EXPLORING THE USE AND INFLUENCE OF MACRONUTRIENTS AND ENERGY INFORMATION LABELLING ON THE INTENTION TO PURCHASE PACKAGED FOOD PRODUCTS

by

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Submitted in accordance with the requirements for
the degree of

MASTER OF CONSUMER SCIENCE

In the subject

ENVIRONMENTAL SCIENCES

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Prof. E Kempen

FEBRUARY 2024

DEDICATION

To my Heavenly Father who makes all things possible (Matthew 19:26), I give all the praise and glory. To my beloved husband and daughter, family and friends, thank you for every word of encouragement and prayer.

DECLARATION

I, Sithabile Sharon Ndlovu, hereby declare that the dissertation I am submitting for the Master of Consumer Science degree at the University of South Africa titled **(Exploring the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products)** is my own work and has previously been submitted by me for a degree at this or any other institution.

I declare that this dissertation does not contain any written work presented by other persons, whether written, in the form of pictures, graphs, data, or any other information, without acknowledging the source.

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Sithabile Sharon Ndlovu

ACKNOWLEDGEMENTS

I sincerely thank the following people for their love, support, and help along this research journey:

- Prof. Elizabeth Kempen, I am grateful for your guidance and support over the last three years, and for going above and beyond dedicating so much of your time. Working with you has been a pleasure.
- My husband (Mr. Lucky Mgobhozi) and daughter (Zenande) for your continuous love and support during this time. I am forever grateful.
- My parents (Mr. Sibusiso Ndlovu & Mrs. Audrey Ndlovu) and siblings (Thembisile, Siyabonga, Sizolwethu & Ziphezinhle) for being my constant prayer warriors and for always believing in and helping me achieve my goals.
- The TAC-SA National Youth Committee together with Mr. Mvuselelo Zulu for the financial support when I started this journey.
- Friends (Zama Ngcobo & Nelly Nkosi) and many more thank so much for your support.
- Each participant who made the effort to engage in the individual interviews that were conducted for this study.
- Leatitia Romero, thank you for your detail-orientated work and swift responses. It has been a pleasure working with you.

ABSTRACTS

The high prevalence of obesity in South Africa has been linked to unhealthy food consumption. Food labelling plays a significant role in informing and educating consumers about macronutrients in the food they consume. Despite the proven efficacy of food labelling, a dearth of research exists on consumers' understanding and use of macronutrient and energy information labelling and how this information influences consumers' intention to purchase packaged food products. A qualitative interpretative phenomenological study was conducted, and purposive, convenience, and snowball sampling was used to select participants who were food label readers. Virtual interviews were held to collect data, and content analysis of the findings suggest that a significant number of participants were aware of macronutrients and energy information labelling. However, their inability to interpret the macronutrients and energy information labelling negatively affected their use of this information, influencing their purchase intention of the food products. Future research can focus on the development of an educational programme to facilitate consumers' knowledge and understanding of macronutrients and energy information labelling.

KEY TERMS
Macronutrients and energy information labelling, front-of-pack and back-of-pack labelling, nutrition information labelling, consumer purchasing intention, planned behaviour.

OKUCASHUNIWE

Ukudlondlobala kwenani labantu abakhuluphala ngokweqile eNingizimu Afrika kuhlobene nokusetshenziswa kokudla okungenampilo. Ukunamekwa kwemibhalo ekudleni kudlala indima enkulu ekwaziseni nasekufundiseni abathengi mayelana nezakhamzimba ekudleni abakudlayo. Ngaphandle kwemiphumela emihle ekunamekweni kwemibhalo ekudleni, lusasilele ucwaningo lokuqonda nokusebenzisa imibhalo enamekwe ekudleni nokudla izakhamzimba ngokunjalo nokuthi ngakube le mibhalo inamuphi umthelela kubathengi uma bethenga imikhiqizo yokudla. Lapha kusetshenziswe ucwaningo lokuhlola iqophelo, inhloso, ukwaneliseka, kanye nokunxenxa abanye ukuze kutholakale ababambiqhaza abavame ukufunda izinameko ezisekudleni. Imininingwane iqoqwe ngokubanjwa kwezinkulumongxoxo, kanye nokuthi ukucwaningwa kwengqikithi yemiphumela etholakele kuveza ukuthi inani elikhulu lababambiqhaza linolwazi mayelana nezakhamzimba kanye nokunamekwa kwemibhalo ekudleni. Kodwa-ke, ukuhluleka kwabathengi ukuhumusha imininingwane ngezakhamzimba nokunamekwa kwemibhalo ekudleni kwenza ukuthi bangakwazi ukusebenzisa kahle le minininingwane, kuphinde kuphazamise izinhloso zabo ekuthengeni imikhiqizo yokudla. Ucwaningo lwesikhathi esizayo lungagxila ekuqalisweni kohlelo lokufundisa ukuze abathengi babe nolwazi futhi baqondisise kahle ngezakhamzimba kanye nokunamekwa kwemibhalo ekudleni.

ISISHWANKATHELO

Ukuxhaphaka jikelele okuphezulu kokutyeba eMzantsi Afrika kuye kwanxulunyaniswa nokutya okungekho sempilweni. Ukuphawulwa kokutya (*food labelling*) kudlala indima ebalulekileyo ekwaziseni nasekufundiseni abathengi ngeezondlo ezidingwa ngumzimba ekutyeni abakutyayo. Ngaphandle kokusebenza okuqinisekisiweyo kokuphawulwa kokutya, ukunqongophala kophando kukhona malunga nokuqonda kwabathengi kunye nokusetyenziswa kolwazi olubhaliweyo ngeezondlo ezinkulu namandla kunye nendlela olu lwazi oluchaphazela ngayo iinjongo zabathengi zokuthenga iimveliso zokutya. Kusetyenziswe uphando lophandontyilazwi oluchaza indlela izinto ezingayo ngokwamava abantu, kukwasetyenziswe iindlela zokukhetha idatha ezifana nokukhetha igcuntswana ledatha ngenjongo, ukukhetha igcuntswana ledatha elifumaneka lula, kunye nokukhetha igcuntswana ledatha ngokufumaneka nzima ngokuncedwa leloo gcuntswana ledatha elisele likho ukukhetha abathathinxaxheba abafunda iileyibhile zokutya. Kubanjwe udliwanondlebe olubanjwa ngezobuchwepheshe ukuqokelela idatha, kwaye uhlalutyo lomxholo weziphumo lubonisa ukuba abathathinxaxheba abaninzi bayayazi ngokubhalwa kolwazi lweezondlo ezidingwa ngumzimba namandla. Nangona kunjalo, ukungakwazi kwabo ukutolika ukubhalwa kolwazi lweezondlo ezidingwa ngumzimba namandla kuyichaphazele kakubi indlela abalusebenzisa ngalo olu lwazi, kuchaphazela iinjongo zabo zokuthenga iimveliso zokutya. Uphando lwexesha elizayo lunokugxila ekuphuhliseni inkqubo yemfundo yokuququzelela ulwazi nokuqonda kwabathengi kokubhalwa kolwazi lweezondlo ezidingwa ngumzimba namandla.

SUMMARY

South Africa is one of the countries that has a double burden of overweight and obesity, which is a risk factor for non-communicable diseases such as cardiovascular diseases and diabetes. The consequences of unhealthy food consumption are not only limited to overweight and obesity but also result in an increased risk of chronic illnesses. In light of the health risks related to unhealthy food consumption, there is a need for an increased focus on consumer behaviour in relation to nutrition information labelling on the food products they purchase. Although food products sold in South Africa should contain nutrition information labelling, it is still challenging for consumers to understand this information when making food-purchasing decisions. Terminology, abbreviations and measurements used to explain the nutritional content of the food product may be unhelpful to consumers making a purchase decision due to their lack of nutrition education and knowledge. Some food products are also sold to consumers without this information, which might contribute to the overconsumption of macronutrients because there is nothing to guide consumers on how to use that particular food product. Overall, this study was motivated by the notable shortfall in South Africa's food labelling regulations to maintain a clear food labelling standard to guide consumers' food-purchasing decisions.

This study aimed to explore the use and influence of macronutrients (fat, carbohydrate and protein) and energy information labelling on consumers' intention to purchase packaged food products. The key objectives of the study were to (1) explore consumers' use and understanding of front-of-pack, back-of-pack, and nutrition information labelling, (2) examine consumers' use and understanding of macronutrients and energy information, and (3) describe the influence of attitude, subjective norms, and perceived behavioural control. To fulfil these research objectives, the study used the qualitative approach to effectively explore participants' experiences, opinions and ideas about the use and influence of macronutrients and energy information labelling on their intention to purchase packaged food products. The researcher employed the interpretivist philosophy to explore participants' own reality of how they experienced and understood their use of macronutrients and energy information labelling and how this information influenced their intention to purchase packaged food products.

A phenomenological research design was employed as it allowed for an examination of conscious experiences from a subjective point of view. In addition, the phenomenological research design was appropriate to determine participants' lived experiences of how

macronutrients and energy information labelling influence their intention to purchase food products, therefore obtaining an understanding of this phenomenon through their eyes.

The study population was South African consumers, and 15 participants were selected using a combination of purposive, convenience and snowball sampling. In selecting the participants, the researcher set out the following inclusion criteria: participants had to be older than 18 to ensure they were consenting adults, be consumers residing in South Africa, be conversant in English as interviews were conducted in English, and be knowledgeable about macronutrients, mainly carbohydrates, proteins, and fats. The study did not specifically test participants' knowledge about macronutrients before commencing the study. In addition, participants had to perceive themselves as familiar with the nutrition information table, also referred to as the nutrition information label found on food products. Participants were also required to make their own purchasing decisions about the food they consume.

In this study, a demographic questionnaire was completed by the participants, and semi-structured, individual online interviews were conducted using an interview guide. Participant interviews were conducted online via Microsoft Teams, allowing participants to be interviewed from their homes, offices, or anywhere they felt most comfortable sharing their experience with the researcher. The number of interviews was determined by data saturation, and the interviews were transcribed for data-gathering purposes. The collected data were analysed to determine which concepts were most pertinent in light of each question's responses. Concepts were used to group similar ideas together, and tabulated quotations supported each category. The findings suggest that most participants had a basic understanding of macronutrients and energy information labelling; however, their interpretation and use remain a challenge when consumers are making food purchases. The term 'macronutrients' was associated with the obtained strength that comes from the nutrients that are absorbed by the body when consuming food. To establish the participants' knowledge about nutrition information labelling, macronutrients, and energy, pictures were presented to participants to interpret this information and reflect their understanding based on the interview guide questions. The findings suggest that it was easy for most participants to explain what front-of-pack labelling was because it is the first feature of a food product that the consumer is introduced to, providing specific information that is expected to be present on the front of the packaging. Some participants were unable to interpret products' macronutrients and energy information labelling, which negatively influenced their purchasing decisions. For instance, the participants were confused about differentiating nutrition information labelling, front-of-pack labelling and back-of-pack labelling. A lack of knowledge and understanding was ultimately identified as a factor hampering consumers' use of nutrition information labelling, which may limit consumers'

knowledge about the food products they are purchasing. This may suggest that more education should be offered to address consumers' lack of understanding, specifically about the fat content of food and how to interpret this information. Consumers should understand products' fat content's contribution to the overall daily requirements for fat intake.

The participants' decision to use the front-of-pack, back-of-pack, or nutrition information labelling varied depending on their familiarity with the product or brand. The participants confirmed that carbohydrates, fats and proteins influence their purchasing decisions. Their level of knowledge, health concerns, and financial strain were found to be additional influencing variables in their purchase decision. The participants concurred that before purchasing food products, it is crucial to read the labels reflecting energy content and macronutrients because the body will suffer long-term effects from consuming too much of these nutrients. Additionally, the findings demonstrated that social pressure and cultural diversity influence consumer behaviour when it comes to food product purchases. Most participants confirmed that culture and family background are foundational and significant factors that contribute to their purchasing decisions. Therefore, the issue at stake involves consumers checking food information labelling before purchasing food products and the context of understanding information displayed on food products' packaging.

The influence of attitude, subjective norms, and perceived behavioural control on macronutrients, energy information, and intention to purchase packaged food products was examined using the theory of planned behaviour. The findings illustrated that most participants' attitudes were influenced by the affordability of food products with macronutrients and energy information labelling. In addition, health was another dominant factor influencing the participants' attitudes toward macronutrients and energy information on food products. The study concluded that consumers with health concerns develop favourable attitudes towards reading food labels to ascertain the macronutrients and energy content in products. The social influence to purchase or not purchase food products that contain macronutrients and energy information labelling mainly originated from the internet, social media, TV, friends and family. These findings imply that without appropriate information and awareness about food labels, macronutrients and energy information, most consumers are influenced to purchase food items based on aesthetic appeal and not health benefits.

The study extends the Theory of Planned Behaviour by showing that social media has become a new arena of social influence on food purchase intention in South Africa. In addition, the study contributes to qualitative research methods by highlighting consumers' food purchase intention as a novel phenomenon that can be explored qualitatively. Using the qualitative

methodology, the researcher was able to attain a greater understanding of participants' explanations and expressions about their difficulties with labelling, especially macronutrients and energy information labelling.

The study recommends the innovation and adoption of consumer awareness mobile applications that, among other functions, provide nutritional and energy information on food products sold in any country of interest. In addition, to address the food label awareness gap, the study recommends that national food legislation be introduced that mandates food advertisers to include macronutrients and energy information at the beginning of every food advertisement on all paid advertising platforms. Collaborations between the Department of Health and food producers and advertisers could also assist in coordinating the food labelling strategies and messaging.

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BOPL	Back-of-Pack Labelling
CAES	College of Agriculture and Environmental Science
FACTS	Food and Allergy Consulting and Testing Services
FOP	Front-of-the-Pack
FOPL	Front-of-Pack Labelling
GDAs	Guideline Daily Amounts
HCL	Healthier Choice Logo
HEALA	Health Living Alliance
HEL	Health Endorsement Logo
HREC	Health Research Ethics Committee
kcal	Kilocalorie
kJ	Kilojoules
LCHF	Low-Carbohydrate-High-Fat
MTL	Multiple Traffic Light
NCDs	Non-Communicable Diseases
PBC	Perceived Behavioural Control
SOP	Side-of-Pack
THUSA	Transition and Health during Urbanisation of South Africans
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UK	United Kingdom
USA	United States of America
VEF	Vitamin-Enriched Food

CHAPTER ONE: OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Chapter 1 introduces the study and describes the researcher's interest in macronutrients and energy information labelling, and the influence it has on consumers' intention to purchase packaged food products. Macronutrients and energy information labelling are important factors consumers can consider when purchasing a particular food product. However, the overconsumption of these nutrients may lead to life-threatening chronic illnesses such as obesity, type 2 diabetes and cardiovascular diseases (Rösner & Oeystese, 2016). Therefore, it may be possible to postulate that consumers' intention to purchase may be influenced by their level of understanding of macronutrients and energy information found on the food labels of the products they intend to purchase.

