30% - 40% of cancers are linked to dietary factors (Loubser, 1992; De Villiers, 1993; Bell, 1992). Money spent on the treatment of preventable diseases could be saved with the improvement of nutritional labelling and consumer education.

Government interest in promoting tourism and free trade also makes uniform nutritional labelling a major consideration. Potential overseas markets and tourists will be more likely to purchase foods with food labels catering to their needs as shown in the U.K. and U.S. (Herbert, personal communication, 1992).

The present South African Government of National Unity has more credibility than South African governments in the past, but still does not have the finances to carry out an educational programme to improve the health of the public. Without the appropriate education, nutritional labelling legislation will remain largely unfunctional. The need for collaboration among the Department of Health, the Food Industry and consumer organisations is therefore emphasised.

5.2.4 *The Effect of Consumer Organisations on Nutritional Labelling Issues.*

This study has shown that the consumer favours mandatory nutritional labelling and the need for more information, and more uniform information on food labels. This corresponds with consumer organisations' efforts to implement mandatory nutritional information or to encourage the food industry to provide a better quality and quantity of information.

Consumers also expressed a greater need for nutritional education than more nutritional information, which underlines the necessity for immediate implementation of an educational programme. While manufacturers maintain that with the present level of consumer education it may not be beneficial to introduce full ingredient labelling, the initiation of the proposed labelling regulations has been delayed by more than a year. The argument that standardised information should come before an educational programme to be of any real benefit weakens as consumers become more confused by the proliferation of information, their confidence in the food industry and their attitude towards healthy eating weaken, and medical costs rise. Increasing consumer awareness through education could also have the effect of better communication of their needs to government and the food industry. Examples of this include: educating consumers how to recognise discrepancies and how to find and elicit information from the food manufacturer when the information is not provided.

5.2.5 *Objectives for a Nutritional Educational Programme.*

The integration of the results as presented in Chapter four, suggests that the following nutritional attitudes and knowledge need to be addressed in a nutritional educational programme on the labelling of food containers:

5.2.5.1 Nutritional Attitudes

- to motivate consumers to make use of nutritional information on food labels in order to choose foods that will contribute

to a balanced diet, thus maintaining their health;

- to urge consumers to critically assess the nutrient content of new foods that are added to the diet;
- to encourage consumers to take responsibility for their health by choosing foods of which the nutritional content is stated on the container, and to encourage consumers to communicate their need for this information to the manufacturer;
- to motivate consumers to report and act on any discrepancies they encounter with food labels;
- to make consumers aware of "actual risks", for example high fat intake, and to reduce "perceived risks" which are unreasonable, such as the consumers' concern with additives;
- to urge consumers who are pressurised for time to make random checks on the nutrient content of their diets using the information on food labels;
- to encourage consumers who purchase food out of habit and who do not consider the nutritional implication of their choice of food on their diet to take responsibility for their health and to use nutritional labels as an information tool when purchasing food.

5.2.5.2 Nutritional Knowledge

- to teach consumers to understand and effectively use nutritional labelling information during the purchase of food and at home as part of a balanced diet;
- to help consumers understand the format that is used to present nutritional information, e.g. the list of ingredients, how measures of nutrients given per weight and percentage of R.D.A. relate to the dietary guidelines, and nutritional claims;
- to inform consumers that the R.D.A.s represent recommended levels of nutrients and not required intakes;
- to increase consumer understanding of terminology used on food labels, and the functions and sources of nutrients present in processed foods, and other foods that contribute to a balanced diet;
- to provide nutritional education which actively involves consumers in problem solving tasks with the use of self

relevant information in order to lead the consumer to a greater understanding of dietary goals;

- to inform consumers of the cost benefit relationship in food choice, e.g. fresh fruit is perceived to be expensive but in relation to other snack food, price becomes irrelevant;
- to equip the consumer with the knowledge to critically evaluate nutritional information from sources prone to bias and sensationalism in order to raise awareness of misinformation;
- to teach consumers to weigh the positive attributes of a product claimed by the manufacturer, with negative points not emphasised by the manufacturer;
- to inform consumers how to compare products in a similar category using limited information, including how to convert information given per 100g (ml) to the serving size used by the consumer;
- to increase consumer understanding of the relationship diet has with disease;
- to provide education about key issues such as: reduction in body weight, fat, and salt; and the increase of fibre in the diet;
- to teach the consumer how to include food groups which have become health issues such as red meat, dairy products and indulgence foods in a balanced diet.

5.3 THE RESEARCH PROCESS

5.3.1 Methodology

The following descriptive survey methods were used for obtaining the data:

- the postal survey method consisting of a questionnaire, completed by the population of marketing managers of cold breakfast cereal companies;
- a formally structured interview questionnaire completed by a sample of consumers under the supervision of H.S.R.C. interviewers.

5.3.1.1 The Population of Manufacturers

The total population of cold breakfast cereal manufacturers was included in the survey. The 57% response rate, although considered reasonable for self administered questionnaires followed by mail return (Leedy, 1985), suggests product bias for the non-respondents and the food industry in general (section 3.3.4). All follow-up efforts to encourage the return of the questionnaire proved to be negative. Since the reasons for the non-response are not clear, any strategy formulated on nutritional labelling will have to take cognizance of the group. Although personal interviews would have elicited a higher response rate, the expense involved, because of the geographical distribution of manufacturers over a wide area (section 3.3.2), did not merit this survey method.

5.3.1.2 The Sample of Consumers

The multi-stage cluster method of sampling was used to derive a representative sample of consumers (section 3.4.1) that fulfil the criteria set out in the delimitations (section 1.2.3). This method of sampling resulted in 20 respondents in each of the 20 middle income suburbs in the Durban Magisterial District being interviewed, which ensured a wide range of respondents. The suburbs totalled 39. The possibility of non-response was also reduced and the procedures followed when this was encountered did not introduce bias (section 3.4.2, 3.4.4). The large number of 400 consumers also made the sample more representative. These factors make it possible to extrapolate these results to the entire population segment in South Africa as laid out in the delimitations (section 1.2.4).

5.3.2 The Manufacturers' Questionnaire

In the design of the questionnaire, it was assumed that the marketing manufactures of cold breakfast cereals were fluent in the English language, that they knew what market "health conscious", "moderation" and "bulk" consumers represented, and that their answers would be positive, constructive and honest (section 1.2.4). Lack of contradiction and apparent lack of confusion in the interpretation of answers given, indicated that these assumptions

were valid (section 4.2).

The high non-response rate attributed to postal surveys (Leedy, 1985) limited the number of questions on the manufacturers perception of nutritional labelling. In retrospect questions on the importance of nutritional claims, sources of nutritional information for the manufacturer, and suitability of the present labelling format could have been included. The nature of the survey, viz. on the manufacturers' perspective of nutritional labelling in general did, however, meet the required goal.

5.3.3 The Consumers' Questionnaire

Most food labelling on the cereal boxes selected for the survey was printed in the English language. It was assumed that this would not have an influence on the results, (section 1.2.4) as research showed that Afrikaans speaking people would buy food with English labelling, but that English speaking people were unlikely to buy food with Afrikaans labelling (Herbert, personal communication, 1992). One of the reasons for this phenomenon could be the mistakes or incorrect terminology prevalent on Afrikaans food labels (Du Toit, 1993). Another reason could be that Afrikaans speaking people may be more proficient in English than English speaking people are in Afrikaans (Coertze, personal communication, 1994). Lack of confusion indicated that this assumption was valid.

Consumer responses were not contradictory in nature, which showed that the assumption that their contribution would be positive, constructive, and honest was valid. Lack of confusion also showed that consumers interpreted questions correctly (section 4.3). The trends depicted in this study are supported by observations made for studies done in the U.K and the U.S.A., which showed positive nutritional attitudes but little or fragmented nutritional knowledge (Fullmer et al., 1991; Black and Rayner, 1992) (section 4.3). The trend of increased income affecting consumer knowledge and attitude as shown in the U.K. (Heasman, 1991) was also shown in this study.

The use of trained interviewers of the H.S.R.C. to administer the questionnaires was beneficial, as not only was bias eliminated by

using trained interviewers, but the time span in which the consumers' attitudes were measured was significantly shortened. This increased the validity of the results because consumers are continually exposed to information changes through the media. This ensured that consumer responses were comparable. Interviews were conducted in the language of the respondents, which eliminated problems arising from language barriers.

This study was delimited to women as it was assumed that it would be their role to be responsible for the purchase of household groceries (section 1.2.4). Of the respondents surveyed, 96.4% were responsible for the purchase of household groceries and 92% were responsible for the planning of these purchases. These findings validate this delimitation (section 4.3.1).

The questionnaire was broad in its scope due to its general nature, but limited in its depth because of time constraints. Its purpose was carried out, however, as the results show that although the majority of consumers have a positive attitude towards nutritional labelling, they are unable to use nutritional knowledge on food labels to assist them in food purchase (section 1.2.2.2). The ability of the consumer to use nutritional information presented numerically and to compare labelling information, knowledge of prevalent diet-related disease relationships, terminology, functions and sources was measured (sections 4.3.3, and 5.2.1.2, Annexure 7.5). Questions on nutritional claims, sources of nutritional information, the frequency of nutritional labelling usage and more in-depth knowledge questions could have been included with fewer questions on diet-related disease statements.

Four cereal boxes were used for this study: Kellogg's All Bran Flakes and Coco Pops, Pronutro, and Nature's Source's Ideal Mix (section 3.4.2, Annexures 7.8 and 7.9). The selection of cereal boxes was found to adequately support the general nature of the knowledge questions and was not seen to influence the consumers' answers to the knowledge questions (section 4.3).

The Afrikaans translation of the questionnaire, the training session and manual, and the pilot study were of great help to the H.S.R.C. interviewers in administrating the questionnaire. The vocabulary was

clear with few explanations made. The interviewers, however, complained that respondents took a long time to answer the questionnaire because of their interest in the subject which stimulated conversation.

5.3.4 The Hypotheses

Due to the time lapsed since the survey was conducted and the study published, both consumers' and manufacturers' perceptions towards nutritional labelling have probably changed.

In Section 1.2.2.1, it was hypothesised that manufacturers did not rate nutritional information on food labels as an effective marketing tool. This hypothesis was rejected as the manufacturers surveyed showed a positive attitude towards nutritional labelling, and 75% of them used nutritional labelling on their containers (section 4.2). It is, however, postulated that food manufacturers are generally biased, as 43% of the population of manufacturers did not respond to the questionnaire (section 3.3.4). This hypothesis is generally supported by the literature (Bell, 1992; Herbert, personal communication, 1992).

The hypothesis for subproblem two (section 1.2.2.2), that the majority of consumers would be unable to use nutritional information on food labels to assist them in food purchase, was accepted. Although nutritional attitudes were positive, knowledge was fragmented. The influence of conventional media on answers to knowledge questions was noted (sections 4.3, 5.2.1.3 and 5.3.6).

In section 1.2.2.3 it was postulated that the necessary determinants needed for the formulation of an educational programme on the objectives of labelling food containers could be identified. The integration of the results obtained in section 5.2 indicated that the third hypothesis could be accepted. Section 5.2.5 lists the objectives for a nutritional labelling educational programme. Section 5.2.2.4 discusses the relevant target markets at which this programme should be aimed.

5.3.5 Constraints on the Research Process

5.3.5.1 The Manufacturers' Questionnaire

The inclusion of manufacturers of food products other than cold breakfast cereals would have been more representative of the food industry. The relationship between product and target market is, however, becoming increasingly important (Stanton et al., 1991). This study showed that cold breakfast cereal manufacturers were catering to their market's needs, with manufacturers targeting their product at "health conscious" and "moderation" consumers. Shapiro (1993) stated that white consumers were the main consumers of cold breakfast cereals in South Africa, and it is this group that is interested in improved nutritional labelling. This product is perceived to be an expensive food item, popular for its convenience value (Crawley-Boevey, personal communication, 1993), and therefore attractive to an affluent minority group. Of the consumers surveyed, only 9.8% never ate cold breakfast cereal, and 68% ate cold breakfast cereal more than once a month.

A reason for the cold breakfast cereal manufacturers' positive attitude towards nutritional labelling could be the accessibility of the nutritional information to its users when the cereal is eaten with the cereal box present at the table at breakfast time (mode = 20), which adds to the product's marketability (questions 12 and 13, Table 5.1, section 7.10 and 7.11). More than half of the consumers surveyed, read nutritional labels at home (section 4.3.2). A substantial number of manufacturers also used nutritional claims. Competition within this product range for the provision of nutritional information could also influence attitudes. These factors could dictate the strategies of the various food companies in providing nutritional labelling.

5.3.5.2 The Consumers' Questionnaire

The reselection of the area in the suburb Musgrave (section 3.4.1) should not have had a substantial influence on the results as the respondents met the delimitation criteria. Problems were also experienced with the suburb of Parkhill. White female consumers were

found to be living in a small section of this suburb, severely limiting the method of selection of an area to survey for this suburb. Because of the large sample size, this should not have substantially influenced the results.

The results of this study showed that as income increased, so did nutritional labelling knowledge. Some H.S.R.C. interviewers did, however, complain that problems were experienced with finding consumers that earned an income From R10 000 to R50 000 a year in the middle income areas (section 1.2.3, 1.2.5). The Central Statistical Service classifies middle income at R50 000, whereas the H.S.R.C. classifies this income group at R30 000 to R60 000. Nutritional labelling attitude and knowledge levels should therefore be better for the higher income group (section 4.3.4). This should be taken into account when defining the target market for food products and a nutritional labelling educational programme.

Although the formally structured interview questionnaire method was used for the consumer questionnaire to ensure that consumers answered the knowledge questions correctly, i.e. by observing the nutritional information on the cereal boxes, the H.S.R.C. interviewers reported on the consumers' use of nutritional information from televised product advertisements to answer the knowledge questions.

Consumers could have had a positive attitude towards nutritional labelling because cereal boxes, which give a relatively large amount of nutritional labelling on the container, were used in the study, and this could have influenced the results. The consumption of cold breakfast cereals did not, however, correlate with attitude (section 4.3.2.3).

Consumers over the age of 55 years old were eliminated from the study as few women with an education above the standard eight level fall into this category in South Africa. This would distort the results as too few consumers would fall in this category (Pillay, 1993). Studies have shown that the older the respondent, the more problems they seem to have with reading food label print (Tatham, 1989), and the less knowledgeable they are about nutritional labelling (Tzeggai, 1989). Nutritional education could, however, be

of great benefit to this segment of the population because of the benefits of healthy eating for the elderly. It is suggested that this segment of the population be investigated as far as their needs for nutritional labelling are concerned.

5.4 RECOMMENDATIONS

Consumers need to be educated about good nutrition as a whole, with the use of nutritional labelling as one of the tools to achieve a balanced diet. Only with the co-operation and co-ordination of the policies of the manufacturer, the government, and consumer organisations, such as in America and to a large extent in the U.K. (section 2.6.1.1), can any significant change in diet be achieved.

Consumer education can be implemented before changes are made to the present labelling system to stimulate awareness. The American Meat Institute (1992) suggested from the results of their poll that a national educational programme be implemented immediately and that it should precede final introduction of new nutritional labels by at least one year to allow time for consumer education, and an orderly, cost-efficient industry transition.

While changes need to be made as far as consumer knowledge and attitudes, and labelling legislation are concerned in order for a nutritional educational programme to be of any real benefit, it is recommended that:

- food manufacturers be encouraged to fulfil their moral obligations in the provision of accurate nutritional information on containers and products advertised, as well as to assist financially in a nutritional educational programme;
- food manufacturers be encouraged to adopt corporate and product images that include healthfulness as a positive attribute and to develop products which are truly beneficial and which contribute to consumer needs for a healthy life style.

Together, nutritional education and nutritional labelling have been shown to produce impressive results, but if either is used in

isolation, impact is lost. Nutritional education should be a continual process, keeping the consumer as well as the manufacturer up to date with advancements in technology and findings as far as the relationship between diet and disease is concerned. Nutritional education should motivate the consumer to make more use of nutritional labelling which would make it a viable marketing tool for the manufacturer, but in planning educational programmes there should be proper recognition of the need for consumers to accept responsibility for their own nutritional health (Eastwood et al., 1992; Parham, 1993).

Before the implementation of a nutritional educational programme, the following are recommended:

1. The key success factors should be identified. It is suggested that the Nominal Group Technique be used. Representatives from industry, consumer organisations, the medical field, as well as consumers need to be invited to participate in the processes of assigning values to rate the importance of the key success factors needed for the formulation of an educational programme on the objectives of providing nutritional information on food containers. The representatives are asked in turn to audibly assign a value to a key factor, starting at the top end of the scale and alternating with the bottom end of the scale, meeting in the middle. This will include the views of all the interested parties and eliminate any perceived bias.

2. A comprehensive needs assessment of the relevant target markets should be done. Tailoring an educational programme to a particular target market is more likely to ensure positive acceptance. The role of consumer behaviour in food choice therefore needs careful study in order to successfully attain dietary goals. Although consumer interest in and awareness of nutritional issues are growing, many individual consumers do not consider themselves in direct need of food and nutritional messages. Consumers believe that poor dietary habits are practised by others and not by themselves. The formulation of a new strategy to provide nutritional information which actively involves consumers in problem solving tasks is therefore more likely to have a better success rate than the information

channels used presently.

Evaluation of the nutritional educational programme should be made to measure its success and to identify areas that can be improved on. Key points in the evaluation process would include:

- an assessment of how the programme is running operationally;
- customer feedback;
- sales return figures - increase in profits for certain foods;
- how an assessment of the programme is contributing to profits;
- administering the same questionnaire to test knowledge and attitudes before and after the initiation of the programme;
- observation of the number of consumers who read nutritional labels at point of purchase;
- an analysis of consumers' dietary habits using the five food groups and the Heart Healthy Guidelines;
- an assessment of the contraction of preventable diseases and the finances spent on the treatment of these diseases within the population concerned.

Because of the restricted time available for the completion of questionnaires, not all the factors which impact on a nutritional labelling educational programme for consumers could be researched. The trends observed in this study suggest the following areas for future study:

- the investigation of the reasons for the manufacturers' non-response in this survey to determine the extent of product bias present among cold breakfast cereal manufacturers and the population of food manufacturers;
- further identification of factors which may influence nutritional attitudes and knowledge, and food purchase such as price, advertising, brand name, time constraints, mood, habit, gender, ethnicity, personality types, and participation of nutrition-related activities at home;
- an in-depth survey of consumer knowledge of nutrition and health, including their knowledge related to the information on food containers;

- the use of and needs for nutritional labelling for lower income groups; non whites and the over 55 year age group;
- the formulation of a new strategy to provide nutritional information which actively involves consumers in problem solving tasks with the use of self-relevant information in order to lead the consumer to a greater understanding of dietary goals;
- identification of the most effective communication channels for helping different population segments to use food labels, including the impact of in-store nutritional information and education on consumer purchase such as ongoing educational themes on the food container;
- availability and accuracy of nutritional information in conventional media as well as that on the container;
- the introduction of education at school level for all population segments in a cross-curricular fashion;
- identification of the most suitable labelling format as well as the use of pictorial information for the time-limited consumer and the illiterate;
- the effect of uniform nutritional labelling on consumer choice of food in a product range.

In conclusion, the results of this study suggest that nutritional labelling is not effective in assisting consumers when purchasing food for the following reasons:

- although consumers had a positive attitude towards nutritional information on food labels, their nutritional knowledge was fragmented;
- the cold breakfast cereal manufacturers surveyed also had a positive attitude towards nutritional labelling. A strong element of bias is, however, implied as 43% of the population of cold breakfast cereal manufacturers did not respond to the questionnaire.

The results of this study emphasise the need for the co-operation and co-ordination of the policies of the manufacturer, the government and consumer organisations in order for both nutritional labelling and a nutritional education programme to be effective.

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ANNEXURES

PAGE

ANNEXURE 7.1

18 September 1993

The Marketing Manager
Address

Dear Marketing Manager

EDUCATIONAL PROGRAMME TO IMPROVE CONSUMER KNOWLEDGE AND ATTITUDES TOWARDS NUTRITIONAL INFORMATION ON FOOD LABELS.

The Department of Food and Nutrition is appealing to you for help. We are investigating aspects of your marketing strategies pertaining to your product and all we need is a few minutes of your time.

Consumers and consumer bodies are asking for an increase in the quantity and the quality of nutrition information on food containers. Increasing public and media interest in diet and health has resulted in a dramatic rise in the volume of information being directed at the consumer. The number of products carrying some form of nutritional information has also increased. The current avalanche of information is outstripping the ability of many consumers to use it effectively or even to comprehend it.

The necessary determinants for the formulation of an educational programme to improve the consumer's knowledge of and attitudes towards nutritional information on food labels need to identified. It is to your advantage to have satisfied, informed, rational consumers. We are sure that you will be willing to co-operate with us towards those desired goals. The questionnaire will not take more than fifteen minutes of your time to complete. Thank you for the courtesy of your assistance.

MRS. DIANA ANDERSON
DEPARTMENT OF FOOD AND NUTRITION

DEPARTMENT OF FOOD AND NUTRITION

PERCEPTION OF NUTRITIONAL INFORMATION ON FOOD LABELS: 1993 SURVEY

QUESTIONNAIRE ON NUTRITION INFORMATION ON FOOD LABELS FROM A MANUFACTURER'S PERSPECTIVE.

INSTRUCTIONS:

A. Your answers to the questions in this questionnaire will be regarded as strictly confidential and will be used for research purposes only. Please answer the questions as honestly and objectively as possible.

B. Please think every question through carefully before you answer it. The questions are phrased in such a way that anyone can answer all of them.

C. Answer all the questions by putting a cross (x) in the appropriate box, unless other instructions are given.

E. The questionnaire should only be completed by the marketing manager of the selected food company.

THANK YOU FOR YOUR CO-OPERATION

SECTION A: Socio-demographical Data

1	Company name:	
2	Name of your most popular cold breakfast cereal: (the top selling brand)	
3	Names of supermarkets where this product is sold in the Durban area.	