This study employed the Theory of Planned Behaviour (TPB) to explore consumers' use of macronutrients and energy information labelling on the intention to purchase packaged food products. In this chapter, the research problem is discussed, the purpose of the study is set out, and the justification for the study is presented. Thereafter, the aim and objectives of this study are briefly discussed, and an overview of the research methodology and the ethical clearance that the study received are presented. In conclusion, this chapter outlines academic-related information pertaining to the researcher, publications from the findings of this study, and other relevant information, as well as the layout of this dissertation.

1.2 BACKGROUND OF THE STUDY

Global statistics indicate that 2.8 million people die every year from illnesses associated with obesity and being overweight (WHO, 2022). According to Ford et al. (2017), low and middle-income countries are experiencing similar increased rates of overweight and obese individuals, particularly in urban areas. Unfortunately, this incline is often associated with chronic illnesses such as type 2 diabetes, ischaemic heart disease and cancer (Van Vollenstee & Van der Merwe, 2021). According to Onagbiye et al. (2023), 16.5% of girls, 11.5% of boys, 26.6% of women, and 20.3% of men are overweight, and this phenomenon is higher among girls and women of childbearing age. Moreover, previous studies reveal that being overweight is commonly linked to unhealthy diets and a lack of physical activity (Manafe et al., 2022; Nglazi & Ataguba, 2022).

Despite awareness programmes meant to combat overweight and obesity in South Africa, unhealthy food consumption remains a challenge (Rahkovsky et al., 2018). Convenience foods, including burgers, fried potato chips, fried chicken, pizzas and others, are popular among South African consumers (Sekgala et al., 2022). According to Nakano and Washizu (2020), consumers' decision to purchase food products is often influenced by time constraints, financial resources and the food environment. Time constraints are attributed to time spent at work and commuting (Rahkovsky et al., 2018), resulting in the consumer's demand for fast and convenient food from grocery stores. However, some food products sold in South African retail outlets and informal markets do not promote good health despite being convenient and affordable (Sekgala et al., 2022). Darmon and Drewnowski (2015) also suggest that the purchase of unhealthy food products, which tend to be cheaper than healthy products, is influenced by a lack of financial resources. As a result, taxi drivers, students, construction workers and others opt to purchase less healthy food from street food vendors in South Africa (Nkosi & Tabit, 2021). Although the convenient food market offers quick and easy options, these may not be the healthiest for consumers. Lastly, the food environment may further influence consumers' purchasing decisions since consumers prefer to purchase food in close proximity to where they live and work (Mancino et al., 2018), which may not always be healthy options.

Research indicates that food products obtained at relatively low prices generally have a lower nutritional value and are rich in energy and macronutrients such as carbohydrates, fats and proteins (Rahkovsky et al., 2018). The overconsumption of foods with high macronutrients and energy content may lead to non-communicable diseases (Machado et al., 2019). Additionally, cultural beliefs and stereotypes were reported to perpetuate overweight and obesity because certain cultures believe being thin is associated with poverty and ill health (Simfukwe et al., 2015), while obesity is often associated with happiness and comfort, which leads to weight gain (Muda et al., 2015). A study by Okop et al. (2016) concur that overweight and obesity are perceived as signs of prosperity and good health in South Africa. Cultural influence may therefore play a role in consumers' consumption of foods that may advance non-communicable diseases.

The optimal balance of macronutrients in the diet has been a long-standing matter of debate (Carreiro et al., 2016). Macronutrients are crucial for lifelong human health, including growth, healing, immunity and reproduction (Venn, 2020). Excessive consumption and deprivation of any macronutrients may contribute to poor human health, though it has been suggested that the excessive consumption of macronutrients is a far greater health hazard, mostly in developed countries (Temple et al., 2017), leading to a change in dietary patterns contributing

to NCDs. Conversely, the driving force behind people depriving themselves of macronutrients is the goal of losing weight (Okop et al., 2016). Varì et al. (2016) indicate that factors such as age, gender, fitness goals and pre-existing health conditions influence the number of macronutrients an individual requires. Moreover, different diets can cause an individual to gain, lose or maintain their body weight, depending on the macronutrient composition (Carreiro et al., 2016). Todd et al. (2022) state that although consumers are well-informed of the importance of balanced and healthy diets, most individuals frequently consume food products with high macronutrient content, irrespective of the amount required for their individual needs. Hence, this study sought to examine consumers' use and understanding of the macronutrient information on food labels to gain more insight into how this information assists them in making informed food-purchasing decisions.

According to French et al. (2019), foods with high energy content and poor nutritional quality are common among low-income consumers. Moreover, a high consumption of fast-food products is primarily reported among consumers residing in urban areas where convenient foods are more prevalent (Biltoft-Jensen et al., 2022). The overconsumption of macronutrients and energy has always been linked to the global obesity epidemic (San-Cristobal et al., 2020), and South Africa is among the countries with the highest obesity prevalence, with an estimated 47.7% of females and 23.3% of males possibly being obese by 2025 (Manafe et al., 2022). However, it has been suggested that high energy consumption is attributed to poor nutritional labelling (Ganderats-Fuentes & Morgan, 2023). This phenomenon is exacerbated by consumers' lack of understanding of energy information labelling as they tend to purchase food products based on the taste and their experience of the product, irrespective of labelling recommendations (Zafar et al., 2022). Still, food product labelling remains an important information source consumers can use to guide their food product purchasing decisions. However, if consumers do not know how to interpret or read the food labels to determine the macronutrients and energy information, the purpose of the label becomes redundant and less helpful in addressing some of the NCDs.

To mitigate the potential negative health consequences of consuming unhealthy food products, the Health Living Alliance (HEALA) launched a campaign called **#whatisinourfood**, where South African consumers voice their opinions about clear warning labels on unhealthy food products. The South African government's new draft regulation (R.3337) consequently intends to intervene and make clear warning labels compulsory on food products to inform consumers about the quality of the items they consume (Smith & Johnson, 2017).

HEALA (2022) states that the dominance of unhealthy food products in stores, incomprehensible food labels, and aggressive advertising by the food industry challenge consumers' ability to choose healthy food options. Therefore, for the labelling of macronutrients on food products to have the desired effect, it is important to explore what factors influence consumers' food purchase decisions. This study thus sought to explore the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. The TPB was used as a theoretical lens to understand consumers' purchase intentions in light of macronutrients and energy information labelling on food products.

1.3 PROBLEM STATEMENT

South Africa is currently facing a high prevalence of obesity and chronic illnesses caused by unhealthy food consumption (Abebe et al., 2020). Ajaero et al. (2020) argue that this problem emanates from consumers purchasing unhealthy food products, such as convenience foods, which contain high levels of energy and macronutrients. Despite the negative consequences of unhealthy food consumption, South Africa's food labelling regulations have been lax in maintaining a clear food labelling standard to guide consumers' food-purchasing decisions. Unhealthy food products are also mostly linked to fast-food outlets, cafés and restaurants (NDoH, 2020). For example, there is no nutrition information labelling on fast foods, making it difficult for consumers to determine the amount of macronutrients and energy the products contain. A study by Dlamini et al. (2022) – on fast-food nutrition labelling – reported that food products such as ready-to-eat foods and fast-food outlets in South Africa are not obligated to list the nutrition information on their products unless a nutritional claim has been made. Therefore, consumers may be making poor estimations of their daily macronutrients and energy intake.

The lack of clear policy guidelines on food labelling in South Africa has resulted in poorly implemented nutrition information labelling on food products compared to countries like Morocco and the United States of America (USA), which have already made nutritional labelling on all food products, including fast foods, mandatory (Dabrowska, 2018). In South Africa, the lack of a policy that makes it compulsory to include nutrition information labelling on food products allows some companies, such as fast-food outlets, to omit this crucial information from their products (Panuganti et al., 2021). As a result, consumers may over-consume macronutrients (carbohydrates, fats and protein) and energy, which may lead to the development of overweight, obesity, diabetes and cardiovascular diseases (Panuganti et al., 2021).

The provision of macronutrient information on food products has been found to influence consumers' purchase decisions in developed countries (Rincón-Gallardo Patiño et al., 2020; Shangguan et al., 2019). However, no South African studies have directly explored the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products through the application of the TPB. Attention has rather been on overweight and obesity and the contribution of macronutrients and energy in this instance (Nwosu et al., 2022). Therefore, available studies have focused on the association between macronutrient and fatty acid consumption and metabolic syndrome (Sekgala et al., 2022); macronutrients and human health for the 21st century (Venn, 2020); macronutrients in health and disease (Temple et al., 2017); and the association between dietary knowledge and consumption of all food containing macronutrients (Ranga & Venter, 2017). Steyn et al. (2020) focused on energy and macronutrient intake among children from one to below ten years of age. Further studies set out to define energy-dense, nutrient-poor foods and drinks, estimating the amount of discretionary energy (Biltoft-Jensen et al., 2022); energy balance and obesity (Romieu et al., 2017); and the effects of menu energy labelling on consumers' behaviour (Robinson et al., 2023). These studies primarily focused on energy and macronutrient intake among children and one specific gender. In addition, these studies were not focused on consumers' understanding of macronutrients and energy information labelling, resulting in a gap in research, particularly in the South African context, that focuses on how macronutrients and energy information labelling influences consumers' intention to purchase packaged food products.

Furthermore, the majority of studies conducted on macronutrients were internationally based (Fogelholm et al., 2012; Rincón-Gallardo Patiño et al., 2020; Shangguan et al., 2019). Shangguan et al. (2019) investigated the impact of food and beverage labelling on consumer behaviour in the USA and discovered that food labelling lowers consumers' dietary intake of specific nutrients. Ikonen et al. (2020) conducted a meta-analysis of the effects of front-of-the-pack (FOP) nutrition labelling on consumers' purchase decisions, focusing on 114 studies. Their findings indicate that while FOP labels assist consumers in selecting healthier items, their ability to prod consumers towards better choices is limited. Zhu et al. (2023) also explored consumers' responses to nutritional labels on food products in China and found that nutrition labelling helped Chinese consumers choose substantially healthier goods. These studies focused on the composition and intake of macronutrients, dietary intake of food and energy intake. These studies did not consider the use and influence of macronutrients and energy information labelling and did not apply the TPB as a theoretical lens.

By implementing the TPB in this study, the researcher was able to explore consumers' attitudes, subjective norms, and perceived behavioural control (PBC) in order to gain a better understanding of their intent to purchase packaged food products (Ajzen, 1985) with macronutrients and energy information labelling. Furthermore, in South Africa, there is insufficient qualitative research on the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products based on the user's experience of such food products. Therefore, the main research questions this study explored were:

- What influence do macronutrients and energy information labelling have on the intention to purchase packaged food products?
- How does the consumer use macronutrients and energy information labelling on food products?

The purpose of the study was to explore the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products from the experience of the consumer as a user of food products. The researcher intended to contribute to the lack of research available in South Africa on this phenomenon and fill this gap from the consumers' perspective. The following section presents the justification for this study based on the described problem.

1.4 JUSTIFICATION FOR THE STUDY

In South Africa, there is a dearth of research on the use and influence of macronutrients and energy information labelling, and this phenomenon has not been explored using the TPB. In addition, limited literature on macronutrients and energy information labelling results in food manufacturers not being aware of factors that influence consumers' use of macronutrients and energy information labelling. Therefore, it would be advantageous for food manufacturers to disseminate the current practice and challenges consumers encounter with macronutrients and energy information labelling, impacting their intention to purchase packaged food products (Seidelmann et al., 2018). If this research is not undertaken, a clear understanding of the way consumers use or do not use macronutrients and energy information labelling will not be reached. This understanding is necessary if specific educational programmes are to be developed to assist consumers in making better food choices by using macronutrients and energy information labelling to their advantage.

This study thus needed to establish what aspects of macronutrients and energy information on food labelling need to be brought to consumers' attention and create awareness of the consequences of consuming foods with high macronutrients and energy content. The study's findings may offer insight into the difficulties consumers experience in terms of understanding, interpreting and using macronutrients and energy information labelling on food products, which are some of the issues Nguyen et al. (2019) raised where consumers and food labelling are concerned.

1.5 RESEARCH AIM AND OBJECTIVES

The aim of this study was to explore the use and influence of macronutrients (fat, carbohydrate and protein) and energy information labelling on consumers' intention to purchase packaged food products. The following objectives and sub-objectives were formulated to address this aim:

Objective 1: Explore consumers' use and understanding of:

1.1 Front-of-pack labelling.
1.2 Back-of-pack labelling.
1.3 Nutrition information labelling.

Objective 2: Examine consumers' use and understanding of macronutrients and energy information by focusing on:

2.1 Consumers' understanding of the word 'macronutrient'.
2.2 Consumers' use and understanding of macronutrient (fat, protein and carbohydrate) information.
2.3 Consumers' use and understanding of energy information.

Objective 3: Describe the influence of attitude, subjective norms, and PBC on:

3.1 Consumers' opinion of macronutrients.
3.2 Consumers' opinion of energy information.
3.3 Consumers' intention to purchase packaged food products.

1.6 RESEARCH METHODOLOGY

A qualitative research methodology was used for this study, and qualitative research methods were employed to assist the researcher in addressing the research issues (Kempen et al., 2011). To explore the participants' own experiences and how they understand macronutrients

and energy labelling information and how this influences their intention to purchase packaged food products, interpretivism was used as a philosophical approach to generate diverse perspectives from participants in pursuit of an overall understanding of the phenomenon. The descriptive and phenomenological research design was used to explain the participants' lived experiences of macronutrients and energy information labelling. Additionally, an exploratory research design was employed to assist the researcher in obtaining relevant information on a phenomenon about which very little is known (Maree & Pietersen, 2016).

Both the sample population and the research participants were general South African consumers. Non-probability sampling strategies were implemented through convenience, purposive and snowball sampling to recruit participants for this study. The participants were purposively selected based on the following specific inclusion criteria: participants had to be 18 years and older, consumers residing in South Africa, perceived themselves as knowledgeable about macronutrients (carbohydrates, proteins and fats), familiar with the nutrition information labels found on food products, and made their own food-purchasing decisions. Convenience and snowball sampling strategies were used to increase the potential number of participants for this study.

Participants were recruited through the social media platform Facebook. Since Facebook is easily accessible among South African users, the researcher chose it as a recruitment tool for this study. Individual online interviews were conducted as the main data-gathering method and were facilitated with the use of an interview guide; questions specific to each of the study's objectives were listed in the interview guide. To determine if participants would understand the questions, the interview guide was first piloted with one participant who met the inclusion criteria for the study. The questions in the interview guide were displayed to the participants by sharing the researcher's screen and focusing on each question as they progressed. The researcher also showed the participants some labels they had to read, analyse, and they answered questions based on these images.