SECTION B: Marketing strategies

4	What income group is your product aimed at ?	Low : 0 - 9 000.....1 Middle:10 000 - 49 999.....2 High: 50 000 - & above....3
5	Nutritional information is used on the food label of this product as part of our marketing strategy.	yes.....1 no.....2
6	If yes at ques. 5, is the nutritional information used on the products food label mandatory because a claim or statement has been made.	yes.....1 no.....2
7	If yes at ques. 5, is the nutritional information used on the products food labels voluntary.	yes.....1 no.....2

8	Rate the order of importance of the following factors that are employed with the above mentioned product (Question 2):						
		VERY HIGH				VERY LOW	
a.	brand name	....	....	....	....	....	1
b.	brand image	....	....	....	....	....	2
c.	price	....	....	....	....	....	3
d.	quality	....	....	....	....	....	4
e.	packaging	....	....	....	....	....	5
f.	nutritional information	....	....	....	....	....	6
g.	nutritional claims	....	....	....	....	....	7
h.	advertising	....	....	....	....	....	8

9	Your product (Question 2) is aimed towards:	the health conscious.....1 moderation eaters.....2 bulk buyers.....3

SECTION C: Manufacturers' Perception of <u>Consumer</u> Attitudes Towards and Knowledge of Nutritional Labelling

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
10	Consumers read nutritional information on food labels when purchasing food items.	1	2	3	4	
11	Consumers read nutritional information on food labels such as that on cold breakfast cereal boxes when they eat breakfast.	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
12	Consumers read nutritional information on food labels when planning meals at home.	1	2	3	4	
13	Consumers understand nutrition information on food labels.	1	2	3	4	
14	Nutritional information is important to consumers when choosing a new product.	1	2	3	4	
15	Consumers would like more nutritional information on food labels to assist them in making a choice when purchasing food items.	1	2	3	4	
16	Consumers do not have sufficient background knowledge to use nutritional information on food labels.	1	2	3	4	
17	If more products presented a standardised form of nutritional information, consumers would be able to use this to assist them in reading food labels.	1	2	3	4	
18	Consumers find the type of label format easy to understand (i.e.the way in which nutritional information is presented which is in numerical fashion).	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
19	Consumers purchase food items out of habit and do not read nutri- tional information on food labels.	1	2	3	4	
20	Consumers assume diet-related disease statements (e.g. calcium prevents osteoporosis) on food labels are accurate.	1	2	3	4	
21	Consumers assume diet-related disease statements are misleading,that they are placed on the box to try and get them to buy the product.	1	2	3	4	

SECTION D: Manufacturers Perception Towards the Effectiveness of Nutritional Labelling.

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
22	Diet-related disease information should be restricted to nutrients that may contribute to diseases such as excessive fat, cholesterol, sodium, sugar etc.	1	2	3	4	

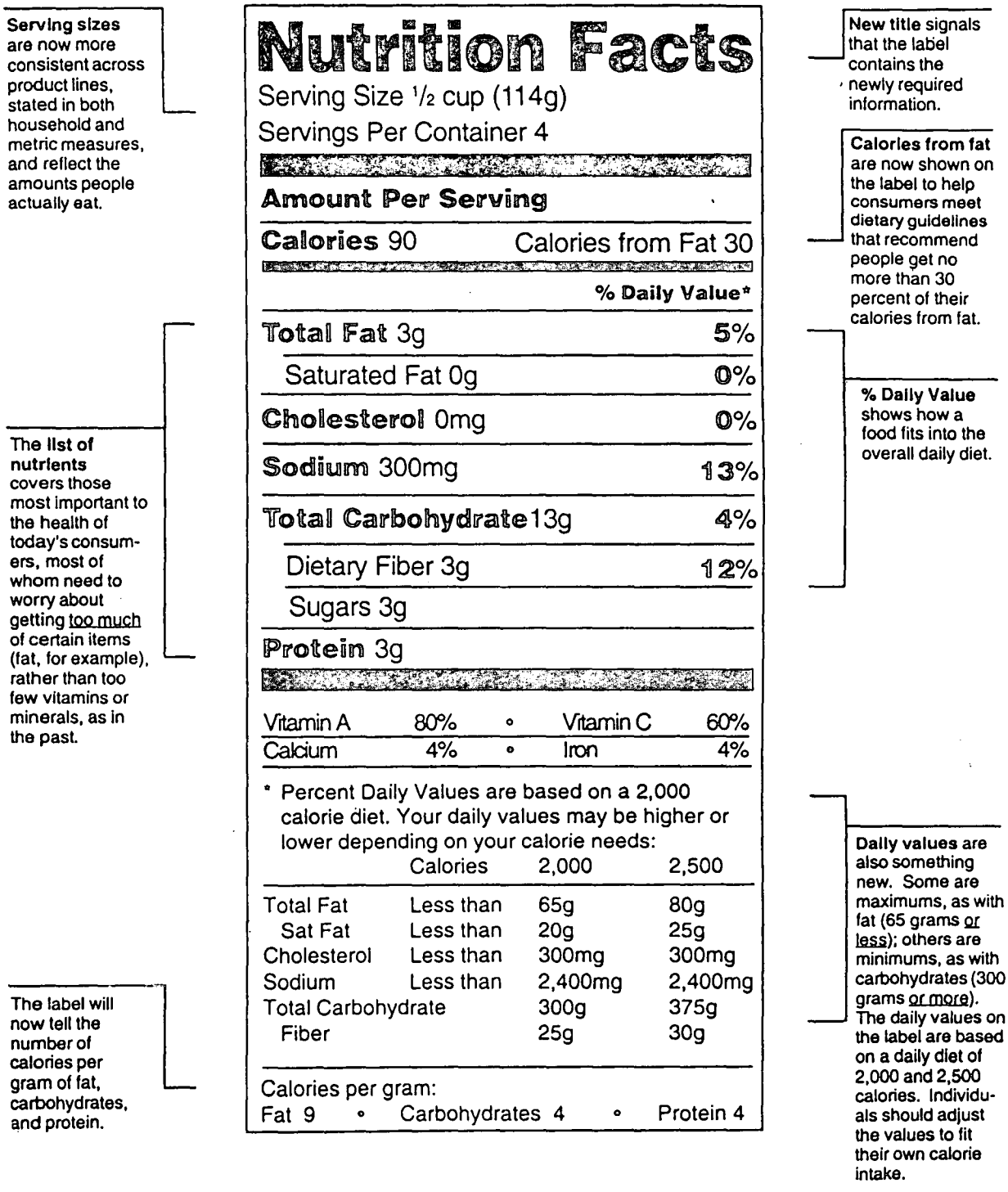
		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
23	Diet-related disease information should be restricted to only those nutrients where sufficient scientific information is presented as to their contribution to disease.	1	2	3	4	
24	Nutritional labelling should be made mandatory for processed foods to facilitate purchasing of foods.	1	2	3	4	
25	Nutritional labelling should remain voluntary but manufacturers should provide more nutritional information on food labels.	1	2	3	4	
26	There is a need for an educational programme to adequately equip the consumer to effectively read nutritional information on food labels.	1	2	3	4	
27	More emphasis should be placed on educating the consumer to understand food labels than on providing more information of the label.	1	2	3	4	
28	More nutritional information will only confuse consumers.	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
29	Nutritional information on food packaging will increase the perceived quality of products through more effective competition as it will facilitate value comparisons.	1	2	3	4	
30	Additional nutritional information on labelling is not effective for those products with a well established image such as " low kilojoule" or "high fibre".	1	2	3	4	
31	Shoppers with diet problems such as those requiring "sodium" control are already aware of products available to them.	1	2	3	4	
32	The size of the container limits the amount of nutritional information that can be given.	1	2	3	4	
33	Our company is continually researching consumer needs and interests.	1	2	3	4	
34	Our corporate image and brand image include healthfulness as a positive attribute.	1	2	3	4	
35	We have responded to consumer health needs by developing new and health associated foods.	1	2	3	4	

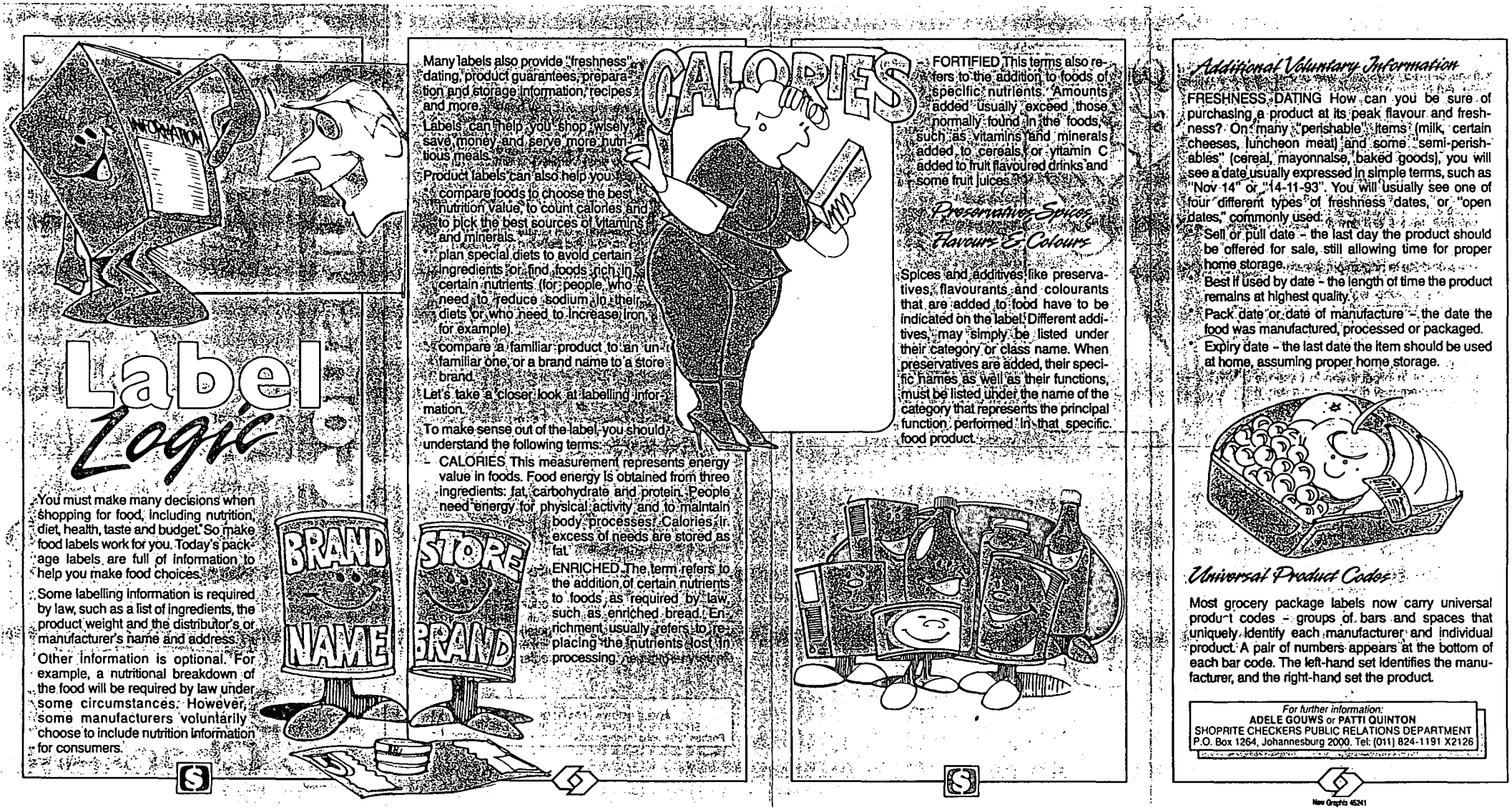
		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
36	We have responded to consumer demand for health related information by providing nutritional information on food labels	1	2	3	4	
37	Healthy eating is a fad and the marketing applied to it is a short term reaction to the latest bout of media hype about our food.	1	2	3	4	
38	Increased confusion on such issues as the merits of "natural" components and "organic" production for safety, health and eating quality will only serve to undermine the future promotion of healthy eating.	1	2	3	4	
39	The health sciences have yet to work out properly what healthy eating actually is before nutritional education and nutritional aspects of healthy eating can be adequately planned.	1	2	3	4	
40	Increased consumer awareness about nutrition will not necessarily mean altered food choices.	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
41	Regulations governing diet-related disease messages in food labelling should be relaxed because people are not receptive to conventional education.	1	2	3	4	
42	Regulations governing diet-related disease messages should be made more restrictive because of their potential for misleading the consumer.	1	2	3	4	
43	Something first needs to be done to educate the consumer before the use of nutritional labelling is considered.	1	2	3	4	

THANK YOU FOR YOUR CO - OPERATION



EXAMPLE OF NUTRITIONAL INFORMATION USED ON FOOD LABELS IN THE U.S.A. (Mermelstein, 1993)



EXAMPLE OF NUTRITIONAL EDUCATION PERTAINING TO SOUTH AFRICA FROM A RETAILER

PLATE 7.1: EXAMPLE ONE OF NUTRITIONAL EDUCATION DISPLAYED ON A FOOD CONTAINER FROM A MANUFACTURER

PLATE 7.2: EXAMPLE TWO OF NUTRITIONAL EDUCATION DISPLAYED ON A FOOD CONTAINER FROM A MANUFACTURER

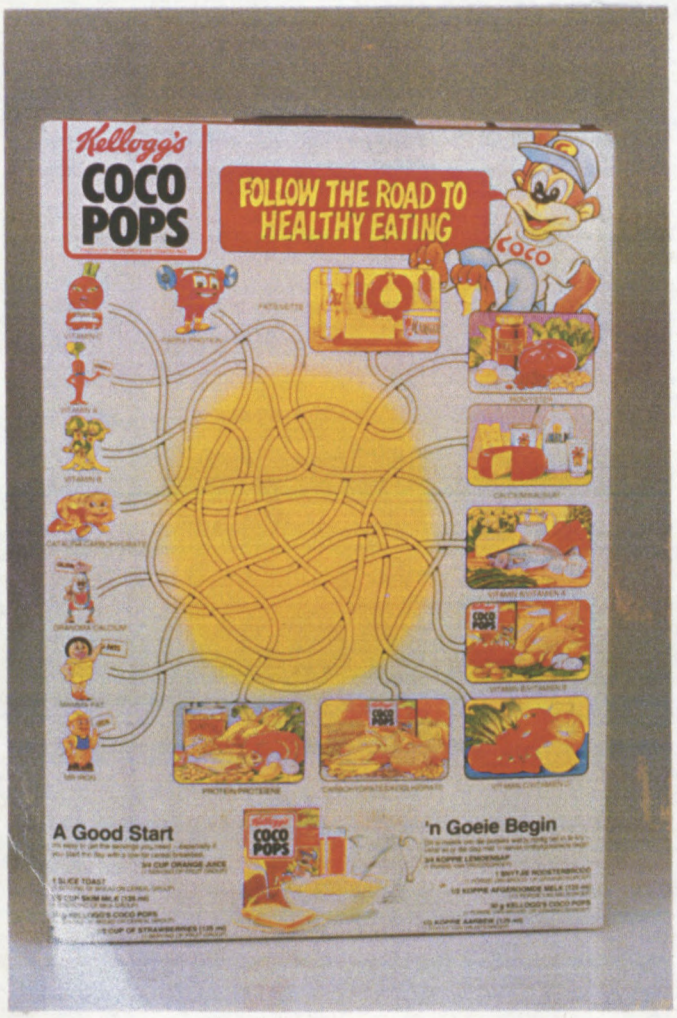


PLATE 7.3: EXAMPLE THREE OF NUTRITIONAL EDUCATION DISPLAYED ON A FOOD CONTAINER FROM A MANUFACTURER

CONSUMER QUESTIONNAIRE

DEAR CONSUMER

YOU HAVE BEEN CHOSEN AS PART OF A SAMPLE OF CONSUMERS TO ANSWER THIS QUESTIONNAIRE ON NUTRITIONAL INFORMATION ON FOOD LABELS FROM A CONSUMER'S PERSPECTIVE.

IT WILL TAKE APPROXIMATELY 30 MINUTES TO ANSWER.

INSTRUCTIONS:

A. Your answers to the questions in this questionnaire will be regarded as strictly confidential and will be used for research purposes only. Please answer the questions as honestly and objectively as possible.

B. Please think every question through carefully before you answer it. The questions are phrased in such a way that anyone can answer all of them.

THANK YOU FOR YOUR CO-OPERATION

NAME:
ADDRESS:

TEL:

SECTION A: Socio-demographical Data

1	Home language:	English.....1 Afrikaans.....2	
2	Age:	18 - 25.....1 26 - 35.....2 36 - 45.....3 46 - 55.....4	
3	Average household income per annum:	10 000 - 19 999.....1 20 000 - 29 999.....2 30 000 - 39 999.....3 40 000 - 49 999.....4	
4	Name of suburb you live in in the Durban area:	1	
5	Level of education:	standard ten.....1 tertiary.....2	
6	Number of people who eat cold breakfast cereal in the household more than once a month:	none.....1 one..... .....2 more than one.....3	
7	Do you or any member of your household follow a special diet?	yes.....1 no.....2	
8	If yes at Q7 please indicate type of diet:	vegetarian.....1 slimming.....2 religious.....3 low - fat.....4 other.....5	
9	I am responsible for the purchase of household groceries:	yes.....1 no.....2	
10	I also make all the decisions about what to buy:	yes.....1 no.....2	

SECTION B: Attitudinal Questions

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
11	I read food labels when purchasing food items.	1	2	3	4	

FIELDWORKER:
POINT OUT EXAMPLES OF NUTRITIONAL INFORMATION ON CEREAL BOXES TO THE RESPONDENT.

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
12	I read nutritional information on food labels when purchasing food items.	1	2	3	4	
13	I read nutritional information on food labels at home, such as that on cold breakfast cereal boxes, when I eat breakfast.	1	2	3	4	
14	I read nutritional information on food labels when planning meals at home.	1	2	3	4	
15	Nutritional information on food labels assists me to make decisions when purchasing food items.	1	2	3	4	
16	I understand nutritional information on food labels.	1	2	3	4	
17	The size of the print on the labels is too small to read.	1	2	3	4	
18	Nutritional information is important when purchasing a new product.	1	2	3	4	
19	I use nutritional information to plan my daily energy intake and/or other nutrient intake.	1	2	3	4	
20	I would like more nutritional information on food labels to assist me in making a choice when purchasing food items.	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
21	I have sufficient background knowledge to use the nutritional information on food labels.	1	2	3	4	
22	If more products presented a standardised form of nutritional information, I would be able to use this to help me in understanding food labels.	1	2	3	4	
23	I find the present label format easy to understand, (i.e. the way the nutritional information is presented).	1	2	3	4	
24	Choosing the correct foods can have an influence on reducing the incidence of some diseases and therefore adequate nutritional information on food labels is very important.	1	2	3	4	
25	Nutritional labelling does not reflect current nutrition, science and health concerns.	1	2	3	4	
26	It is important to choose foods which contribute to a healthy lifestyle and therefore nutritional information on food labels is necessary.	1	2	3	4	
27	As long as everything is eaten in moderation I will be all right.	1	2	3	4	
28	I buy on price and do not compare the nutritional content of different foods.	1	2	3	4	
29	I purchase food items out of habit and do not read nutritional information on food labels.	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
30	The food label is the appropriate place for diet-related disease messages.	1	2	3	4	
31	If a diet-disease statement appears on a food label, I assume it is accurate	1	2	3	4	
32	Diet-disease statements are useful.	1	2	3	4	
33	Diet-disease statements are misleading.	1	2	3	4	
34	Diet-disease statements are placed on the box to try and get me to by the product.	1	2	3	4	
35	Diet-disease related information should be restricted to nutrients that may contribute to diseases such as excessive fat, cholesterol, sodium, sugar.	1	2	3	4	
36	Diet-disease related information should be restricted to only those nutrients where there is sufficient scientific information as to their contribution to disease.	1	2	3	4	
37	I don't think any type of diet-disease related information should appear on food labels.	1	2	3	4	
38	Suppose a product were both high in both fibre and salt content. If a manufacturer makes a statement concerning the benefit of the high fibre intake, the manufacturer should also make a statement concerning the risks of a high salt content.	1	2	3	4	

		Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree	
39	Nutritional labelling should be made mandatory for processed foods to facilitate the purchase of these foods.	1	2	3	4	
40	Nutritional labelling should remain voluntary but manufacturers should provide more nutritional information.	1	2	3	4	
41	There is a need for an educational programme to adequately equip the consumer to effectively read nutritional information on food labels.	1	2	3	4	
42	Effective education will help consumers to read labels and this will help in the decision process when purchasing food items.	1	2	3	4	
43	Effective education will help consumers to read labels and this will in turn help decrease diet-related diseases.	1	2	3	4	
44	More emphasis should be placed on education rather than on information.	1	2	3	4	

SECTION C: Nutritional Knowledge

45	The ingredients present in a product are listed in the the order:	decreasing weight.....1 increasing weight.....2 random order.....3 unsure.....4	
46	Glucose, fructose, galactose and lactose are the names of different types of:	sugar.....1 fat.....2 protein.....3 additives.....4 unsure.....5	

47	Margarine contains cholesterol	true.....1 false.....2 unsure.....3
48	Vegetable oils such as palm oil, coconut oil and palm kernel oil contain saturated fatty acids.	true.....1 false.....2 unsure.....3
49	Words such as monosodium glutamate or disodium inosinate mean that the product should be avoided by people on a salt restricted diet.	true.....1 false.....2 unsure.....3
50	Organic foods contain the same chemical composition and pesticide residue as other foods:	true.....1 false.....2 unsure.....3
51	Enriched foods have nutrient additives added to them which are not normally in the product:	true.....1 false.....2 unsure.....3
52	The recommended minimum daily intake of dietary fibre per day is:	30g.....1 20g.....2 10g.....3
53	What does R.D.A. stand for?	Required Dietary Allowance..1 Recommended Daily Allowance.2 Required Daily Allowance....3 unsure.....4
54	What does R.D.A. mean?	