Fifteen individual online interviews were conducted for this study using Microsoft Teams, lasting 45 to 60 minutes. Prior to the scheduled online interview, the researcher conveniently approached potential participants who met the inclusion criteria to fill in their demographic information and sign the consent form; these forms were sent via email. At the beginning of the individual online interview, the researcher introduced herself, briefly explained the purpose of the study to the participant, and clarified that the interview would be recorded for transcribing purposes. After the researcher had explained everything pertaining to the study, verbal consent was also obtained to continue with the interview. Participation in this study was

voluntary. All questions were asked according to the interview guide, with probing for further clarification where necessary. Although data saturation for this study was noted at the 11th interview, four additional interviews were conducted to confirm data saturation.

After conducting all 15 interviews, recorded interviews were transcribed using Microsoft Word. Data were analysed using an inductive approach to look for patterns and trends emerging from the data. When analysing data, open coding was used in identifying the key concepts by breaking the data into discrete parts and creating codes to label them; data coding was performed manually using coloured pens to code each participant's data. To capture participants' feedback on each question, key-coded concepts were refined and grouped into categories. Data tables were compiled of the verbatim quotes representing the responses participants shared, from which categories emerged. Tables were also used to depict emerging categories as part of the data analysis process.

To guarantee that the data analysed in this study were trustworthy, the principles of trustworthiness that address confirmability, transferability, credibility, dependability, and authenticity were employed. Bracketing was applied during the data collection and analysis process, and it assisted the researcher in ensuring that any assumptions held by the researcher did not influence the meaning the participant conveyed.

1.7 ETHICAL CONSIDERATIONS

Before the commencement of data collection, ethical clearance was obtained from the Health Research Ethics Committee of the College of Agriculture and Environmental Science (CAES) at the University of South Africa after the research proposal was approved. The ethics approval letter is attached as Appendix A, containing the reference number for this study (2022/CAES_HREC/119). Data were collected after the ethical clearance was obtained. The ethical principles of autonomy, beneficence, justice, and non-maleficence were also ensured. Prior to the scheduled interview, the participants received an information letter written in English to ensure optimal communication. All information about the research was clearly stated in the information letter (see Appendix B). The researcher used an online platform to select participants from the target population, and as soon as participants accepted the invitation, a demographic questionnaire (see Appendix C) was sent to the potential participants via the email addresses they shared on Facebook inbox, and dates were scheduled for the interviews. The interviews were conducted using Microsoft Teams, and the interview link was emailed to the participants.

During the interviews, the researcher discussed the purpose of the study and how the interview would be conducted. Potential benefits of the study were explored, and the researcher ensured that the participants were aware of what was expected of them to ensure full transparency. The participants were reminded that the individual interview would be recorded for data analysis.

Participation in the study was entirely voluntary, and participants were reminded that they could end the interview and withdraw from the study at any time. The researcher also assured the participants of their right to anonymity and confidentiality of the data gathered for this study. They were also assured that their names would not be used during data analysis, and participants would not be identified. Participants were informed that their information would not be shared with anyone other than the research supervisor. During data gathering, no unforeseen adverse events were experienced.

1.8 OUTLINE OF THE DISSERTATION

This dissertation is presented in six chapters.

Chapter 1: This chapter introduces the background of the study, outlining the researcher's interest in macronutrients and energy information labelling on consumers' intention to purchase packaged food products. This study employed the TPB to understand consumers' use of macronutrients and energy information labelling and its influence on their intention to purchase packaged food products. The identified research problem is discussed, and the justification for the study is presented. Thereafter, the aim and objectives of this study are briefly presented, and the research methodology and ethical clearance obtained for this study are outlined. In conclusion, this chapter outlines academic-related information and the layout of this dissertation.

Chapter 2: This chapter provides insight into the literature defining food labelling, nutrition information, the purpose and use of food labels. Furthermore, this chapter discusses front-of-pack labelling (FOPL) and back-of-pack labelling (BOPL), and the use of macronutrients and energy information labelling in consumers' diets. It also discusses South African studies conducted in relation to macronutrients and the TPB.

Chapter 3: This chapter provides insight into consumers' decision-making process by using the TPB's (Ajzen, 1991) model, including its three constructs (attitude, subjective norms and

PBC) to establish how consumer knowledge can influence their intention to purchase packaged food products with macronutrients and energy information labelling.

Chapter 4: In Chapter 4, the methodology used to address the research objectives is presented. This chapter details the research design, sampling strategy and data-gathering methods used for this study. The data instrument and the data gathering methods, as well as the trustworthiness of the data, are presented.

Chapter 5: This chapter offers a descriptive presentation of data gathered from the interviews conducted in accordance with the study's objectives. The first section of this chapter focuses on the participants' demographic profile, then the qualitative findings are presented by indicating the main objective and sub-objectives followed by categories that emerged from the analysis of each question posed to the participants. Figures and tables are included to assist in interpreting and presenting the study's findings.

Chapter 6: In this chapter, the study's most prominent findings are discussed regarding each objective. The participants' demographic profile is briefly summarised to ensure that the conclusions are drawn within the context in which the study was executed. The implications of the findings are shared in this chapter. The study's contribution to theory, methodology and the body of literature, as well as the study's limitations and recommendations for future research, are presented in this chapter.

1.9 ACADEMIC-RELATED INFORMATION

The Harvard referencing style was used in this dissertation based on the guidelines provided by the Department of Life and Consumer Sciences Tutorial Letter 301. The dissertation was also submitted through the Turnitin software program for a plagiarism similarity check, and the certificate is attached as Appendix E. Findings from this study have not been presented at any national or international conferences. An article will be compiled from the study's findings and submitted to an accredited journal for publication.

1.10 SUMMARY

This chapter presented a background of the study, the problem statement, the justification for the research, the research aim and objectives, and the conceptual framework used in this study. A brief description of the research methodology, ethical clearance obtained for this study, and the dissertation's outline were also discussed. The following chapter presents the

literature review, which covers food labelling, nutrition information, FOPL and BOPL, and concludes with literature on macronutrients in the diet and South African studies conducted on macronutrients.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter provided an overview of the background of food labelling, macronutrients, and energy information labelling and these aspects' influence on consumers' purchase intention. Mohajan (2018) defines a literature review as a systematic and critical review of crucial published literature on a specific topic. To critically review readily available literature, the end results should indicate current knowledge about a phenomenon. Therefore, this literature review chapter aims to intensify the reader's knowledge and understanding of the use of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. The chapter explores the following thematic areas: food labelling, nutrition information, FOPL and BOPL, and concludes with literature on macronutrients in the diet and South African studies conducted on macronutrients. A review of the literature helped the researcher gather insights, new information, and scientific evidence relating to the value of food labelling, macronutrient information and the types of labelling.

The reviewed literature was identified from an electronic search, and relevant literature resources were used. The search was performed using various electronic library databases such as Cinahl, Science Direct, PubMed, Medline and PEDro, as well as Google Scholar. Keywords, which provide the thematic direction of the study, were used to search for relevant literature. Keywords included "use or influence of macronutrients", "use or influence of energy information labelling", and "intention to purchase packaged food products". Packaged food products are referred to as any food item that has been processed, prepared, and sealed in packaging for distribution and sale. This includes a wide range of items such as canned food, frozen meals, snacks, cereals, and beverages, among others (Gopinath & Akhtar, 2023). Moreover, defining food labelling was ultimately important as it constitutes one of the keywords used in the literature search.

2.2 DEFINING FOOD LABELLING

Several studies have described food labelling as necessary information provided on food labels that guide consumers on whether to buy a food product based on their needs and how useful they find the information (Hwang & Lorenzen, 2008; Drichoutis et al., 2006; Banterle et al., 2009). Smith (2022) defines a 'food product' as any substance that is consumed to provide nutritional support to the body. This includes items such as fruits, vegetables, grains, meats,

dairy products, processed foods and beverages, among others. In the same way, Kumar and Kapoor (2017) are of the opinion that food labelling is an effective signal of information that is extensive and changes according to product specifications. In addition, Moreira et al. (2019) and Pasdar et al. (2017) further add that food labelling reflects communication between food business operators and consumers, where essential information about the nutritional value and composition of products is presented. Koen et al. (2016) suggest that any marked, printed, graphic or other definitive element stencilled on a package or container can be defined as food labelling.

Fernández-Serrano et al. (2020) state that the nutrition information on food labels comprises any information related to the processes concerned with acquiring and preparing food. Further studies also described food labelling as a population-based approach to nutrition education that provides information to consumers at the point of purchase, where product decisions are made (Hassan & Dimassi, 2017). Moreover, Darkwa (2014) believes that food labelling sharpens consumers' thinking when it comes to purchasing decisions and can motivate changes in consumers' behaviour. Food labelling is ultimately valuable to consumers as it assists them in making informed food choices and improving their health to prevent chronic illnesses (Pasdar et al., 2017).

To synthesise the above definitions of food labelling, the key characteristic of the phenomenon is that food labelling is consumer-centric communication. It seeks to inform and educate consumers about the food items they intend to consume. Thus, regulatory mechanisms must be in place to enforce food labelling. Food labelling is the primary interface between food manufacturers and consumers; however, it also acts as a foundation for consumers to make informed dietary decisions. The information on food labels can influence consumers' attitudes and behaviours, thus contributing to consumers' intention to purchase.

The Foodstuffs, Cosmetics, and Disinfectants Act No 54. of 1972 states that it is mandatory for all South African foodstuff labels to comply with requirements subject to regulation 74 to bear nutrition information, except for those food products produced for sale by small producers or street vendors, unless a claim about its nutritional content or health message has been shared (DOH, 2023). The Act exempts labels on food products such as fast food, meaning small food businesses and street vendors are not obliged to provide information that might be useful to consumers about the items they are selling. Moreover, these small food businesses and street vendors mostly sell convenient foods such as fast food and drinks, which consumers prefer to purchase. Pre-packaged foodstuffs refer to food items that have been pre-packaged and are ready for sale to consumers without further processing or preparation

required. These products are typically further sealed in packaging and may include items such as snacks, convenience meals, canned food and beverages (Jones & Smith, 2023).The purchasing patterns of convenient food result in the consumption of foods high in macronutrients and energy, which further leads to overweight, obesity, diabetes and heart-related diseases.

Although the food industry responded to The Foodstuffs, Cosmetics, and Disinfectants Act No. 54 of 1972 by providing more detailed nutrition information to assist consumers in benefiting from proper nutrition labelling and validated nutrition claims provided on food labels, some consumers are still challenged when they have to make decisions about their food purchases (Xazela et al., 2019). These challenges are associated with individual knowledge and understanding of all the information provided and applying it when using food products (Moore et al., 2018).

Based on the facts presented in the preceding paragraphs, a food label is one of the most important modes through which consumers may evaluate food products and make informed purchase decisions (Kumar & Kapoor, 2017). Moreover, Albert (2010) is of the opinion that in light of increased consumer and food industry interest in food labels, government authorities must ensure that the information that appears on food packages is valuable and credible so that it does not mislead the consumer. Clear and concise information must be included on food labels to assist consumers in making decisions about the macronutrient and energy content of their purchases, because many brand-loyal consumers are ignorant of all other details presented on food labels due to the experience they have with their trusted brands (Anisha et al., 2020). Consumers therefore identify the food products they want to purchase and specific to their needs based on food labels (Nugzar, 2018).

This section provided several definitions of food labelling and proceeded to discuss the value of food labelling to consumers as well as the challenges that some consumers still have in making purchase decisions despite the availability of food labels. Food labelling is depicted as important in influencing consumers' purchase intentions based on their needs. However, some consumers' lack of understanding of macronutrients and energy information has negative implications for their informed decisions to purchase packaged food products.

2.3 NUTRITION INFORMATION ON FOOD LABELS

Besides educating consumers about important ingredients in a food product, the nutrition information on food labels is important in guiding consumers' food choices (Koen et al., 2016).

There has been a global trend in providing mandatory nutrition information labelling, which includes the nutrition information table, regardless of whether a health or nutritional claim has been made. According to Roberto et al. (2021) and Meijer et al. (2021), all food labels in South Africa must have certain mandatory information depending on the product and the type of claim being made. In addition, all South African food labels must conform with the country's latest food labelling and advertising legislation.

Van Dijk et al. (2012) indicate that nutrition information on food labels is presented in different formats, displayed either on the front-of-pack (FOP), side-of-pack (SOP) or back-of-pack (BOP). Information on food labels has become multifaceted, and its purpose has intensified under the effects of many dominant groups, including food companies, retailers, consumer associations and public authorities (Gomez et al., 2017). Miller and Cassady (2015) state that although consumers value nutrition, the information on food labels seldom efficiently communicates with consumers. Nutrition information is thus a convenient mechanism to use when communicating product information to consumers at the point of sale.

Detailed food labels have become crucial to today's consumption practices (Singla, 2010). However, impacting influences such as cost, accessibility, consumer attitudes and beliefs towards food items are also important in determining dietary choice and nutrition knowledge (Prinsloo et al., 2012). Food label information assists consumers in understanding the rudimentary nutrition information and characteristics of food products (Gomez et al., 2017), and some content relevant to healthy eating behaviour and nutrient intake is included on food labels. Although nutrition information is significant on food labels and promotes consumers' understanding of what the product contains (Miller & Cassady, 2015), it is typically underutilised by consumers. This may be due to consumers' insufficient knowledge about the nutrition information being communicated on the label, such as macronutrient information (Miller & Cassady, 2015).

Prinsloo et al. (2012) argue that concise nutrition information on food labels can assist consumers in selecting products to consume based on the amount of nutrients, number of servings, and portions the product provides. However, without an understanding of the nutrition information on food labels, these labels are of little use to the consumer. In addition, information, such as the shelf-life appearing on food labels, may be useful to consumers when storing and using food they have purchased safely, therefore supporting food label use (Van der Merwe et al., 2014). Roberto et al. (2021) indicate that most consumers value product nutrition information that is easy to read, and they consider a wide array of information before

making purchase decisions. As a result, this translates into most consumers seeking additional information based on changes in their diet or health needs (Singhal, 2018).

The nutrition information on food labels serves both the consumer and the marketer (Butcher et al., 2019; Huang et al., 2021). The availability of nutrition information on food labels assists consumers in becoming savvy about their food choices (Temple, 2020), which, in turn, influences their intent to purchase these products. In addition, nutrition information often increases consumer loyalty. This is a positive outcome for marketers because, if the consumer is satisfied with the information provided on food labels, the marketer's goal of achieving maximum consumer satisfaction is met, which also positively impacts product sales and brand loyalty (Anisha & Melvin, 2020).