FIELDWORKER: TELL THE RESPONDENT:
"WITH REFERENCE TO THE COLD BREAKFAST CEREALS IN FRONT OF YOU, PLEASE ANSWER THE FOLLOWING QUESTIONS:"

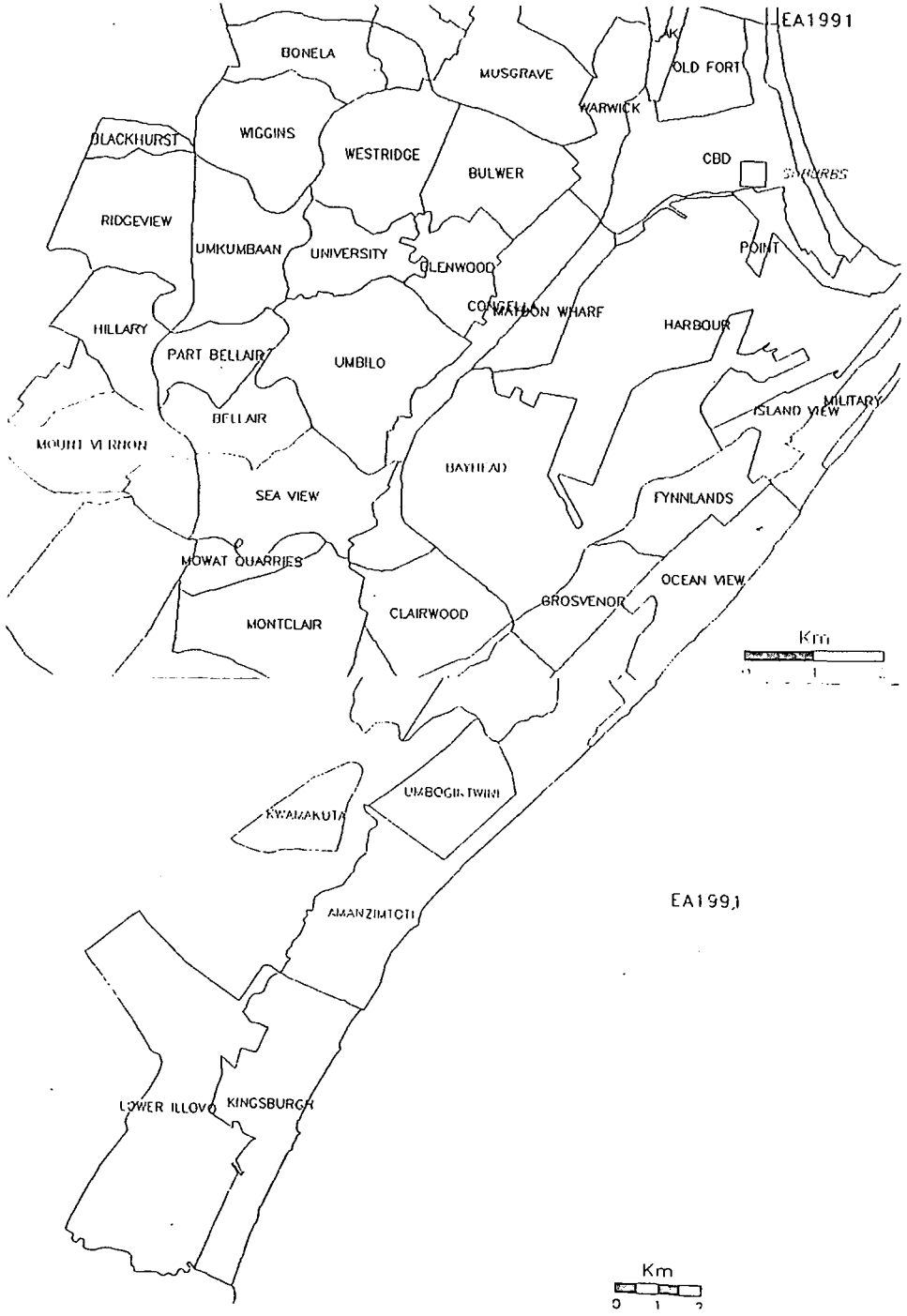
55	Which product has the highest protein content?	Kellogg's All Bran Flakes...1 Kellogg's Coco Pops.....2 Pronutro.....3 Ideal Mix Muesli.....4 I don't know.....5

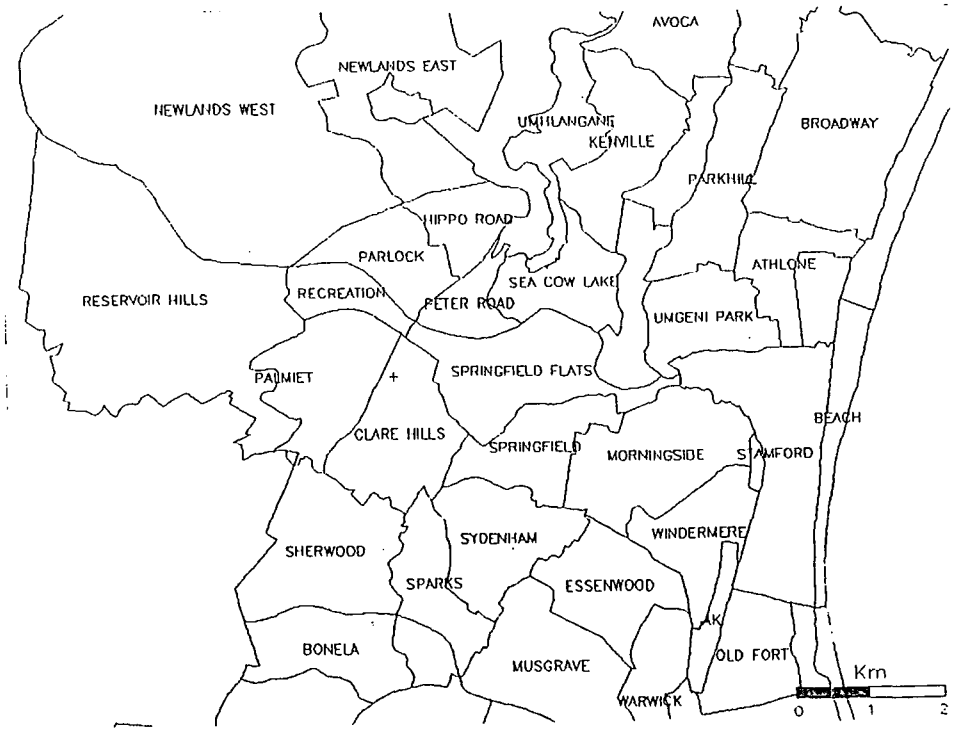
56	If your spouse had heart disease, which cereal would you choose?	Kellogg's All Bran Flakes..1 Kellogg's Coco Pops.....2 Pronutro.....3 Ideal Mix Muesli.....4 I don't know.....5
57	State the reason for your answer:	
58	Your child uses a lot of energy. Which cereal would you use?	Kellogg's All Bran Flakes..1 Kellogg's Coco Pops.....2 Pronutro.....3 Ideal Mix Muesli.....4 I don't know.....5
59	State the reason for your answer:	
60	If you had high blood pressure, which cereal would you use?	Kellogg's All Bran Flakes..1 Kellogg's Coco Pops.....2 Pronutro.....3 Ideal Mix Muesli.....4 I don't know.....5
61	State the reason for your answer:	
62	If you had iron-deficiency anaemia, which cereal would you use?	Kellogg's All Bran Flakes..1 Kellogg's Cocoa Pops.....2 Pronutro.....3 Ideal mix Muesli.....4 I don't know.....5
63	State the reason for your answer:	
64	Pronutro has no sugar content:	true.....1 false.....2 unsure.....3
65	Ideal mix muesli crunch has 6.7g of dietary fibre per 100g. How much fibre will you consume if you eat 30g of muesli?	
66	Calculate the amount of carbohydrate present in a serving of Kellogg's Coco Pops:	

THANK YOU FOR YOUR CO-OPERATION

AN OVERVIEW OF THE DURBAN MAGISTERIAL DISTRICT

Twenty middle income suburbs or strata were chosen at random from a total of 39 strata using the Statgraphic statistical software computer programme (section 3.4.1, annexure 7.6.1).Ten interviewers interviewed twenty respondents i.e.ten respondents in two areas to make up the total number of respondents of 400. In the second stage of the sampling selection, each suburb was divided into smaller areas or clusters using the Central Statistical Service area listing for each suburb (Barnard, personal communication, 1993). The area's within each suburb were listed numerically in ascending order. One area was chosen at random from each suburb using the Stat Graphic computer package (Barnard, personal communication, 1993; Stoker, 1989).





ANNEXURE 7.6.2

AN EXAMPLE OF THE MAPS USED IN THE CONSUMER SURVEY FOR THE SELECTED AREAS IN THIS STUDY

NUTRITIONAL INFORMATION ON FOOD LABELS: CONSUMER KNOWLEDGE AND ATTITUDES

1. The aim of this study is to ascertain consumers' knowledge of and attitudes towards nutritional information on food labels.

2. Criteria: white female;
married;
age: 18 - 55 years old;
average income per household per annum;
R10 000 - R49 999;
std. 10;
live in allocated suburb in the Durban area;

3. Tools: introductory sheet;
English questionnaire;
Afrikaans questionnaire;
calculator;
four cereal boxes: Kellogg's All Bran Flakes;
Kellogg's Coco Pops;
Pronutro;
Ideal Mix Muesli

4. Questionnaire:

After securing an interview with a respondent who meets the above criteria, brief the respondent on the instructions given on the front page of the questionnaire. Fill in the respondents name, address and telephone number.

Page one of the questionnaire deals with "information" type questions. These include the specified criteria.

Questions 11 - 44 (page 2 - 5) are attitudinal questions. Read the statement to the respondent. First ask the respondent if she agrees or disagrees with the statement. Once the respondent has given her answer ask her to what extent she agrees or disagrees with the statement.

From question 11 - 44 the respondent must be shown examples of nutrition information on the cereal boxes provided.

Questions 45 - 66 (page 5 - 7) covers the knowledge aspect of the questionnaire. From question 55 onwards the respondent must refer to the nutrition information on the cereal boxes provided in order to answer the questions. A calculator is needed for the calculation in question 65.

5. Coding of the questions:

Each question has a range of answers that the respondent can choose from. Each answer has a corresponding code printed on the question paper. The code which matches the answer is written in the empty box at the end of each question. The following questions are exceptions:

4. NAME OF SUBURB:

Code

A	Broadway
B	Ocean View
C	Sherwood
D	Essenwood
E	Windermere
F	Morningside
G	CBD
H	Fynnlands
I	Umbilo
J	Mt.Vernon
K	Yellow Wood Park
L	Grosvenor
M	Montclair
N	Musgrave
O	Bulwer
P	Umgeni
Q	Amanzimtoti
R	Parkhill
S	Westridge
T	Kingsburgh

54. DEFINITION FOR R.D.A:

Code

1 Recommended level of nutrient intake for one day
2 Anything else
3 Unsure

57. REASON FOR CHOICE OF CEREAL FOR HEAT DISEASE:

Code

1 High in fibre and low in fat
2 Anything else
3 Unsure

59. REASON FOR CHOICE OF CEREAL FOR HIGH ENERGY INTAKE

Code

1 Highest kilojoule intake
High in kilojoules
Highest energy content
High in/rich source of energy
1140 kj
2 Anything else
3 Unsure

61. REASON FOR CHOICE OF CEREAL FOR HIGH BLOOD PRESSURE:

Code

1 No salt
2 Anything else
3 Unsure

63. REASON FOR CHOICE OF CEREAL FOR IRON-DEFICIENCY ANAEMIA:

Code

1 Highest iron content/high in iron
2 Anything else
3 Unsure

65. ANSWER TO FIBRE CALCULATION:

Code

1 2.04g

2 Anything else

66. ANSWER TO AMOUNT OF CARBOHYDRATE PRESENT:

Code

1 28.2g

2 Anything else

6. Please don't worry about respondents not understanding the nutritional terms. The aim of this study is to find out how much consumers know about nutrition and their use of nutritional information on food labels.

7. A translation of the English questionnaire is provided for Afrikaans speaking respondents. This is to be used as a language guide. The responses and codes are to be filled in on the English questionnaire.