2.4 PURPOSE AND USE OF FOOD LABELS

Koen et al. (2016) state that there has been a change in the information communicated through food labels to consumers. Informing the consumer of the product's nutritional value is the primary role of food labels, supporting marketing and product sales. Food labels also convey relevant food safety and nutrition information, allowing consumers to distinguish between alternative products (Prinsloo et al., 2012). In addition, Siddiqui et al. (2021) state that food labels help consumers recognise health claims, certification marks, allergen icons and support their tailored diets. Research conducted by Malloy-Weir and Cooper (2017), to examine American consumers' use of nutrition labels, revealed that the primary roles of these labels are to inform consumers about nutrition, help them compare the nutrients in similar products, and choose the one that best suits their needs. Additionally, food labels assist consumers in avoiding confusion when interpreting quantitative information from different nutrition label formats (Koen et al., 2016). Moreira et al. (2019) explain that food labels are also useful for specific consumer groups, such as athletes and other professionals with strict dietary needs to maintain an appropriate level of physical fitness.

Evidence from a study conducted by Aygen (2012), exploring Turkish consumers' opinions and use of food labels, determined that food label use is a moderator associated with dietary behaviours and helps to market and sell products. Consumers with prior food label knowledge are more likely to use food labels effectively (Van der Merwe et al., 2014), though some consumers lack the understanding to make the best use of food labels (Xazela et al., 2019). Guthrie et al. (2015) suggest that convenient foods also require food labelling because they cater to consumers' busy lifestyles. Food labelling is thus particularly vital for convenient foods

since consumers greatly underestimate the nutritional content of these products (Mayfield et al., 2014).

The reviewed studies in this section revealed that food labelling is a marketing communication tool that promotes product differentiation in the food industry (Kumar & Kapoor, 2017). Consumers have a right to be informed of the processes involved in the production of a food product as well as the nutritional and energy elements contained in the product. Therefore, informing the consumer of a food product's nutritional and energy components helps to influence purchase intentions. Thus, food marketers must ensure that they attract consumers' attention to food labels. The next section explores the factors influencing consumers' decision to read food labels.

2.5 FACTORS INFLUENCING CONSUMERS' DECISION TO READ FOOD LABELS

Based on the reviewed literature that discussed the nutrition information presented on food labels, the purpose and use of food labels, it is evident that the way in which consumers respond to food labels is linked to several factors (Spiteri Cornish & Moraes, 2015). The first factor is consumers' **sociodemographic profiles**, including age, culture, occupation, monthly income and education. Srivastava (2021) states that consumers' sociodemographic profiles play a significant role in influencing their decision to read food labels and are thus likely to influence the consumer's intention to purchase. According to Nguyen et al. (2019b), education is the most dominant of the sociodemographic profile elements, because it directly influences consumers' purchase decisions and reveals their comprehension, use and interpretation of food labels. Information on food labels contributes to the consumer's safe consumption of the food product, and protects consumers against potential hazards, for instance, allergens (Fiocchi et al., 2021). The ability to read assists consumers in making informed food choices by analysing food labels based on their preferences, needs and health status. For this reason, it is essential that food labels are easy to understand (Dominick et al., 2018).

From the discussions in the reviewed studies, it can be deduced that sociodemographic factors influence a culture of reading or not reading food labels. **Education** was found to be an important factor that impacts consumers' decision to read food labels. Individuals with lower educational levels are likely to ignore food labels as they lack awareness of their nutritional needs (Moore et al., 2018). Conversely, the literature suggests that educated individuals are conscious of their nutritional needs and therefore more likely to read the food labels, impacting their intention to purchase products based on the information at hand.

Price is another significant factor affecting consumers' response to reading food labels, influencing their purchasing behaviour (Nguyen et al., 2019b). Koen et al. (2016) explain that some consumers select food products based on the price, irrespective of the nutritional value or quality. A study conducted by Darkwa (2014) in Ghana investigated consumers' knowledge about food labels and how this knowledge guided consumers' purchasing decisions. The author found that price was most important in determining which product was purchased. In addition, Darkwa (2014) indicated that consumers from Ghana who placed an emphasis on price were less likely to read and use food labels. In support, Albari (2020) indicates that price perception greatly affects a consumer's decision to purchase a product.

The price consumers are willing to pay for food products does not go to waste if the product nutritionally benefits them (Ali & Rahut, 2019). Kempen et al.'s (2011) research, to determine whether consumers who read food labels were also aware of health and lifestyle issues in Gauteng, revealed that consumers who often read food labels were more health conscious and maintained a healthier lifestyle.

The key themes from this section reflect that the price of a food item can either prompt or discourage consumers from reading food labels. Consumers who perceive a food product to be too expensive may ignore food labels, whereas other consumers who are more health conscious have shown a willingness to pay a premium for health and wellness food products (Ali & Ali, 2020).

The third factor that influences consumers' decision to read food labels is the **availability of nutrition information**. Consumers often seek food products with nutrition information to assess the product's health properties (Van der Merwe et al., 2014) and select one best suited to their needs. Koen et al. (2016) explain that consumers seek and use significant information relating to product qualities, and **health conditions** may be one of the factors that influence consumers' reading of food labels. Nutrition information on product labels must be easy to read, accurate, and scientifically valid in order for consumers to modify their diets and lower the risk of diet-related diseases (Kathane & Sharma, 2017). Therefore, information such as ingredient lists, product preparation and storage recommendations, and the best-before or use-by dates are the information consumers require to address their health concerns. The ingredient list also informs consumers about potential allergens in a product and other elements such as food preservatives, additives, oxidants, and stabilisers (Kelly & Jewell, 2018). Ultimately, although consumers' sociodemographic profiles' impact on their decision to read food labels has been discussed, Ali et al. (2018a) suggest that product characteristics,

market attributes and psychological factors are also likely to impact consumers' decision to buy healthy food products.

The reviewed literature has underscored the importance of nutrition information's availability and its influence on consumers' purchase intention. Health-conscious consumers ultimately read food labels in order to establish whether the nutritional and energy aspects of the product meet their health needs. It can thus be concluded that the availability of health information influences consumers' food product purchase decisions. Therefore, the position of the food label, such as FOP and BOP should be considered as other factors that may further influence food purchase intentions.

2.6 FACTORS LIMITING CONSUMERS' DECISIONS TO READ FOOD LABELS

Consumer awareness of food choices has gained significant attention in recent years due to growing concerns about health and nutrition. Food labels serve as a vital tool for conveying information about the nutritional content and ingredients of food products. However, despite their importance, several factors limit consumers' decisions to read food labels. The following factors provide insight into consumers' behaviour in food label engagement.

- **Wide Availability of Food Products:** The wide availability of food products in modern markets presents consumers with a paradox of choice, where numerous options compete for attention. Research by Smith et al. (2018) suggests that an abundance of choices can overwhelm consumers, leading to decision fatigue and a reluctance to engage with food labels. Moreover, the sheer volume of available products may contribute to a perception of homogeneity, diminishing the perceived importance of reading labels (Johnson & Smith, 2020).

- **Brand Loyalty and Perceived Value:** Brand loyalty plays a significant role in consumer behaviour, often influencing purchasing decisions over other factors such as price and product attributes (Lee & Johnson, 2019). Consumers who have established loyalty to a particular brand may trust its products implicitly, leading to a reduced motivation to scrutinise food labels (Huang, 2021). Additionally, perceived value, which encompasses both the quality and reputation of a brand, can influence consumers' perceptions of the necessity of reading food labels (Brown & Jones, 2018).

- **Price (Promotions and Discounts):** Price promotions and discounts are commonly used marketing strategies to attract consumers and drive sales. Research by Chang et al. (2019)

suggests that consumers often prioritise price over other factors when making purchasing decisions, especially when faced with limited financial resources. Consequently, the allure of discounted prices may overshadow the importance of reading food labels, particularly among price-sensitive consumers (Smith & Chang, 2020).

In conclusion, several factors influence consumers' decisions to engage with food labels, including the wide availability of products, brand loyalty, perceived value, and price considerations. An understanding of these factors is crucial for policymakers and food industry stakeholders to develop effective interventions and strategies to encourage informed food choices among consumers. Further research is needed to explore the interplay of these factors and their impact on consumer behavior in diverse contexts.

2.7 DRAFT SUGGESTIONS FOR FRONT-OF-PACK LABELING (FOPL) AND BACK-OF-PACK LABELING (BOPL) REGULATIONS

Front-of-Pack Labelling (FOPL):

- **Clear and Visible FOPL Logo:** Ensure that the FOPL logo is prominently displayed on the front of the packaging or main panel to maximise visibility to consumers. The logo should cover up to 25% of the front of the pack, as per the provided specifications (Smith et al., 2022).

- **Colour Contrast and Legibility:** Implement guidelines for colour contrast and legibility of FOPL logos to ensure that they are easily recognisable and readable by consumers, including those with visual impairments (Jones & Brown, 2021).

- **Standardized Format:** Establish a standardised format for FOPL logos across all packaged food products to enhance consistency and facilitate quick understanding by consumers. This format should include easily understandable symbols or text indicating the presence of added saturated fat, added sugar, added sodium above certain cut-off values, or artificial sweeteners (Lee & Chang, 2020).

- **Threshold Values:** Define clear and evidence-based threshold values for added saturated fat, added sugar, added sodium, and artificial sweeteners that trigger the requirement for FOPL labelling. These values should be regularly reviewed and updated based on the latest scientific evidence and dietary guidelines (Huang, 2019).

- **Consumer Education:** Develop comprehensive consumer education campaigns to increase awareness and understanding of FOPL logos and their significance in making informed food choices. Provide information on how to interpret FOPL labels and their implications for health (Johnson & Smith, 2018).

Back-of-Pack Labelling (BOPL):

- **Detailed Nutritional Information:** Mandate the provision of detailed nutritional information on the back of packaging, including the quantities of saturated fat, sugar, sodium, and artificial sweeteners per serving or per 100 g/ml of the product (Chang et al., 2020).

- **Ingredients List:** Ensure a clear and comprehensive ingredient list on the back of packaging, indicating all ingredients used in the product, including any additives or preservatives (Brown & Lee, 2019).

- **Allergen Information:** Ensure that allergen information is prominently displayed on the back of packaging, highlighting the presence of common allergens such as gluten, nuts, dairy, and soy (Smith & Johnson, 2017).

- **Recommended Daily Intake:** Include information on the recommended daily intake of key nutrients and ingredients to assist consumers in making healthier food choices and managing their dietary intake (Chang & Huang, 2018).

The requirement for all food labels to include a nutritional information table, with a few exceptions, is a significant regulatory change (Smith & Johnson, 2017). Notably, there are modifications to the format, such as the inclusion of total carbohydrates with new sub-nutrients (Lee & Chang, 2020). This adjustment ensures that consumers have access to comprehensive and up-to-date information about the nutritional content of food products, aiding them in making informed dietary choices. The inclusion of expanded nutritional information tables reflects a commitment to enhancing consumer awareness and promoting healthier food choices (Chang & Huang, 2018). This regulatory measure aligns with broader efforts to improve public health outcomes by facilitating informed decision-making in food selection (Huang, 2019).

2.8 FRONT-OF-PACK LABELLING

Goodman et al. (2018) and Roodenburg (2017) define FOPL as a label on the front of packaging, providing the consumer with easily understandable nutrition information, including fat, sugar and salt, and serving size. Typically located on the front of the package, the purpose of FOLP is to enable consumers to quickly assess the nutritional value of packaged food products without the need for extensive examinations of the packaging. FOPL augment the BOPL information and provide consumers with interpretive symbols or logos that meet a certain nutritional criterion to assess a product's overall nutritional value (Khandpur et al., 2018). Pettigrew et al. (2017) argue that FOPLs can be classified into two groups, namely reductive and evaluative. Reductive FOLPs provide no interpretative information, but they provide a numerical summary of specific nutrients, such as Guideline Daily Amounts (GDAs) (Goodman et al., 2018). Evaluative FOLPs, also called criteria-based labels, provide interpretative information, which is assessed based on specific criteria to draw conclusions about a product's quality (Kleef & Dagevos, 2015). From the reviewed literature, it can be concluded that FOPL provides interpretive symbols and a numerical summary of the composition of a food product. Symbols appeal to even the most uneducated consumers, whereas consumers concerned about their health and fitness demands are more drawn to the numerical information on the label. Therefore, both symbols and numerical information may influence a consumer's purchase intention of a food product depending on the way they interpret the information.

Vargas-Meza et al. (2019) argue that obesity and chronic diseases are increasingly becoming a public health concern as high mortality rates and burdens of disease have been reported to be associated with obesity and diabetes (Kelly & Jewell, 2018; Pettigrew et al., 2017). It has been recognised that adequate FOPL could contribute to alleviating this phenomenon and promote efforts to improve nutrition (Cecchini & Warin, 2016). However, the British Dietetic Association reports that it is not mandatory for products to display a FOPL (Croker et al., 2020b). Conversely, the South African draft regulations relating to the labelling and advertising of foodstuffs (R.429) specify that all food products must display FOPL under the Directorate of Nutrition (Frank et al., 2021). According to Kanter et al. (2018), FOPL objectives are twofold, namely to (i) inform consumers about the content of the product and (ii) influence the consumer to make healthier choices by prominently presenting vital information on the front of product packaging. Therefore, regulations can be regarded as enforcement mechanisms to ensure food producers display information, contributing to consumers' informed decisions to purchase a food product.

Nutrition information can also be displayed on food labels, such as GDAs, nationally endorsed health symbols, and the multiple traffic light (MTL) system. In South Africa, GDAs, now commonly known as Reference Intakes (Kontopoulou et al., 2022) (see Figure 2.1), depict nutrient content in terms of sugar, energy, fat, salt and saturated fat (Khandpur et al., 2018). GDAs display equivalent percentage contributions to an adult's daily needs per portion of the product. Therefore, if present, the label will contain total energy in kilojoules (kJ) per serving and per 100g. The FOPL can also display the amount of fat, saturates (saturated fat), sugars and salt in a serving.

Nationally endorsed health symbols or a health endorsement logo (HEL) are evaluative, summary indicator labels that are only displayed on products that meet a defined set of nutritional criteria (Kelly & Jewell, 2018). South Africa's Heart and Stroke Foundation (see Figure 2.2) is an example of an HEL. This foundation aims to reduce the burden of cardiovascular disease and encourage consumers to choose healthier food (Khandpur et al., 2018).

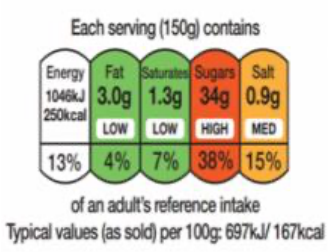


Figure 2.1: Reference intake label

Source: The Healthy Employee

Figure 2.2: Heart and stroke foundation logo of South Africa

Source: Heart foundation, South Africa

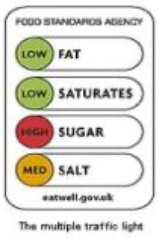


Figure 2.3: Multiple traffic light system label

Source: *British Nutrition Foundation and Endorsements Health & Stroke Foundation, South Africa*

There are several countries where FOPL have been implemented as mandatory or voluntary schemes, and while the MTL label found on food products in the United Kingdom is one such example (Findling et al., 2018), these are not found on South African-made products, as seen in Figure 2.3. Colour codes depicted on FOPLs indicate if the nutrient in an item is present in high, medium, or low amounts, as shown in Figure 2.3 (Mandle et al., 2015).

Recent studies indicate that warning labels improve consumers' ability to correctly identify products containing excessive amounts of critical nutrients (Kanter et al., 2018; Roodenburg, 2017). In a study conducted on Mexican consumers to compare their acceptability and understanding of FOPLs, Vargas-Meza et al. (2019) indicated that MTL may be better at helping low and middle-income consumers make healthier food choices than non-directive FOPLs such as GDAs, which consumers find complicated to interpret. These labels depict the systems used to interpret nutrition information on food labels, but their application and use vary among countries. GDAs and the Heart and Stroke Foundation's label are common on South African products, whereas the MTL label is most common in the United Kingdom and other countries.

Figure 2.4: A guideline daily amount label on a South African food product

Source: *FOODStuff SA*

Figure 2.5: Heart and Stroke Foundation label on a South African food product

Source: *Goss*

Figure 2.6: An international cereal product with MTL label

Source: *Food Manufacture*

In 2016, draft regulations relating to the labelling and advertising of foodstuffs (R.429) were published for voluntary FOPL (Singh et al., 2021). The Food and Allergy Consulting and Testing Services (FACTS) of South Africa reported that FOPL was previously under the Directorate of Food Control, and is now mandated under the Directorate of Nutrition (Kanter et al., 2018). A study by Hutton and Gresse (2020) explored South African consumers' perception of five FOPL formats, and the MTL label (see Figure 2.3) scored highest in trustworthiness across all ethnicities in the study. Hutton and Gresse (2020) are of the opinion that MTL labelling is the most trusted FOPL in South Africa.

FOPL can be interpretive or non-interpretive, and they can also provide aggregate (overall judgement on the product) or analytical evidence that includes detailed information on specific nutrients (Kelly & Jewell, 2018). According to Croker et al. (2020a), the Funnel Model was developed to describe the functional and visual characteristics of FOPL. This model considers

various aspects of a label, which fall into the following broad categories: components (qualifying or disqualifying); methodology (including the reference unit, e.g. per 100 g or serving; and the measurement method, e.g. compliance with scores/thresholds) and expression, including whether voluntary or mandatory; and the aim to help the consumer or promote reformulation (Cecchini & Warin, 2016). This model allows FOPL to be described consistently and systematically.

As mentioned, FOPL schemes are mandatory in some countries, although most have voluntary schemes. Based on the Funnel Model, it is reasonable to conclude that food labelling attempts to reconcile marketing, ethical and legislative guidelines to ensure consumers are influenced to buy products that meet their health needs. The researcher is ultimately of the view that FOPL schemes are meant to help consumers access important information about the nutritional components of food products to guide their purchase intentions and decisions.

2.9 BACK-OF-PACK LABELLING

BOPL is defined as the information displayed on the rear or backside of food packaging, including the nutrition information table, ingredients, and usage instructions. BOPL serves to provide consumers with comprehensive information about the nutritional content of a food product, complementing the FOPL (Ronnow, 2020). BOPL is the most prevalent format worldwide, and approximately 75% of the global population lives in countries with BOPL regulations that stipulate mandatory labelling on all food products (Mandle et al., 2015). This form of labelling has been in use for many years (Peonides et al., 2022). In South Africa, the nutrient analysis table is mandatory if any claims are made about the product, and the information must be provided in a prescribed format (Karim et al., 2022). Nutrition information tables, ingredient lists, potential allergens, and storage instructions are located at the back of packaging, as seen in Figure 2.7 (Grunert et al., 2010), but sometimes can also be found on the side of products' packaging.

Our finest Raw Honey Chocolate is made using pure Raw Honey, harvested locally in the Cape Region of South Africa. The African Honey Bee produces a superior Golden honey, rich in essential oils and fragrance. Our Raw Honey is carefully blended with Plump Cherries and Cocoa to create this luxurious treat.

Typical Nutritional Information*

Per serving	Per 50 g	Per 20 g
Energy (kj)	1041	489
Protein (g)	2.4	1
Carbohydrate (g)	22.5	8
of which Total Sugar (g)	21.55	9
Total fat (g)	16.5	7.1
of which Saturated fat (g)	10.5	4.5
Dietary fibre (g)	0.75	0.3
Total Sodium (mg)	7	2.5

* Nutritional information for the product as packed

Ingredients: Cherries, Cocoa Mass, Cocoa Butter, Raw Honey, Flavouring (natural and nature identical)
Allergens: Nuts
Best before: See bottom of pack
Storage: Store in a cool dry area

Native: Manufactured in Cape Town, South Africa
Tel: 021 1801777

Figure 2.7: Typical nutrition information table on a South African chocolate product
Source: Native South Africa

Figure 2.7 shows a nutrition information label that was updated in 2016 by the US Food and Drug Administration to reflect updated scientific information for effective consumer usage (FDA 2017). The updated nutrition information table/label is also available on South African food products. According to Venter (2017), South African food manufacturers have used marketing strategies that mislead the consumer, for instance, by providing nutrition misinformation. Therefore, the Department of Health has reformulated the Food Labelling Regulations to address these issues, stipulating what information all product labels must include. The new regulations mandate the following aspects:

- Foods that have added saturated fat, added sugar, added sodium (salt), exceed the nutritional cut-off levels for total sugar, total sodium, or total saturated fatty acids, or contain artificial sweeteners must bear specific FOPL. Logos must also be clearly visible to the consumer, according to the stipulated requirements. It is also necessary to take precautions to avoid removing or damaging logos.
- Celebrities, sports figures, cartoon characters, puppets, or computer animations cannot appear on these labels. Competitions, tokens, presents, or collectable goods attractive to children are also prohibited, as are youngsters in mixed groups with young people over 18, but young adults are not specified.
- Advertisements for items with FOPL may not violate positive family values by depicting cheerful, loving family settings.
- Warning labels must be in both black and white.

- There should be detailed provisions for health claims that allude to an effect on the human body.

These regulations create an equal platform for all food products by stating only facts and no confusing information (Singh et al., 2021). According to Sekgala et al. (2022), the goal of the new laws is admirable since it appears to be aimed at addressing South Africa's rising incidence of obesity and lifestyle disorders. The literature highlights that the new regulations protect consumers from unethical behaviour from food marketers regarding their products' nutritional and energy components. The next section explores literature on macronutrients, which food labels should specify.

2.10 DEFINITION AND USE OF MACRONUTRIENTS

Kirkby (2023) defines macronutrients as a class of chemical compounds that provide energy needed for growth, metabolism, and other body functions. Seidelmann et al. (2018) similarly describe macronutrients (carbohydrates, fats and proteins) as a class of nutrients that generate energy in the human body. Carbohydrates, fats and proteins are essential macronutrients obtained from one's diet, as the human body cannot synthesise them on its own (Streit, 2021). Carbohydrates are the main nutritional energy sources, whereas fat insulates organs and makes up cell membranes (Hernandez, 2023). According to Roth et al. (2018), proteins provide structure to bones, muscles and skin and provide nitrogen to human cells. Each cell in the body has a different function (Kumar & Kapoor, 2017); however, without energy and nutrition, human body cells cannot perform optimally (Muth & Park, 2021). Streit (2021) also states that each macronutrient has a specific function in the human body during digestion. Therefore, macronutrients are consumed in large quantities to provide energy (Roth et al., 2018). The reviewed studies have highlighted that macronutrients are important for a healthy body. To that end, consumers who are conscious about their health need to pay attention to these components presented on food labels and use this information to make a decision to purchase or not purchase the product.

Fats are proximate principles because they provide 38 kilojoules per gram (kJ/g), whereas proteins and carbohydrates provide 17 kJ/g (Kumar & Kapoor, 2017). Energy from these macronutrients is expressed in kilojoules (kJ) (Speakman, 2022). Seidelmann et al. (2018) suggest that a lack of adequate nutrients may cause undernutrition, resulting in a nutritional deficiency disorder. Obesity and related disorders may also develop due to an excessive intake of macronutrients. For proper and adequate nutrition in the human body, a healthy diet that consists of a variety of nutrients is fundamental (Zavitsanou & Drigas, 2021). It is thus

crucial for consumers to be informed about the energy content of food products they intend to purchase so they can make informed purchase decisions that will benefit their health.

2.11 MACRONUTRIENTS AND ENERGY INTAKE IN THE DIET

Bellissimo and Akhavan (2015) suggest that an understanding of macronutrient composition and the relative required proteins, fats and carbohydrates may assist consumers in determining their appropriate macronutrients and energy intake. However, it is plausible that the consumption of a healthy diet is more important than strictly adhering to a low-fat/high-carbohydrate diet (Kovell et al., 2020). A study conducted by Qasrawi et al. (2021) to explore energy, macronutrient and dietary patterns among school children in Bahrain indicated that low intake of dietary fiber, high sugar intake and high saturated fat intake was likely to increase the risk of obesity and cardiovascular diseases later in life. Therefore, nutrition education programmes were suggested as an intervention to emphasise the importance of healthy, balanced diets.

Furthermore, Kumar and Kapoor (2017) explain that there are famous diets that interpret macronutrient dietary compositions differently. Among others, these diets have made headlines and influenced many South Africans' lifestyles. Pujol-Busquets et al. (2020) indicate there is currently significant public interest in Low-Carbohydrate-High-Fat (LCHF) diets in South Africa, and there is a general perception that foods included in this type of diet are expensive, and people who decide to follow this lifestyle are reasonably affluent. The term LCHF is described as a means of weight loss and improved metabolic health (Pujol-Busquets et al., 2020). The first of these diets is the Atkins diet, which has an extremely restricted carbohydrate intake of 5-20% of total energy intake but does not limit protein and fat intake regardless of saturated or unsaturated fat type. Kirkpatrick et al. (2019) mention that the Atkins diet focuses on controlling insulin levels in the body through a low-carbohydrate diet and may be recommended for weight loss. The second is the Zone diet, which promotes the consumption of high-quality carbohydrates (unrefined carbohydrates) and fats such as olive oil, avocados and nuts. Turner-McGrievy et al. (2021) mention that the Zone diet is concerned with the quality of ingredients and, similar to the Atkins diet, the focus is on controlling insulin levels. The Zone diet may improve body weight control more than other weight-loss approaches (Mooradian, 2020). According to Wali et al. (2021), there is also an increased emphasis on the quality of food and macronutrients in the Zone diet, so for many individuals, the quantity of food is evidently still a concern.

The third diet is commonly known as Banting; this diet severely restricts the consumption of carbohydrates and promotes the consumption of fats that are considered healthy according to this diet (Pujol-Busquets et al., 2020). Fields et al. (2016) suggest the banting diet usually promotes fat loss, and it is known as a diet that controls the appetite. Consumers' increased concern about weight loss and improved health has resulted in many South African restaurants including Banting options on their menus (Harcombe & Noakes, 2016).

The reviewed studies highlight that awareness and interest in macronutrient dietary composition has increased globally and in South Africa as consumers attempt to address obesity. This awareness implies that consumers' purchase decisions are influenced by the extent to which they are satisfied with the macronutrient dietary composition of food products.

2.12 SOUTH AFRICAN STUDIES CONDUCTED ON MACRONUTRIENTS

Despite diet being a first-line strategy for preventing certain diseases, the optimal macronutrient profile remains unclear (Kovell et al., 2020). Sekgala et al. (2022) indicate that salient findings on macronutrient information labelling in South Africa are relatively known. However, nutrition professionals have used isolated dietary intake studies to understand South Africans' macronutrient and energy intake. A study conducted in the Northwest province of South Africa by Vorster et al. (2005) described how urbanisation influences nutrition and health transition using data from the Transition and Health during Urbanisation of South Africans' (THUSA) study. The findings indicate that urbanisation in the Northwest province is associated with a rise in micronutrient consumption and status, but also an increase in overweight and obesity (Kruger et al., 2006). However, intervention programmes to promote nutritional health were proposed to enhance individuals' micronutrient status while avoiding obesity.

Another study by Vorster (2013) discovered a pattern among White, Coloured and Indian South Africans having a relatively low total carbohydrate intake (mean <50% of energy), while Africans, especially rural Africans, had a high intake of total carbohydrates (50-70% of energy). According to the reviewed study, rapid nutrition transition and urbanisation have been observed in South Africa and Africa as a whole. A decrease in total carbohydrate intake and increased added sugar intake have also been distinguished. Naude et al. (2014) conducted a systematic review to determine whether low carbohydrate diets have any beneficial or harmful effects on weight and cardiovascular risk factors compared to a balanced diet. This systematic review was conducted because some popular weight-loss diets restricting carbohydrates have made claims of being more effective. Findings revealed that weight can be lost in the short

term with low carbohydrate intake and balanced diets. Ultimately, the risk of developing metabolic diseases such as diabetes, which is commonly observed during adulthood, can be reduced by effective weight control, and this can be accomplished regardless of dietary macronutrient composition (Bellissimo & Akhavan, 2015).

Studies by Kwon et al. (2021) and Ranga and Venter (2017) on dietary macronutrient patterns also indicate that diverse diet patterns have led to the consumption of energy-dense, high protein and fatty foods among adolescents and young adults, which results in obesity and other diseases. From the studies reviewed in this section, it can be concluded that sociodemographic characteristics play a role in shaping consumers' dietary patterns. The implication of sociodemographic discrepancies may reflect the levels of health awareness among consumers, which, in turn, influence their food purchase decisions.

2.13 PREVIOUS RESEARCH ON FOOD LABELS, MACRONUTRIENT INFORMATION USE AND INTENTION TO PURCHASE PACKAGED FOOD PRODUCTS

This section presents information on previous research studies conducted on food labels, macronutrient information use, and consumers' intention to purchase packaged food products. Table 2.1 shows recent literature has focused on food labels, macronutrients and energy information labelling, and intention to purchase packaged food products. Available studies have focused on food and nutrition labelling (Koen et al., 2016), consumers' knowledge of food labels (Van der Merwe et al., 2014), usage and understanding of a food label (Hassan & Dimassi, 2017), effects of nutrition knowledge on food label use (Miller & Cassady, 2015), and knowledge of nutrition facts on food labels and their impact on consumers' food choices (Darkwa, 2014). These studies addressed consumers' knowledge and use of food labels and how nutrition knowledge impacts their decision to purchase packaged food products.