PLATE 7.4: SELECTED CEREAL BOXES USED FOR THE CONSUMER QUESTIONNAIRE

ANNEXURE 7.9

TABLE 7.1: A COMPARISON OF THE NUTRITIONAL INFORMATION PRINTED ON THE LABELS OF CEREAL BOXES USED IN THE CONSUMER SURVEY

	KELLOGG'S ALL BRAN FLAKES	KELLOGG'S COCO POPS	PRONUTRO	IDEAL MIX MUESLI CRUNCH
NUTRITIONAL INFORMATION	% RDA PER 30 G SERVING	% RDA PER 30 G SERVING	of which: Saturated fats 0.7 g	Sodium 301.37 mg
	Protein 8	Protein > 5	Mono-unsaturated fat 1.0 g	Vit A, Vit B1, Vit B2,
	Vit B1 25	Vit B1 25	Poly-unsaturated fat 2.7 g	Vit B3, Vit C
	Vit B2 25	Vit B2 25	Minerals 1.8 g	
	Vit B6 25	Vit B6 25	Dietary fibre 7.3 g	
	Vit B12 25	Vit B12 25	of which:	
	Vit E 25	Vit E 25	Soluble dietary fibre 1.5 g	
	Folic Acid 25	Folic Aci 25	Insoluble dietary fibre 5.8 g	
	Niacin 25	Niacin 25	Linoleic acid 2.5 g	
	Food Iron 25	Food Iron 10	Cholesterol Nil	
	"Whole milk provides an extra 100 Kj, 3.3g fat and 0.01 g cholesterol."	"Whole milk provides an extra 100 Kj, 3.3g fat and 0.01 g cholesterol."	% RDA PER 50 G SERVING	
	Carbohy-drate information	**Carbohy-drate information**	Vit A 33	
	Starch & related CHO 13.8 g	Starch & related CHO 16.7 g	Vit E 33	
	Sugars 2.9 g	Sugars 10.8 g	Vit C 60	
	Dietary Fibre 5.7 g	Dietary Fibre 0.7 g	Thiamine 33	
	Total CHO 22.4 g	Total CHO 28.2 g	Riboflavin 33	
			Niacin 33	
			Vit B6 33	
			Folic acid 33	
			Vit B12 33	
			Pantothenic acid 33	
			Calcium 33	
			Phosphorus 33	
			Iron 33	
			Iodine 33	
			14.97 mg	

Abbreviations:RDA: Recommended Daily Allowance; CHO: Carbohydrate; %; Percentage; Vit: Vitamin; Kj: Kilojoule.

TABLE 7.1: A COMPARISON OF THE NUTRITIONAL INFORMATION PRINTED ON THE LABELS OF CEREAL BOXES USED IN THE CONSUMER SURVEY

	KELLOGG'S ALL BRAN FLAKES	KELLOGG'S COCO POPS	PRONUTRO	IDEAL MIX MUESLI CRUNCH
NUTRITIONAL CLAIM	Enriched with 7 vitamins and iron	Enriched with 7 vitamins and iron	Balanced High energy breakfast cereal	Rich in fibre, contains no additives
LIST OF INGREDIENTS	Bran enriched wheat, sugar, malt, salt, food iron and vitamins B_1, B_2, B_6, B_{12}, folic acid and niacin.	Rice, sugar, malt, cocoa, salt, food iron, and vitamins B_1, B_2, B_6, B_{12}, folic acid and niacin.	Maize, soya, sugar, milk solids, food yeast, wheat germ, salt, minerals, lysine, methionine, vitamins.	Whole rolled oats, digestive bran, wheat, corn syrup, glucose powder, soya lecithin, sun dried raisins, corn oil, cotton seed oil, natural flavourings.
NUTRITION INFORMATION	Nutritional information per 30 g and per 30 g + 100 ml skim milk.	Nutritional information per 30 g and per 30 g + 100 ml skim milk.	Nutritional information per 50 g and per 100 g.	Nutritional information per 100 g.
	SERVING SIZE: 30 g	SERVING SIZE: 30 g	SERVING SIZE: 50 g	SERVING SIZE: 30 g
	Kilojoules: 371 Protein: 4.4 g Carbohydrate: 22.4 g Fat: 0.5 g Cholesterol: 0.0 g Sodium: 0.24 g Potassium: 0.17 g	Kilojoules: 435 Protein: 1.5 g Carbohydrate: 28.2 g Fat: 0.08 g Cholesterol: 0.0 g Sodium: 0.245 g Potassium: 0.034 g	Energy 795 Kj Protein 9.8 g % RDA for protein 18 Carbohydrate 29.3 g of which: Simple CHO 6.1 g Complex CHO 23.2 g Fat 4.4 g	Protein 6.81 g Cholesterol 0 Carbohydrates 60.34 g Dietary Fibre 10.5 g Fat 5.44 g Calcium 46.75 g Phosphorous 232.73 mg Iron 14.97mg

Abbreviations:RDA: Recommended Daily Allowance; CHO: Carbohydrate; %; Percentage; Vit: Vitamin; Kj: Kilojoule.

ANNEXURE 7.10

MANUFACTURERS' SAMPLE REALISATION: N = 8

SECTION A: Socio-demographical Data		RESPONSE RATE %
Q. 4. Income group:		
low income:	0 - 9 000	37.5
middle income:	10 000 - 49 999	100
high income	50 000 and above	75

SECTION B: MARKETING STRATEGIES

Q. 5 : Nutritional information used on food label of best selling product:

yes	62.5
no	37.5

Q. 6 : Nutritional information used mandatorily on food label of best selling product:

yes	50
no	50

Q. 7 : Nutritional information used voluntarily on food label of best selling product:

yes	50
no	50

Q. 8 is presented in tabular form, rating the various marketing elements according to their importance in the strategical planning for the best selling product of the manufacturers of cold breakfast cereals.

TABLE 7.2: THE IMPORTANT ELEMENTS FOR MARKETING OF COLD BREAKFAST CEREALS USED BY THE MANUFACTURING COMPANIES EXPRESSED AS A PERCENTAGE OF THE RESPONSES IN EACH CATEGORY (N = 8) (X^2 = 38.8267, P = 0.0837503)

	VERY LOW	LOW	NEUTRAL	HIGH	VERY HIGH
brand name	0	0	25	50	25
brand image	0	12.5	12.5	37.5	37.5
price	0	0	12.5	12.5	75
quality	12.5	25	25	0	37.5
packaging	37.5	12.5	12.5	12.5	25
nutritional information	0	0	12.5	62.5	25.0
nutritional claims	0	12.5	37.5	37.5	12.5
advertising	25.0	0	25	0	50

Q. 9 : Target market best selling product is aimed towards: %

health conscious	37.5
moderation eaters	25
bulk buyers	25

TABLE 7.3: PERCENTAGE OF RESPONSES TO QUESTIONS 10 TO 21 ON CONSUMERS' PERCEPTIONS OF NUTRITIONAL LABELLING BY MANUFACTURERS OF COLD BREAKFAST CEREALS RATED ON A FOUR POINT LICKERT SCALE (N = 8)

Q.	Perception	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
10	Consumers read nutritional information on food labels when purchasing food items.	0.0	25	75	0.0
11	Consumers read nutritional information on food labels such as that on cold breakfast cereal boxes when they eat breakfast.	0.0	37.5	50	12.5
12	Consumers read nutritional information on food labels when planning meals at home.	12.5	75	12.5	0.0
13	Consumers understand nutritional information on food labels.	0.0	62.5	37.5	0.0
14	Nutritional information is important to consumers when choosing a new product.	0.0	37.5	25	37.5
15	Consumers would like more nutritional information on food labels to assist them in making a choice when purchasing food items.	0.0	25	62.2	12.5
16	Consumers do not have sufficient background knowledge to use nutritional information on food labels.	0.0	0.0	87.5	12.5
17	If more products presented a standardised form of nutritional information consumers would be able to use this to assist them in reading food labels	0.0	0.0	62.5	37.5

TABLE 7.3: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 10 TO 21 ON CONSUMERS' PERCEPTIONS OF NUTRITIONAL LABELLING BY MANUFACTURERS OF COLD BREAKFAST CEREALS RATED ON A FOUR POINT LICKERT SCALE (N = 8)

Q.	Perception	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
18	Consumers find the type of label format easy to understand (i.e. the way in which nutritional information is presented - in numerical fashion).	0.0	37.5	62.5	0.0
19	Consumers purchase food items out of habit and do not read nutritional information on food labels.	0.0	12.5	75.5	12.5
20	Consumers assume diet-related disease statements (eg calcium prevents osteoporosis) on food labels are accurate.	0.0	0.0	87.7	12.5
21	Consumers assume diet-related disease statements are misleading, that they are placed on box to try and get them to by the product.	37.5	62.5	0.0	0.0

SECTION D: Manufacturers Perception Towards the Effectiveness of Nutritional Labelling.

TABLE 7.4: PERCENTAGE OF RESPONSES TO QUESTIONS 22 TO 43 ON MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (N = 8)

Q.	Perception	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
22	Diet-disease related information should be restricted to nutrients that may contribute to diseases such as excessive fat, cholesterol, sodium, sugar etc.	25	37.5	25	12.5
23	Diet-disease information should be restricted to only those nutrients contribution to disease.where sufficient scientific information is presented as to their	25	12.5	50	12.5
24	Nutritional labelling should be made mandatory for processed foods to facilitate purchasing of foods.	0.0	12.5	75	12.5
25	Nutritional labelling should remain voluntary but manufacturers should provide more nutritional information on food labels.	0.0	50	25	25
26	There is a need for an educational programme to adequately equip the consumer to effectively read nutritional information on food labels.	0.0	0.0	25	75
27	More emphasis should be placed on educating the consumer to understand food labels than on providing more information of the label.	0.0	12.5	50	37.5

TABLE 7.4: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 22 TO 43 ON MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (N = 8)

Q.	Perception	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
28	More nutritional information will only confuse consumers.	25	37.5	37.5	0.0
29	Nutritional information on food packaging will increase the perceived quality of products through more effective competition as it will facilitate value comparisons.	0.0	12.5	37.5	50
30	Additional nutritional information on labelling is not effective for those products with a well established image such as: " low kilojoule" or "high fibre".	12.5	62.5	25	0.0
31	Shoppers with diet problems such as those requiring "sodium" control are already aware of products available to them.	12.5	25	37.5	37.5
32	The size of the container limits the amount of nutritional information that can be given.	12.5	50	25	12.5
33	Our company is continually researching consumer needs and interests.	0.0	12.5	25	37.5
34	Our corporate image and brand image include healthfulness as a positive attribute.	0.0	12.5	37.5	50

TABLE 7.4: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 22 TO 43 ON MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (N = 8)

Q.	Perception	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
35	We have responded to consumer health needs by developing new and health associated foods.	12.5	0.0	37.5	50
36	We have responded to consumer demand for health related information by providing nutritional information on food labels.	0.0	25	25	50
37	Healthy eating is a fad and the marketing applied to it is a short term reaction to the latest bout of media hype about our food.	62.5	25	12.5	0.0
38	Increased confusion on such issues as the merits of "natural" components and "organic" production for safety, health and eating quality will only serve to undermine the future promotion of healthy eating.	12.5	62.5	25	0.0
39	The health sciences have yet to work out properly what healthy eating actually is before nutri- tional education and nutritional aspects of healthy eating can be adequately planned.	12.5	25	62.5	0.0
40	Increased consumer awareness about nutrition will not necessarily mean altered food choices.	0.0	62.5	37.5	0.0
41	Regulations governing diet-related disease messages in food labelling should be relaxed because people are not receptive to conventional education.	12.5	62.5	12.5	12.5