Studies conducted on macronutrients are limited in South Africa (Ranga & Venter, 2017; Steyn et al., 2020), but these studies addressed energy and macronutrient intake and consumers' knowledge of macronutrient consumption among specific targeted populations, which did not include all races and different age groups. Other studies that focused on macronutrients were internationally based (Bellissimo & Akhavan, 2015; Kim et al., 2020) and focused on analysing dietary patterns, macronutrient intake, and body composition. However, in South Africa and internationally, research on the impact of consumers' knowledge of food labels and macronutrients and energy information labelling on the intention to purchase packaged food products is limited. Therefore, the need for this research remains evident in light of the dearth

of research on the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products.

Table 2.1: Previous research on food labels, macronutrient use and intention to purchase

TITLE OF ARTICLE	DESCRIPTION AND FINDINGS
Food and nutrition labelling review: the past, present and the way forward (Koen et al., 2016).	This review investigated the need for food and nutrition labelling, mainly the section of information on a food label that specifically declares nutrient content, consumers' nutrition label use and understanding, and the impact of nutrition labelling on purchasing behaviour. It provided a summary of the latest global nutrition labelling trends, the current situation in South Africa, and the way forward.
Consumers' knowledge of food label information: an exploratory investigation in Potchefstroom, South Africa (Van der Merwe et al., 2014).	The objective of this study was to determine consumers' ability to locate and manipulate food label information, assess the accuracy of nutrient content claims, and identify symbols on food labels. Associations related to use and knowledge regarding food label information were also determined among consumers from different demographic and related groups. In conclusion, consumers' label reading practices resulted in labels influencing purchasing decisions.
The effects of nutrition knowledge on food label use: A review of the literature (Miller & Cassady, 2015).	This review examined the importance of consumers' nutrition knowledge to communicate nutrition information through labels on packaged foods. Relatively few studies investigated knowledge's effects on the use of ingredient lists and claims compared to nutritional facts labels. The findings of this review suggest that nutrition knowledge supports food label use, and an increase in consumers' nutrition knowledge levels may improve nutrition communication through food labels.
Usage and understanding of food labels among Lebanese shoppers: A cross-sectional study (Hassan & Dimassi, 2017).	The aim of this study was to assess consumers' food label use, understanding, and factors affecting Lebanese supermarket shoppers. The low awareness of food labels reported among Lebanese supermarket shoppers contributes, in the short term, to higher consumption of unhealthy foods and higher susceptibility to chronic diseases in the long term. Data gathered from this study demonstrated a considerable demand for nutrition education and recommended that grocery stores would be ideal for reaching out to this target population.

TITLE OF ARTICLE	DESCRIPTION AND FINDINGS
Impacts of Dietary Macronutrient Pattern on Adolescent Body Composition and Metabolic Risk: Current and Future Health Status—A Narrative Review (Kim et al., 2020).	The aim of this study was to review cross-sectional and interventional studies to analyse dietary patterns focusing on macronutrient intake's impact on growth, body composition, and metabolic changes in adolescents. Based on the findings of previous and recent reports, it is suggested that sufficient protein intake with slightly reduced carbohydrate intake may be the most suitable way to improve body composition and metabolic status among obese adolescents.
The association between dietary fat knowledge and consumption of foods rich in fat among black-first-year students in a South African university self-catering residences (Ranga & Venter, 2017).	The objective of this study was to determine the association between dietary fat knowledge and consumption of foods rich in fat among first-year students in self-catering residences at a university of technology in Cape Town, South Africa. The study's findings revealed students generally had below-average fat-nutrition knowledge. This result further reinforces the recommendation for nutrition education aimed at students to emphasise fat-nutrition knowledge, which seems lacking among the majority of students assessed in this study.
The roles of attitude, subjective norm, and perceived behavioral control in the formation of consumers' behavioral intentions to read menu labels in the restaurant industry (Kim et al., 2020).	This study examined consumers' behaviour toward reading nutritional labelling at casual dining restaurants. The study tested a conceptual framework of the proposed effects of constructs on consumers' behavioural intentions. Findings indicated that the variable 'attitude' acts as a mediator in the relationship between subjective norm and behavioural intention.
Provincial Dietary Intake Study (PDIS): Energy and Macronutrient Intakes of Children in a Representative/Random Sample of 1–<10-Year-Old Children in Two Economically Active and Urbanized Provinces in South Africa (Steyn et al., 2020).	This paper focused on the energy and macronutrient intake of 1–<10-year-olds surveyed in two provinces. Overall, the dietary intake information shows elements of both over- and undernutrition in all three of the age groups investigated.
Effect of Macronutrient Composition on Short-Term Food Intake and Weight Loss (Bellissimo & Akhavan, 2015).	The aim of this review was to describe the role of macronutrient composition in the control of short-term food intake and weight loss. The findings suggested that various approaches based on manipulating dietary composition can help people lose weight as long as they follow the diets.
Knowledge of nutrition facts on food labels and their impact on food	The aim of this study was to investigate consumers' knowledge of food labels and how this knowledge guides their decisions when purchasing food items. These findings indicated an

TITLE OF ARTICLE	DESCRIPTION AND FINDINGS
choices on consumers in Koforidua, Ghana: a case study (Darkwa, 2014).	awareness and knowledge of food labelling among consumers, which may not always adequately impact food choices, even though the research respondents indicated high awareness and low to average reading of labels prior to purchasing food.

2.14 SUMMARY

This chapter presented a review of literature on the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. The thematic focus of the literature review provided more detailed discussions of the key concepts specific to this study. Therefore, the following key topics were explored: the definition of food labelling, the nutrition information on food labels, the purpose and use of food labels, and factors influencing consumers' decision to read food labels, FOPL and BOPL. In addition, the chapter defined macronutrients and their use, macronutrients and energy intake in the diet. The chapter further described previous South African studies conducted on macronutrients and concluded by discussing previous research on food labels, macronutrient information use and consumers' intention to purchase packaged food products. The next chapter presents the theoretical framework for the study.

CHAPTER THREE: THEORETICAL FRAMEWORK

3.1 INTRODUCTION

Chapter 2 provided an overview of the literature on food labelling in general and the purpose and use of food labels. The significance of FOPL and BOPL, including the nationally endorsed health symbols found on food labels, was discussed to illustrate these symbols' influence on consumers' food purchase decisions. An overview of the literature on macronutrients and energy was provided, together with a presentation of South African studies conducted on food labels, macronutrients and energy labelling and their influence on food purchase intentions. An interest in consumer behaviour is essential for the food industry to understand how and why consumers behave in a certain way during the decision-making process when buying food products. However, consumers' intention to purchase packaged food products using macronutrients and energy information labelling has not been thoroughly researched in South Africa.

In this chapter, insight is presented into the TPB (Ajzen, 1991) that was used to study macronutrients and energy information labelling's influence on consumers' purchase intentions where food products are concerned. The different components of the TPB, namely attitude, subjective norm, and PBC (Ajzen, 2002) are discussed. Thereafter, the study's conceptual framework is presented to reflect the constructs that influence consumers' behavioural intentions.

3.2 BACKGROUND ON THE THEORY OF PLANNED BEHAVIOUR

The TPB extends the theory of reasoned action (TRA) by connecting beliefs and behaviour (Kan & Fabrigar, 2017; Sanne & Wiese, 2018). Ajzen and Fishbein created the TRA in 1975 with the intention of forecasting individuals' conduct. According to the notion, behaviour immediately precedes behavioural intentions (Liu & Jang, 2009). Beliefs about the specific results of a particular conduct have an impact on individuals' behavioural intentions (Ajzen, 1985; Belleau et al., 2007), and beliefs may also represent individuals' attitudes towards carrying out actions or adhering to personal standards. This suggests that people's perceptions of what other people do or would find acceptable affect their behavioural intentions, which then affect how they behave in their own lives (Paz & Rodríguez-Vargas, 2023). The TRA's shortcoming is that it only considers variables that people can choose to control (Dörnyei & Gyulavári, 2016). In order to bridge this theoretical gap, the TPB considers

an individual's perceptions regarding whether or not they possess the means, opportunity, and control necessary to perform a particular activity (Ajzen, 1985). Volitional control is an important component that leads to action (behaviour) where the TPB is concerned because it is the extent to which an individual can exercise control over their behaviour (Gómez-Olmedo et al., 2021).

The TPB comprises three components that indicate a person's genuine control over their behaviour (Setiawan et al., 2020). These components are attitudes toward the behaviour, subjective norms, and PBC. These components show the motivations for human behaviour, as depicted in Figure 3.1. The TPB's central idea is that intentions control actions, but not all intentions are followed through to actions (Ibrahim & Buba, 2021). As a result, the theory looks at the relationship between behavioural intentions and actions and how intentions might be used to predict behaviour. Ghahremani et al. (2022) assessed the TPB's ability to predict potential intention and positive thinking behaviour among a school-based sample of Iranian adolescents, with a sample of n=367 high school males. It was predicted that 36% of intention variance and 20% of behaviour variance contributed to positive thinking. It was further explained that the 'attitude' construct is the most powerful in predicting positive thinking intention among male teens. The proposed recommendation was that more attention be paid to this construct in educational programmes to improve male high school students' mental health.

Ultimately, attitudes towards a concept to which the behaviour is directed, subjective norms, which are others' influence on the person who is interested in a specific object (such as a food product), and PBC (the control a person might have to engage with the object under investigation, such as a food product) all impact an individual's intention to engage with the object and thus behave in a certain way. Such intentions describe the ultimate or actual conduct to a large extent (Kumar & Goyal, 2016). In essence, the stronger a person's intention to engage in a certain way, the more likely that behaviour will be demonstrated (Horne et al., 2020). In the next section, each of the components of the TPB is discussed in more detail to illustrate their role in the TPB.

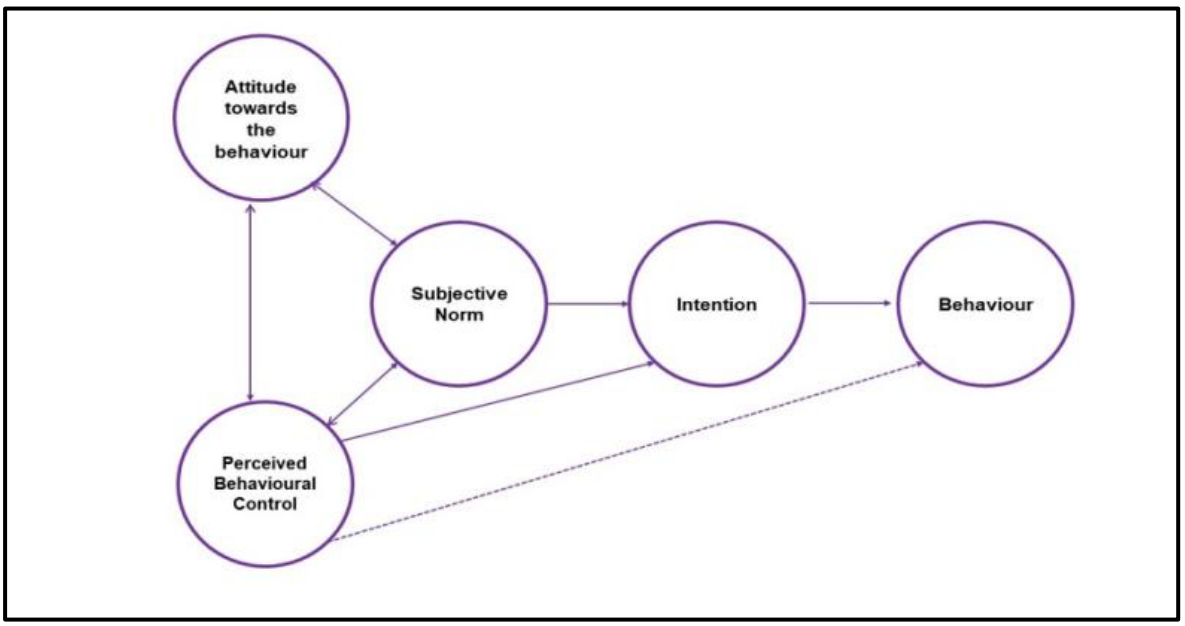


Figure 3.1: Theory of Planned Behaviour

Source: Ajzen 1991:182

3.3 COMPONENTS OF THE TPB

The TPB comprises three components that indicate a person's genuine control over their behaviour (Setiawan et al., 2020), which results in the motivation to adopt the behaviour. As mentioned, these components are attitudes toward the behaviour, subjective norms, and PBC.

3.3.1 Attitude

Attitude refers to the degree of informed beliefs individuals have about the likely consequences of a given behaviour (Ajzen, 1991). Ajzen (1985) states that attitude entails a consideration of the outcomes of performing a behaviour; therefore, attitude goes hand in hand with behavioural intention, which is associated with the motivational factors that influence a given behaviour (Holland et al., 2012). Moreover, the opinions individuals have of specific objects give rise to their attitude towards such objects. Therefore, individuals' attitudes depend on their perceived outcome of the specific behaviour (Nyremo & Widerberg, 2020).

A person's attitude can be seen in several areas, including their search for, perception of, understanding of, liking of, and use of a product. The word 'search' describes an endeavour to learn more about a topic, which, in the case of this study, refers to information about nutrition found on the labelling of food products. Studies show that when consumers look for nutrition

information, there is a greater likelihood that the knowledge will genuinely influence their food choices (Dörnyei & Gyulavári, 2016).

According to Smigic et al. (2016), perception is an individual's understanding or thought process about a subject and is influenced by situational and personal elements. It takes time for a consumer's perception of a product to develop after their first viewing. Understanding follows the development of perception (Grunert & Aachmann, 2016). Most people are aware of the basics of nutrition information seen on food labels, and consumers' preferences are referred to as 'liking' (Song et al., 2015; Huang et al., 2021). According to research, consumers prefer food labels that are clear, recognisable, have pictures and adjectives, and do not use a lot of fancy or technical jargon (Dörnyei & Gyulavári, 2016). Lastly, individuals' liking of a product affects how the product is used. Consumers weigh up nutrition information when making decisions about buying healthier food (Mhurchu et al., 2018), which may influence their liking of the product.

Previous studies that used the TPB have highlighted attitudes' role in positive or negative behaviour. Song et al. (2015) found that attitudes toward nutrition labels were positive among participants who had a higher confidence and satisfaction with nutrition labels. Smigic et al. (2016) also sought to establish differences in attitudes towards food labels between smokers and non-smokers in Serbia. Their study found no statistically significant differences between smokers and non-smokers regarding their attitudes toward nutrition information. Smigic et al. (2016) and Fatimah et al. (2019) also explored consumers' attitudes towards food labelling in Malaysia and determined that most consumers believed the healthier choice logo (HCL) increased individuals' confidence in choosing those food products.

Ajzen (2015) investigated consumers' attitudes and behaviour applied to food consumption decisions. In that study, men preferred hunting for game meat, while women had negative attitudes towards this behaviour. The men believed more strongly than women that hunting leads to positive outcomes. Consequently, they held more favourable attitudes toward this behaviour, and their attitudes were the primary determinants of their hunting intentions (Ajzen, 2015). A related study that explored consumers' attitudes towards functional foods revealed that in some societies, such as in the USA, consumers had a less positive attitude towards functional foods compared to other countries due to the diversity of functional foods in the market, as well as cultural differences among the countries (Salmani et al., 2020).

The reviewed studies have shown that attitude is central in influencing consumers' decision to read food labels and intention to purchase thereafter. However, there is a paucity of research in South Africa that focuses on attitudes to read food labels and the intention to purchase.

3.3.2 Subjective norms

Subjective norms refer to the belief that an important person or group of people will approve and support a particular behaviour (Mhurchu et al., 2018). Subjective norms are determined by perceived social pressure from others for an individual to behave in a certain manner and their motivation to comply with those people's views (Ham et al., 2015). Subjective norms relate to an individual's beliefs about whether peers or people of importance to the person think they should engage in the behaviour (Sadati & Mohammadi, 2012). Singhal (2018) states that people around consumers shape the individuals' attitudes and therefore form part of the subjective norm's influence on the behaviour of those consumers.

Subjective norms are ultimately derived from an individual's normative values, which are actions anticipated by prominent people in an individual's life (Ajzen, 1991), such as relatives, friends, and colleagues (Ukenna et al., 2018), among others. Research conducted by Siddiqui and Arabia (2015), to explore consumers' behaviour and their family's influence on their decision-making about household purchases, found that family members did influence the individual's decisions of what to purchase. Ham et al. (2015) also investigated the role of subjective norms in forming the intention to purchase green or sustainable food products among a sample of 411 primary household shoppers within the Southeast European region. That study found influential people had an influence on participants' green food purchase behaviour. Ham et al. (2015) also concluded that, in some instances, demographic variables such as age played an important role in influencing young people as they were found to be under the stronger influence of their peers and therefore may modify their behaviour accordingly. Therefore, social influences such as family, friends, and close associates may impact an individual's intention to purchase packaged food products based on their use of macronutrients and energy information labelling.

3.3.3 Perceived behavioural control

PBC includes the perception of a person's own abilities and sense of control over a situation. It is defined as an individual's belief about the amount of control they have over events and outcomes in their life and self-efficacy (perceived ability to perform the task) (Ajzen, 2002). Ajzen (1991) further describes PBC as the difficulty individuals experience when executing a

specific behaviour. In this way, PBC refers to a person's perception of the ease with which they can access an intended product. In this study, PBC may refer to the ease with which consumers can use macronutrients and energy information labelling to guide their intention to purchase a food product. Horne et al. (2020) state that PBC is referred to as the perceived presence of factors that may impede the performance of a behaviour. Therefore, in relation to this study, PBC may refer to different influencing factors that either support or hinder the use of macronutrients and energy information labelling of food products.

Tian et al. (2022) used the TPB to investigate consumers' food label use intentions in the USA. Their findings revealed that the ability to read and PBC are important indicators for label users but not for non-users. Similarly, Sobaih and Abdelaziz (2022) employed the TPB to examine consumers' intentions to buy from nutrition-labelled menus. They determined a strong correlation between intention to purchase and PBC. This outcome aligns with earlier research by Kim et al. (2013), who similarly discovered PBC's substantial beneficial influence on consumers' intentions to purchase products with nutrition labels. Salmani et al. (2020) assessed Iranian consumers' perceptions of functional meals in light of the TPB and concluded that the consumption of vitamin-enriched food (VEF) might be accurately predicted by attitudes and subjective norms. Based on the literature presented above, it can be concluded that PBC may influence food label reading.

3.3.4 Intention

According to Ajzen (1991), intention is the main component within the TPB, as seen in Figure 3.1. The actual behaviour is determined by the intention to perform the behaviour, while this intention is jointly influenced by an individual's attitude towards performing the behaviour (Kim et al., 2020). Therefore, intention reflects a person's eagerness to behave in one way or another; for instance, purchasing food products with macronutrients and energy information labelling.

The TPB is successful in establishing the relationship between behavioural intention and its components, such as attitude toward the behaviour, subjective norms, and PBC in various disciplines. According to Ajzen (1991), the motivational factors giving rise to the behaviour, a person's willingness to adopt the behaviour, the resources at the person's disposal to achieve the behaviour, and the dedication with which the individual attempts to participate in the behaviour are based on their intention (Kodali & Telaprolu, 2018). Motivational factors influencing behaviour, a person's willingness to adopt the behaviour, the number of resources dedicated to the behaviour, and how hard the individual is willing to work to participate in the

behaviour are relatively known to be based on their intention (Ajzen, 1991). Therefore, intention towards a behaviour is driven by the strength of this intention. The stronger the intention, the more likely that the behaviour will emerge under volitional control.

Research by Ali et al. (2018b) investigated demographic factors' effect on consumers' purchase intention of organic food in Malaysia. Their study found that gender, age, and level of education significantly impacted the consumer's intention to buy organic food. Moreover, the age and presence of children within the households were identified as important factors that favourably influence consumers' intention to purchase organic products (Ali et al., 2018a). In addition, consumers with higher education levels were more interested in purchasing organic food than those with less education (Ali et al., 2018b). This implies that consumers who understand the meaning and value of food labels are likely to purchase the food based on their understanding.

Aitken et al. (2020) investigated the positive role of labelling on consumers' PBC and intention to purchase organic food. The results of their study indicated that refining labelling systems to include additional information, such as health and societal benefits, would intensify PBC and increase consumers' intention to purchase organic products (Aitken et al. 2020). A related study by Simanjuntak (2022) used the TPB to investigate how knowledge, perception, attitude, subjective norms, and behavioural control differ and impact individuals' intention to read composition labels; they concurred that most respondents did not intend to read composition labels. Similarly, Fatimah et al. (2019) found that the intention to purchase food products was higher when consumers believed in the HCL as they perceived the food as good for their health. A related study by Kodali and Telaprolu (2018) reviewed studies that examined consumer preferences, understanding and use of different labels. The findings revealed that consumers' attitudes toward health messages on food labels were positive. The literature shows that consumers benefit from the health directive labels appearing on the food products they purchase.

3.3.5 Behaviour

The final component of behaviour within the TPB is proposed to be the consumers' actual behaviour, action or deed that is performed. In the context of this study, consumers' actual behaviour is the action of obtaining a product with macronutrients and energy information labelling, which has been used to inform their decision to purchase the product. Extant literature has explored the influence of attitude, subjective norms and behavioural control on individuals' actual behaviour. For example, Kodali and Telaprolu (2018) and Fatimah et al.

(2019) found that consumers preferred buying branded products because they were perceived as high-quality, even though unbranded goods occasionally provided the same level of enjoyment. This means these consumers had positive attitudes towards the food item. Simanjuntak (2022) suggested that consumers with a lower understanding of food labels had less favourable attitudes towards the item. As a result, their actual behaviour of purchasing the product was low (Simanjuntak, 2022). Zafar et al. (2022) investigated food labels' influence and effectiveness in shaping consumers' attitudes and intentions to purchase healthful foods. Their findings showed that user-friendly food labels had a major influence on attitudes, behavioural intention and the actual behaviour of purchasing the food item.

3.4 SOUTH AFRICAN STUDIES THAT HAVE IMPLEMENTED THE TPB

This section discusses previous research studies that implemented the TPB in South Africa. In the past, a study conducted by Aitken et al. (2020) on the role of labelling on consumers' PBC and intention to purchase organic food indicated that refining labelling systems to include additional information such as health and societal benefits would intensify PBC and increase consumers' intention to purchase organic products. Similarly, Krige et al. (2018) conducted a study using the TPB to explore the dietary intake and beliefs of pregnant women with gestational diabetes and their beliefs about consuming fruits and vegetables and sugary foods and drinks in Cape Town, South Africa. The findings demonstrated that strongly held opinions about sugary foods and drinks may have contributed to poor adherence to nutritional requirements among pregnant women with gestational diabetes mellitus in South Africa. Osman and Thornton (2019) further investigated MTL labelling of meals to promote sustainable consumption and healthy eating, using the TPB to examine the effect of behavioural involvement on sustainable consumption and healthy eating habits. They reported that the presence of traffic light labels leads to lower carbon emissions. Positive behavioural change was also noted, with individuals not only making healthier choices but also making more sustainable meal choices.

A related study was conducted by Koen et al. (2016), who investigated consumer expectations and expertise in reading nutrition information on food labels, as well as the self-reported influence of food and nutrition labelling on purchase behaviour and obstacles to reading it. That study found that nutrition information was not an important determinant of food-purchasing behaviour due to a lack of understanding of food labelling. Another study focusing on parental food purchase decisions was conducted by Bopape et al. (2022), who determined that parents keep buying products with labels that reflected the food's safety. The study used the TPB to show the link between food labelling, attitudes and purchase behaviour (Bopape

et al., 2022). Bopape et al. (2022) also used the TPB to evaluate the impact of various labels on participants' ability to recognise products with high levels of nutrients of concern, as well as their propensity to buy unhealthy products. That study found lower attitudes towards buying food items with warning labels than those without.

The reviewed studies show that the TPB has been successfully used to understand consumer behaviour, refine labelling systems, and establish consumers' intent to purchase. It is also evident that the TPB framework could be useful in determining consumers' beliefs and attitudes towards food choices and the motivation that comes with it. However, although the TPB framework is sufficient in establishing individuals' attitudes and determining their intent to purchase certain products, there is a gap in addressing the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products.

3.5 CONCEPTUAL FRAMEWORK

A conceptual framework is a description by the researcher of how the research problem will be uncovered (Adom et al., 2016). Gornik-Tomaszewski and Choi (2018) indicate that a conceptual framework intends to set objectives and reflect necessary concepts that are the basis for the development of a study. The conceptual framework for this study is based on the TPB and is presented in Figure 3.2. To explore consumers' intention to purchase packaged food products with macronutrients and energy information labelling, the TPB was proposed as a framework to explain what intentions lead to the actual behaviour (Ajzen, 1991) of purchasing food products that contain this information.

When considering the conceptual framework presented in Figure 3.2, it was proposed that the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products can be studied through an understanding of the three components of the TPB: attitude, subjective norms, and PBC. These three components can influence consumers' expected actions (Rezai et al., 2012) and thus their intention to purchase packaged food products. In the TBP, behaviour depends on intention, which, in turn, is influenced by attitude towards behaviour, subjective norm and PBC (Hauser et al., 2013). In Figure 3.2 it is proposed that the components of the TPB may influence consumers' use of macronutrients and energy information labelling, consequently influencing consumers' intention to purchase packaged food products.

Information labelling: Food labelling refers to the provision of macronutrients and energy information on the packaging of food products. Many factors influence the nature of food labelling in South Africa. For example, FOPL schemes and the Department of Health reformulated the Food Labelling Regulations, which stipulate what content is required on food labels (Kelly & Jewell, 2018). The information labels have an influence on consumers' attitudes to reading the information and their intention to purchase a food product (Cecchini & Warin, 2016).

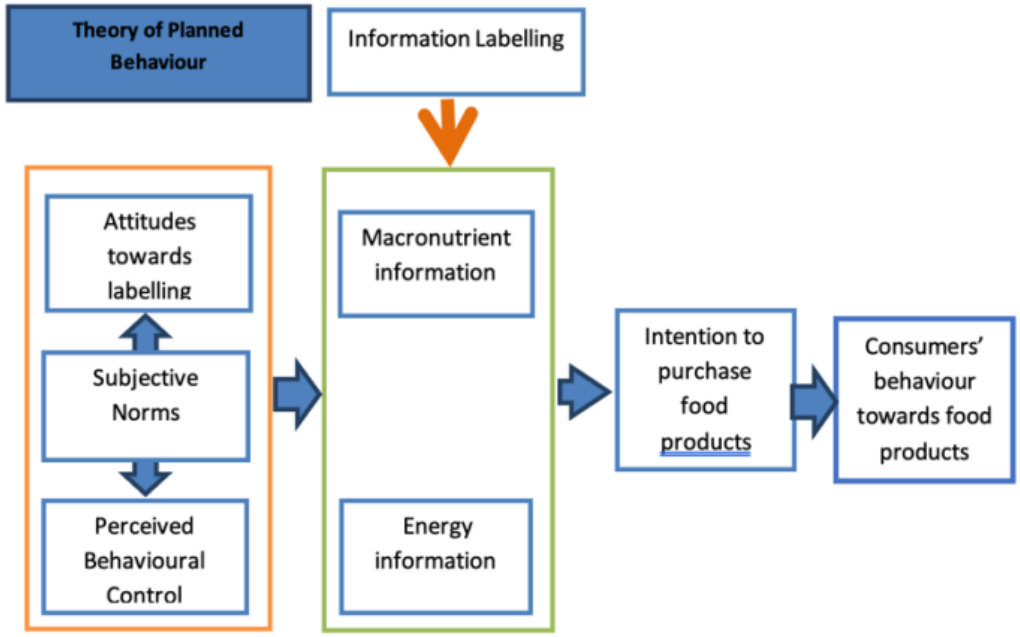


Figure 3.2: The schematic presentation of the conceptual framework

Attitudes towards labelling: Attitude may influence consumers' intention to purchase packaged food products with macronutrients and energy information labelling (Cofre & Morales, 2022). The attitude construct indicates that consumers' attitude towards macronutrients and energy information influences consumers' purchase intention if they have a positive attitude towards information labelling (Shahrabani, 2021). Consumers' sociodemographic characteristics also influence their attitudes towards reading food labels and purchase intentions (Ranga & Venter, 2017). For example, educated individuals are more health-conscious than those with less education. Therefore, they are more likely to read food labels, influencing their purchase intention (Dutta & Patel, 2017).

Subjective norms: Subjective norm is a term used to suggest the way in which consumer attitudes are not the only influencer of their behaviour; significant others also play a role (Mhurchu et al., 2018). In this study, friends, family and colleagues may influence consumers'

intention to purchase packaged food products with macronutrients and energy information labelling. For example, sporting communities are conscious of the nutritional value of the food they consume (Msimango et al., 2023). Therefore, they share knowledge of what type of food to buy and what to look out for. This knowledge influences members of that community to read food labels and make a purchase decision based on their nutritional needs (Xazela et al., 2019).