TABLE 7.4: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 22 TO 43 ON MANUFACTURERS' PERCEPTIONS OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (N = 8)

Q.	Perception	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
42	Regulations governing diet-realted disease messages should be made more restrictive because of their potential for misleading the consumer	12.5	62.5	25	0.0
43	Something first needs to be done to educate the consumer before the use of nutritional labelling is considered.	12.5	25	25	37.5

TABLE 7.5: CROSS TABULATION OF Q.16 BY Q.26 (N = 8)

Q.16 \ Q.26	10	20	30	Row Total
20	0	1	6	7
30	1	0	0	1
Column Total	1	1	6	8

TABLE 7.6: CROSS TABULATION OF Q.16 BY Q.13 (N = 8)

Q.16 \ Q.13	10	20	30	Row Total
20	5	2	0	7
30	0	0	1	1
Column Total	5	2	1	8

TABLE 7.7: CROSS TABULATION OF Q.26 BY Q.43 (N = 8)

Q.26 \ Q.43	1	10	20	30	Row Total
10	1	0	0	0	1
20	0	1	0	0	1
30	0	1	2	3	6
Column Total	1	2	2	3	8

TABLE 7.8: CROSS TABULATION OF Q.42 BY Q.25 (N = 8)

Q.42 \ Q.25	10	20	30	Row Total
1	0	1	0	1
10	3	1	1	5
20	0	1	1	2
Column Total	3	3	2	8

TABLE 7.9: CROSS TABULATION OF Q.42 BY Q.24 (N = 8)

Q.42 \ Q.24	10	20	30	Row Total
1	1	0	0	1
10	0	4	1	5
20	1	1	0	2
Column Total	2	5	1	8

TABLE 7.10: CROSS TABULATION OF Q.41 BY Q.24 (N = 8)

Q.41 \ Q.24	10	20	30	Row Total
1	1	1	0	2
10	1	3	1	5
20	0	1	0	1
Column Total	2	5	1	8

ANNEXURE 7.11

CONSUMERS' SAMPLE REALISATION: n = 388

SECTION A: Socio-demographical Data	RESPONSE RATE %
Q. 1 : Home Language:	
English	72.4
Afrikaans	27.6
Q. 2 : Age:	
18 - 25	17.6
26 - 35	35.7
36 - 45	21.2
46 - 55	25.6
Q. 3 : Income:	
10 000 - 19 999	8.1
20 000 - 29 999	16.9
30 000 - 39 999	24.7
40 000 - 49 999	50.4

Q. 4 : Suburb: %

Broadway	5,2
Ocean View	5,2
Sherwood	4,9
Essenwood	4,6
Windermere	5,2
Morningside	5,2
CBD	4,9
Fynnlands	5,2
Umbilo	4,9
Mt.Vernon	5,2
Yellow Wood Park	5,2
Grosvenor	5,2
Montclair	4,9
Musgrave	5,2
Bulwer	5,2
Umgeni	5,2
Amanzimtoti	4,9
Parkhill	4,1
Westridge	4,9
Kingsburgh	5,2

Q. 5 : Education:

Standard Ten	63.4
Tertiary	36.6

Q. 6 : Number of people who eat cold breakfast cereal in the household more than once a month:

none	9,8
one	22,2
more than one	68

Q. 7 : Special diet followed:

yes	25.5
no	74.3

Q. 8 : Type of diet followed: %

vegetarian	2.3
slimming	10.6
religious	0.0
low fat	5.2
other	7.6

Q. 9 : Responsibility for purchase of household groceries:

yes	96.4
no	3.6

Q. 10 : Responsibility for planning of food purchases:

yes	92
no	7.7

SECTION B: Attitudinal Questions

TABLE 7.11: PERCENTAGE OF RESPONSES TO QUESTIONS 11 TO 44 ON CONSUMER ATTITUDES OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (n = 388)

Q.	Attitude	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
11	I read food labels when purchasing food items.	15.8	19.5	33.8	31.0
12	I read nutritional information on food labels when purchasing food items.	23.8	23.5	29.3	23.5
13	I read nutritional information on food labels at home, such as that on cold breakfast cereal boxes, when I eat breakfast.	26.3	16.0	30.3	27.5
14	I read nutritional information on food labels when planning meals at. home	43.5	23.3	19.5	13.8
15	Nutritional information on food labels assists me to make a decision. when purchasing food items	27.8	24.5	22.3	25.5
16	I understand nutritional information on food labels.	8.0	11.8	28.2	52.0
17	The size of the print on the labels is to small to read.	31.8	19.8	23.0	25.5
18	Nutritional information is important when purchasing a new product.	7.5	13.3	28.0	51.2
19	I use nutritional information to plan my daily energy intake and/or other nutrient intake.	44.8	22.0	20.3	13.0
20	I would like more nutritional information on food labels to assist me in making a choice when purchasing food items.	23.3	26.0	27.8	23.0
21	I have sufficient background knowledge to use the nutritional information on food labels.	10.3	16.5	28.2	45.0

TABLE 7.11: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 11 TO 44 ON CONSUMERS' ATTITUDES OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (n = 388)

Q.	Attitude	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
22	If more products presented a standardised form of nutritional information, I would be able to use this to help me in understanding food labels.	9.0	16.0	37.8	37.3
23	I find the present label format easy to understand, (i.e. the way the nutritional information is presented).	9.3	15.5	41.6	33.6
24	Choosing the correct foods can have an influence on reducing the incidence of some diseases and therefore adequate nutritional information on food labels is very important.	3.0	5.8	26.8	64.4
25	Nutritional labelling does not reflect current nutrition, science and health concerns.	17.0	33.8	32.0	17.3
26	It is important to choose foods which contribute to a healthy lifestyle and therefore nutritional information on food labels is necessary.	3.0	7.2	27.5	62.3
27	As long as everything is eaten in moderation I will be all right.	34.3	28.2	21.3	16.3
28	I buy on price and do not compare the nutritional content of. different foods	23.3	22.3	32.3	22.3
29	I purchase food items out of habit and do not read nutritional information on food labels.	21.5	24.0	27.0	27.5
30	The food label is the appropriate place for diet-related disease messages.	3.3	15.0	28.7	53.0
31	If a diet-related disease statement appears on a food label, I assume it is accurate	2.8	13.8	28.1	55.4
32	Diet-related disease statements are useful.	2.5	4.3	33.8	59.4

TABLE 7.11: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 11 TO 44 CONSUMERS' ATTITUDES OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (n = 388)

Q.	Attitude	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
33	Diet-related disease statements are misleading.	29.4	44.0	19.8	6.8
34	Diet-related disease statements are placed on the box to try and get. me to by the product	27.9	28.6	27.9	15.6
35	Diet-related disease related information should be restricted to nutrients that may contribute to diseases such as excessive fat, cholesterol, sodium, sugar.	23.8	19.8	30.6	25.8
36	Diet-related disease related information should be restricted to only those nutrients where there is sufficient scientific information as to their contribution to disease.	9.3	15.5	30.8	44.4
37	I don't think any type of diet-related disease information should appear on food labels.	54.5	2 5.0	11.3	9.3
38	Suppose a product were both high in both fibre and salt content. If a manufacturer makes a statement concerning the benefit of the high fibre intake, the manufacturer should also make a statement concerning the risks of a high salt content.	4.5	5.5	20.5	69.5
39	Nutrition labelling should be made mandatory for processed foods to facilitate the purchase of these foods.	5.5	9.5	28.3	56.6
40	Nutritional labelling should remain voluntary but more manufacturers should provide more nutritional information.	19.8	23.6	32.3	24.3
41	There is a need for an educational programme to adequately equip the consumer to effectively read nutritional information on food labels.	6.8	14.8	35.0	43.5
42	Effective education will help consumers to read labels and this will help in the decision process when purchasing food items.	7.8	12.0	32.5	47.8

TABLE 7.11: CONTINUED: PERCENTAGE OF RESPONSES TO QUESTIONS 11 TO 44 ON CONSUMERS' ATTITUDES OF NUTRITIONAL LABELLING RATED ON A FOUR POINT LICKERT SCALE (n = 388)

Q.	Attitude	Definitely disagree	Inclined to disagree	Inclined to agree	Definitely agree
43	Effective education will help consumers to read labels and this will in turn help decrease diet-related diseases.	6.5	12.0	36.5	45.0
44	More emphasis should be placed on education rather than on information.	12.5	25.0	30.8	31.8

SECTION C: Nutritional Knowledge

TABLE 7.12: PERCENTAGE OF CONSUMER RESPONSES TO KNOWLEDGE QUESTIONS 45 TO 66 ON NUTRITIONAL LABELLING (n = 388)

Q.	General Nutritional Knowledge	Responses
45	The order of ingredients present in a product are listed in:	Decreasing weight.....24.0 Increasing weight.....8.5 Random order.....28.5 Unsure.....39.0
46	Glucose, fructose, galactose and lactose are the names of different types of:	Sugar.....87.0 Fat.....1.8 Protein.....0.8 Additives.....3.3 Unsure.....7.0
47	Margarine contains cholesterol	True.....61.0 False.....28.0 Unsure.....12.0
48	Vegetable oils such as palm oil, coconut oil and palm kernel oil contain saturated fatty acids.	True..... .....31.3 False..... .....24.0 unsure..... .....44.8

TABLE 7.12: CONTINUED: PERCENTAGE OF CONSUMER RESPONSES TO KNOWLEDGE QUESTIONS 45 TO 66 ON NUTRITIONAL LABELLING (n = 388)

Q.	Specific Nutritional Knowledge	Responses
49	Words such as monosodium glutamate or disodium inosinate mean that the product should be avoided by people on a salt restricted diet.	True.....44.8 False.....10.0 Unsure.....45.0
50	Organic foods contain the same chemical composition and pesticide residue as other foods:	True.....10.0 False.....49.5 Unsure.....39.5
51	Enriched foods have nutrient additives added to them which are not normally in the product:	True.....71.9 False.....8.0 Unsure.....21.0
52	The recommended minimum daily intake of dietary fibre per day is:	30g.....63.4 20g.....25.6 10g.....10.6
53	What does R.D.A. stand for?	Required Dietary Allowance...76.0 Recommended Daily Allowance...4.0 Required Daily Allowance.....7.0 Unsure.....13.3
54	What does R.D.A. mean?	Correct.....39.0 Incorrect.....41.3 Unsure.....19.0
55	Which product has the higher protein content?	Kellogg's All Bran Flakes.....7.5 Kellogg's Coco Pops.....2.8 Pronutro.....63.0 Ideal Mix Muesli.....17.8 I don't know.....9
56	If your spouse had heart disease, which cereal would you choose?	Kellogg's All Bran Flakes....44.8 Kellogg's Coco Pops.....2.8 Pronutro.....9.5 Ideal Mix Muesli.....23.3 I don't know.....19.0

TABLE 7.12: CONTINUED: PERCENTAGE OF CONSUMER RESPONSES TO KNOWLEDGE QUESTIONS 45 TO 66 ON NUTRITIONAL LABELLING (n = 398)

Q.	Specific Nutritional Knowledge	Responses
57	State the reason for your answer:	Correct.....15.5 Incorrect.....60.8 Unsure.....23.0
58	Your child uses allot of energy. Which cereal would you use?	Kellogg's All Bran Flakes.....2.3 Kellogg's Coco Pops.....9.0 Pronutro.....74.8 Ideal Mix Muesli.....8.0 I don't know.....6.0
59	State the reason for your answer:	Correct.....59.5 Incorrect.....31.3 Unsure.....9.3
60	If you had high blood pressure, which cereal would you use?	Kellogg's All Bran Flakes.....26.3 Kellogg's Coco Pops.....2.3 Pronutro.....20.8 Ideal Mix Muesli.....18.5 I don't know.....31.0
61	State the reason for your answer:	Correct.....26.5 Incorrect.....35.5 Unsure.....37.4
62	If you had iron-deficiency Anaemia, which cereal would you use?	Kellogg's All Bran Flakes.....25.5 Kellogg's Cocoa Pops.....0.0 Pronutro.....42.0 Ideal mix Muesli.....14.5 I don't know.....19.0
63	State the reason for your answer:	Correct.....64 Incorrect.....14 Unsure.....22
64	Pronutro has no sugar content:	true.....43.0 false.....42.5 unsure.....14.0

TABLE 7.12: CONTINUED: PERCENTAGE OF CONSUMER RESPONSES TO KNOWLEDGE QUESTIONS 45 TC 66 ON NUTRITIONAL LABELLING (n = 386)

Q.	Specific Nutritional Knowledge	Responses
65	Ideal mix muesli crunch has 6,7g of dietary fibre per 100g. How much fibre will you consume if you eat 30g ?	Correct.....55.5 Incorrect.....44.5
66	Calculate the amount of carbohydrate present in a serving of Kellogg's Coco Pops:	Correct.....65.0 Incorrect.....35.0

SECTION C: Nutritional Knowledge

TABLE 7.13: CORRECT ANSWERS TO CONSUMER KNOWLEDGE QUESTIONS

Q.	General Knowledge	Answer
45	The order of ingredients present in a product is listed in:	decreasing weight
46	Glucose, fructose, galactose and lactose are the names of different types of:	sugar
47	Margarine contains cholesterol	false
48	Vegetable oils such as palm oil, coconut oil and palm kernel oil contain saturated fatty acids.	true
49	Words such as monosodium glutamate or disodium inosinate mean that the product should be avoided by people on a salt restricted diet.	true
50	Organic foods contain the same chemical composition and pesticide residue as other foods:	true
51	Enriched foods have nutrient additives added to them which are not normally in the product:	true
52	The recommended minimum daily intake of dietary fibre per day is:	30g
53	What does R.D.A. stand for?	Recommended Daily Allowance
54	What does R.D.A. mean?	Recommended level of nutrient intake for one day
Q.	**Specific Knowledge**	**Answer**
55	Which product has the higher protein content?	Pronutro

TABLE 7.13: CONTINUED: CORRECT ANSWERS TO CONSUMER KNOWLEDGE QUESTIONS

Q.	Specific Knowledge	Answer
56	If your spouse had heart disease, which cereal would you choose?	Kellogg's All Bran Flakes
57	State the reason for your answer:	High fibre, low fat, medium kj & salt.
58	Your child uses a lot of energy. Which cereal would you use?	Pronutro
59	State the reason for your answer:	Highest energy content.
60	If you had high blood pressure, which cereal would you use?	Kellogg's All Bran Flakes
61	State the reason for your answer:	Low salt, high fibre, fair kj.
62	If you had iron-deficiency Anaemia, which cereal would you use?	Kellogg's All Bran Flakes
63	State the reason for your answer:	Highest iron content
64	Pronutro has no sugar content:	false
65	Ideal mix muesli crunch has 6,8g of dietary fibre per 100g. How much fibre will you consume if you eat 30g of muesli?	2,04 g
66	Calculate the amount of carbohydrate present in a serving of Kellogg's Coco Pops:	28,2 g

TABLE 7.14: CLASS FREQUENCY TABULATION FOR CONSUMER KNOWLEDGE SCORES (n = 388)

Class	Lower Limit	Frequency	Relative Frequency	Cumulative Frequency	Cum. Rel. Frequency
1	1	50	0.125	50	0.125
2	2	84	0.210	134	0.335
3	3	115	0.288	249	0.623
4	4	79	0.198	328	0.820
5	5	60	0.150	388	1.000

TABLE 7.15: TABLE OF MEANS FOR CONSUMER ATTITUDES TOWARDS AND KNOWLEDGE OF NUTRITIONAL LABELLING (n = 388)

Level	Count	Average	Stnd.Error (internal)	Stnd. Error (pooled s)	95 % LSD intervals for mean	
1 - 5	50	550.680	16.982	14.011	531.198	570.162
6 - 7	84	591.500	12.512	10.810	576.469	606.531
8 - 9	115	643.583	8.753	9.239	630.736	656.429
10 - 11	79	642.924	10.086	11.147	627.425	658.423
12 - 16	60	650.333	9.362	11.676	634.098	666.569
Total	388	622.118	4.954	4.954	615.229	629.006

TABLE 7.16: CROSS TABULATION OF Q.1 BY Q.2 EXPRESSED AS A PERCENTAGE

(n = 388) (X^2 = 9.67, P = 0.02)

Q. 2 / Q. 1	18 - 25 YEARS	26 - 35 YEARS	36 - 45 YEARS	46 - 55 YEARS	Row Total
ENGLISH	66.7	73.6	62.8	81.7	72.2
AFRIKAANS	33.3	26.4	37.2	18.3	27.8
Column Total	17.3	35.1	21.6	26.1	100

TABLE 7.17: CROSS TABULATION OF Q.1 BY Q.6 EXPRESSED AS A PERCENTAGE

(n = 388) (X^2 = 7.989, P = 0.01)

Q.6 / Q.1	NONE	ONE	MORE THAN ONE	Row Total
ENGLISH	84.6	61.8	73.5	72
AFRIKAANS	15.4	38.2	26.5	28
Column Total	9.8	22.3	68	100

TABLE 7.18: CROSS TABULATION OF Q.18 BY Q.15 EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 113.859, P = 0.0000)

Q.18 / Q.15	1	10	20	30	Row Total
1	39	15.2	2.7	1.7	8
10	24.4	36.4	9.7	1.1	11.8
20	9.8	27.3	54	16.7	28.2
30	26.8	21.2	33.6	80.6	52
Column Total	10.3	16.5	28.2	45	100

TABLE 7.19: CROSS TABULATION OF Q.23 BY Q.22 EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 16.06, P = 0.065)

Q.22 / Q.23	1	10	20	30	Row Total
1	13.9	9.4	8.6	8.7	9.3
10	11.1	15.6	14.6	17.4	15.5
20	19.4	42.2	49.7	38.3	41.5
30	55.6	32.8	27.2	35.6	33.8
Column Total	9	16	37.8	37.3	100

TABLE 7.20: CROSS TABULATION OF Q.24 BY Q.28 EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 18.6, P = 0.02)

Q.24 \ Q.28	1	10	20	30	Row Total
1	4.3	4.5	1.6	2.3	3
10	3.2	6.7	7	5.7	5.8
20	14	25.8	36.4	27.3	26.8
30	78.5	62.9	55	64.8	64.4
Column Total	19.8	23.6	32.3	24.3	100

TABLE 7.21: CROSS TABULATION OF Q.33 BY Q.38 EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 18.8644, P = 0.02)

Q.38 \ Q.33	1	10	20	30	Row Total
1	0.9	6.3	6.3	3.7	18
10	1.7	6.9	10.1	0	5.5
20	16.2	22.3	22.8	22.2	20.6
30	81.2	64.6	60.8	74.1	69.3
Column Total	29.4	44	19.8	6.8	100

TABLE 7.22: CROSS TABULATION OF Q.2 BY TOTAL KNOWLEDGE EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 1197.0, P = 0.04)

Q.2 / TOTAL KNOWLEDGE	18 - 25 Years	26 - 35 Years	36 - 45 Years	46 - 55 Years	Row Total
1 - 5	10.3	9.4	18.3	18.2	13.7
6 & 7	27.9	18.8	32.9	16.2	22.7
8 & 9	26.5	23.2	20.7	28.3	24.5
10 & 11	27.9	37.7	20.7	32.3	31.0
12 - 16	7.4	10.9	7.3	5.1	8
Column Total	17.6	35.7	21.2	25.6	100

TABLE 7.23: CROSS TABULATION OF Q.3 BY TOTAL KNOWLEDGE EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 1188.02, P = 0.09)

Q.3 / TOTAL KNOWLEDGE	10 000 - 19 999	20 000 - 29 999	30 000 - 39 999	40 000 - 49 999	Row Total
1 - 5	9.7	10.8	18.9	12.9	13.8
6 & 7	38.7	21.5	29.5	17.5	22.9
8 & 9	25.8	29.2	22.1	24.2	24.7
10 & 11	25.8	30.8	22.1	35.6	30.6
12 - 16	0	7.7	7.4	9.8	8.1
Column Total	8.1	16.9	24.7	50.4	100

TABLE 7.24: CROSS TABULATION OF Q.12 BY TOTAL KNOWLEDGE EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 25.6423, P = 0.04)

Q.12 / TOTAL KNOWLEDGE	1	10	20	30	Row Total
1 - 5	13.8	34.5	41.4	10.3	7.3
6 & 7	29.3	24.4	24.4	22	10.3
8 & 9	25	26.1	29.5	19.3	22.2
10 & 11	25	21.7	25	28.3	53.4
12 - 16	14.8	11.1	55.6	18.5	6.8
Column Total	23.9	23.2	29.2	23.7	100

TABLE 7.25: CROSS TABULATION OF Q.15 BY TOTAL KNOWLEDGE EXPRESSED AS A PERCENTAGE (n = 388) (X^2 = 22.2474, P = 0.06)

Q.15 / TOTAL KNOWLEDGE	1	10	20	30	Row Total
1 - 5	10.8	7.4	3.4	6.9	7.3
6 & 7	10.8	11.6	7.9	10.8	10.3
8 & 9	26.1	23.2	25.8	11.8	22.2
10 & 11	47.7	51.6	50.6	63.7	53.4
12 - 16	4.5	4.2	12.4	6.9	6.8
Column Total	28	23.9	22.4	25.7	100

TABLE 7.26: CROSS TABULATION OF Q.42 BY TOTAL KNOWLEDGE EXPRESSED AS A PERCENTAGE (n = 388) (x^2 = 27.6193, P = 0.04)

Q.30 / TOTAL KNOWLEDGE	1	10	20	30	Row Total
1 - 5	9.7	16.7	9.3	3.2	7.3
6 & 7	16.1	14.6	12.4	6.9	10.3
8 & 9	25.8	20.8	20.9	22.8	22.2
10 & 11	45.2	45.8	49.6	59.3	53.4
12 - 16	3.2	2.1	7.8	7.9	6.8
Column Total	7.8	12.1	32.5	47.6	100

TABLE 7.27: CROSS TABULATION OF Q.43 BY TOTAL KNOWLEDGE EXPRESSED AS A PERCENTAGE (n = 388) (x^2 = 40.9273, P = 0.01)

Q.43 / TOTAL KNOWLEDGE	1	10	20	30	Row Total
1 - 5	19.2	16.7	6.9	3.4	7.3
6 & 7	19.2	16.7	9	8.4	10.3
8 & 9	15.4	18.8	25.5	21.3	22.2
10 & 11	42.3	45.8	51.7	58.4	53.4
12 - 16	3.8	2.1	6.9	8.4	6.8
Column Total	6.5	12.1	36.5	44.8	100