PBC: The third and last construct influencing consumers' intention to purchase packaged food products with macronutrients and energy information labelling is PBC (Kwon et al., 2021). PBC proposes that there may be volatile influences on individuals' intention to purchase packaged food products with macronutrients and energy information labelling (Asadi et al., 2020). In this study, it is proposed that PBC is an important determinant of influence and consumers' use of macronutrients and energy information labelling, with the potential to influence consumers' intention to purchase packaged food products.

Behaviour: Behaviour is the result of a culmination of several factors, such as attitudes towards food labelling, the influences of the social setting, and PBC. Individuals who believe that their social environment would approve of them if they read food labels and purchase food based on the macronutrient and energy information will make food label reading a part of their culture (Simanjuntak, 2022). Conversely, an individual from a community or social environment that disregards the nutritional value of food may not be interested in reading food labels; thus, the nutrition information found on food labels has no influence on that individual's purchase intentions (Zafar et al., 2022).

3.6 LIMITATIONS OF THE TPB

Limitations, particularly concerning decision-making's role in purchasing behaviour in relation to cultural and contextual factors and emotions are presented next.

Cultural and Contextual Factors: The TPB assumes a relatively universal set of beliefs, attitudes, subjective norms, and perceived behavioural control that influence behaviour. However, cultural and contextual factors can significantly shape individuals' decision-making processes and behaviours. Cultural norms, values, and traditions may differ across societies, influencing how individuals perceive and evaluate products or services. For example, collectivist cultures may prioritise group norms over individual attitudes, leading to different purchasing behaviours compared to individualistic cultures.

Emotions: The TPB primarily focuses on cognitive determinants of behaviour, such as attitudes and subjective norms, while largely overlooking the role of emotions. Emotions play a crucial role in decision-making and can strongly influence purchasing behaviour. For instance, consumers may make impulsive purchases driven by emotions like excitement or fear.

3.7 SUMMARY

This chapter presented the study's theoretical framework, which is the lens used to understand the factors influencing consumers' decision to read food labels containing macronutrient and energy information about food products and how this information influences their purchase intention. The TPB was proposed for this study to explore the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. This model suggests that attitude, subjective norms and PBC may influence consumers' intention to purchase packaged food products with macronutrients and energy information labelling. This can lead to a behaviour of purchasing or not purchasing the food product, although various factors may influence consumers' intention to purchase food products, as discussed in the literature in Chapter 2. These same factors may also be relevant to this study. The research methodology used to explore consumers' intention to purchase packaged food products with macronutrients and energy information labelling is discussed in Chapter 4.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 INTRODUCTION

A research methodology can be defined as the study's theoretical framework (Kiger & Varpio, 2020) and methods systematically designed by the researcher to attain valid results that address the aim and objectives of the study (Jansen & Warren, 2020). The following sections outline the methodology used in the study. A brief presentation of the research aim and objectives is offered to ensure that the selected methodology best addresses these objectives. The paradigm used in this study allowed the researcher to explore the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products at the point of purchase. The study's location, population and sampling strategies are discussed, followed by an explanation of the data-gathering method and analysis procedure used for qualitative data. The study's trustworthiness components are discussed, and the ethical approval received for the study concludes the discussion in this chapter.

4.2 RESEARCH AIM AND OBJECTIVES

The aim of this study was to explore the use and influence of macronutrients (fat, carbohydrate and protein) and energy information labelling on consumers' intention to purchase packaged food products. The following objectives and sub-objectives were formulated to address this aim:

Objective 1: Explore consumers' use and understanding of:
1.1 Front-of-pack labelling.
1.2 Back-of-pack labelling.
1.3 Nutrition information labelling.

Objective 2: Examine consumers' use and understanding of macronutrients and energy information by focusing on:
2.1 Consumers' understanding of the word 'macronutrient'.
2.2 Consumers' use and understanding of macronutrient (fat, protein and carbohydrate) information.
2.3 Consumers' use and understanding of energy information.

Objective 3: Describe the influence of attitude, subjective norms, and perceived behavioural control on:

3.1 Consumers' opinion of macronutrients.

3.2 Consumers' opinion of energy information.

3.3 Consumers' intention to purchase packaged food products.

The researcher determined a qualitative methodology would best address the study's objectives.

4.3 QUALITATIVE RESEARCH METHODOLOGY

This study used a qualitative research methodology to explore the use and influence of macronutrients (fat, carbohydrate and protein) and energy information labelling on consumers' intention to purchase packaged food products. With a qualitative methodology, qualitative research methods are used allowing the researcher to answer the research questions (Kempen et al., 2011). Qualitative research entails gathering and analysing non-numerical data to better understand concepts, views, or experiences (Mohajan, 2018). This methodology can be used to gather in-depth insight into a problem or generate new ideas for research (Bhandari, 2020). Similarly, Mohajan (2018) describes qualitative research as a methodology that defines and focuses on the phenomenon of interest, comprising the information gathered from the participants' experiences in contrast to generating statistics. Qualitative research is therefore a multifaceted research method that uses an interpretative (Hamilton & Finley, 2020), naturalistic approach to the phenomenon of interest (Bradshaw et al., 2017).

The multifaceted nature of qualitative research allows a researcher to develop a holistic picture of the subject matter (Rahman & Areni, 2016). Ronkainen et al. (2022) indicate that specific characteristics guide qualitative research to explore phenomena holistically. It begins with a search for an understanding of the whole matter and investigates the larger picture of the subject. Qualitative research focuses on understanding a given social setting, not necessarily making predictions about that setting (McPherson et al., 2022). Furthermore, qualitative research demands time-consuming and ongoing analysis of data, is more detailed and in-depth than quantitative approaches, and acknowledges subjectivity when gathering information from the participants rather than objectivity (Asenahabi, 2019). Tenny et al. (2022) summarise the previously presented ideas by suggesting that qualitative research focuses on the participants' views and thoughts, and thus seeks to determine people's opinions, ideas, experiences and perceptions.

The qualitative methodology was therefore deemed an appropriate strategy to explore participants' experiences, opinions and ideas about the use and influence of macronutrients and energy information labelling on their intention to purchase packaged food products.

4.4 PHILOSOPHICAL APPROACH

Interpretivism is a paradigm that allows the researcher to understand reality based on people's lived experiences of the environment (Crossman, 2021). Interpretivism leans towards qualitative research as the nature of knowledge is explored within personal experiences (Brown & Dueñas, 2020). In this study, interpretivism was used to explore participants' own reality of how they have experienced and understood their use of macronutrients and energy information labelling and how this information influenced their intention to purchase packaged food products. This approach allowed the researcher to gain more insight and understand consumers' experiences of this phenomenon.

In interpretivism, the researcher derives meaning from interpretation; thus, there is no objective knowledge obtained from independent thinking and reasoning (Crossman, 2021). The epistemological stance and interpretive approach focus on information about reality that is gained through a social construction where shared meanings are communicated through the understanding of events (Putnam & Banghart, 2017). Furthermore, interpretive research is more particular to human sense-making as the scenario unfolds and does not have established dependent and independent characteristics (Levers, 2013), which makes this paradigm suitable for this study.

The interpretive paradigm seeks to examine the meaning behind human behaviour and interactions within a societal paradigm (Pulla & Carter, 2018). The main purpose is to generate understanding, and the paradigm often accepts a relativist position and is more subjective than objective (Chowdhury, 2014). It allows the researcher to generate diverse perspectives from participants in pursuit of an overall understanding of the phenomenon based on participants' narratives (Alharahsheh & Pius, 2019).

Interpretivism holds the following assumptions, as explained by Kivunja and Kuyini (2017):

- Interpretivism recognises that an individual's perspective does not define the social environment.
- It holds the belief that the real world is diverse and driven by the collective opinions of individuals.

- Interpretivism acknowledges a certain relationship between the researcher and study participants.
- There is acceptance that contexts are essential in creating awareness and knowledge.
- There is an agreement that information is generated by the findings, and a detailed description of the situation is valuable to understanding the phenomenon.
- Interpretivism is employed to understand individuals instead of universal laws.
- Within interpretivism, it is accepted that effects and causes are jointly interdependent.
- Circumstantial factors must be considerable for any sequential pursuit of understanding.

Therefore, in this study, the interpretivism paradigm enabled the researcher to develop a comprehensive understanding of the phenomenon of interest. This understanding was based on the participants' views, experiences and behaviour (Pulla & Carter, 2018) towards using macronutrients and energy information labelling and how it influenced their intention to purchase packaged food products.

4.5 STUDY DESIGN

A study's design is understood as the process researchers follow during the research (Sileyew, 2019). Sutton and Austin (2015) further define a research design as the approach used to combine diverse components of the study in a consistent manner that addresses research questions through the collection, interpretation, analysis and discussion of data (Creswell & Poth, 2016). Therefore, research designs allow researchers to determine how relevant data can be collected for their study as they provide the evidence required to solve research problems (Sileyew, 2019).

The current study is empirical in nature, as it intended to provide new meaning and understanding to the phenomenon being studied. The researcher thus ensured the study's empirical nature by applying the principles of empirical research, as indicated by Denzin and Lincoln (2005):

- The researcher uses a comprehensive approach where all sections of the problem are explored in the pursuit of understanding the whole matter.
- The research focuses on relationships and influences within the research approach.
- The research approach is very particular in exploring participants' experiences.
- The research focuses on understanding the problem under study rather than predictions of the problem.

Therefore, the researcher intended to gain new insights about the phenomenon of this study by using descriptive, exploratory (Levers, 2013) and phenomenological designs in the qualitative research approach. These three designs are discussed next.

4.5.1 Descriptive research design

A descriptive research design involves a direct exploration, analysis, and description of the particular phenomenon, and is used for documenting the phenomenon of concern in the actual situation (Creswell & Poth, 2016). This design always focuses more on the "what" of the research subject than the "why" (Earl-Babbie, 2013). The descriptive qualitative research design enabled the researcher to describe the use of macronutrients and energy information labelling, which sustained the TPB's theoretical assumptions on which the study was based. In the current study, the descriptive approach was suitable because a realistic description was necessary to understand the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products.

4.5.2 Exploratory research design

An exploratory research design was also used for this study as it allowed the researcher to discover new meanings attached to the influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. As a result, the distinct nature and impact of the problem could be studied (Berman, 2017). The exploratory design was appropriate in addressing the research objectives and in choosing the most suitable data collection method that assisted the researcher in obtaining relevant information of a phenomenon about which very little is known (Maree & Pietersen, 2016).

An exploratory design aims to establish facts and determine new meaningful patterns in a relatively unknown research area (Earl-Babbie, 2013). Crossman (2021) also emphasises the exploratory design is used to (1) satisfy the researcher's curiosity and desire for better understanding, (2) test the feasibility of undertaking a more extensive study, and (3) develop the methods to be employed in any subsequent study. Therefore, since the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products has not been explored to this extent before, the use of an exploratory research design helped the researcher to better understand this phenomenon.

4.5.3 Phenomenological research design

Qutoshi (2018) defines phenomenology as a philosophy that involves the direct exploration and description of phenomena that are not limited to the technique of knowing. Instead, it is an intellectual engagement in knowing that is used to represent individuals' world in a rational manner. Mohajan (2018) indicates that phenomenology seeks to explain individuals' experiences without making previous assumptions about their context. Furthermore, Alhazmi and Kaufmann (2022) suggest that phenomenology examines conscious experiences from a subjective point of view. The fundamental philosophical assumption underpinning a phenomenological inquiry is that truth is obtained and occurs within individuals' lived experiences (Creswell, 2014). Phenomenology investigates the specific experiences of each individual in a given situation (Neubauer et al., 2019). This research design was thus appropriate to determine participants' lived experiences of how macronutrients and energy information labelling influence their intention to purchase packaged food products, therefore obtaining an understanding of this phenomenon through their eyes.

4.6 STUDY LOCATION

The research setting refers to the location where data were collected (Moser & Korstjens, 2018). For this study, the researcher collected data within the borders of South Africa and Facebook was used as a recruitment technique because on its widespread reach. Participation in this study was open to all South African provinces and regions, allowing the researcher to draw potential participants from around South Africa. Participation was confined to South African participants who met the inclusion criteria for this study. The specifics of the inclusion criteria are covered in the next section.

4.7 POPULATION AND STUDY SAMPLE

Mohajan (2018) defines the study population as the total number of individuals who share the common characteristics specified in the study's sampling criteria. The sample population for this study consisted of general South African food consumers who lived in South Africa. The target population refers to the entire aggregate of participants that meet the proposed set of criteria (Matlhaba et al., 2021). To understand the influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products, the study included South African consumers who complied with the following inclusion criteria:

1. Participants had to be older than 18 to ensure they were consenting adults.
2. Participants had to be consumers residing in South Africa as the study was specific to South African consumers.
3. Participants were required to be conversant in English since interviews were conducted in English.
4. Participants had to perceive themselves as knowledgeable about macronutrients, mainly carbohydrates, proteins, and fats. The study did not specifically test participants' knowledge about macronutrients before commencing the study. The study aimed to include consumers who thought they knew enough about macronutrients to contribute positively to this study.
5. Participants had to perceive themselves as familiar with the nutrition information table, also referred to as the nutrition information label found on food products. The study specifically did not test participants' knowledge about the nutrition information label before the commencement of the study, since the aim was to include consumers who thought they knew enough about the nutrition information label to make a positive contribution to this study.
6. Participants were also required to make their own purchasing decisions about the food they consume.

Inclusion criteria four and five relied on the participants' perceived nature. This approach was necessary to establish the general consumer's ideas about what they thought they knew about macronutrient and nutrition information labelling. The study only included this group of consumers as many consumers think they are knowledgeable about important nutritional aspects, such as macronutrients and nutrition information labelling. By including participants who perceived themselves as being knowledgeable, the researcher was able to establish what the perceived state of their knowledge was and if any interventions would be needed to either augment their information or if their perceived state of understanding is, in fact, a very knowledgeable one that does not require any intervention.

The researcher did not initially inquire about the participants' knowledge of macronutrients or their familiarity with the nutrition information table, aiming to include those who believed they knew about macronutrients and the nutrition information table to make a positive contribution to the study. However, during online interviews, it became apparent that not all participants accurately assessed their understanding, as evidenced by their struggles with questions and interpreting data from the nutrition information table.

4.8 SAMPLING STRATEGY

A sampling strategy is the plan researchers use to select individuals who represent the population from which the sample is drawn (Ritchie et al., 2013). In this study, three non-probability sampling strategies were used to recruit participants. Pace (2021) states that non-probability sampling strategies involve individuals being selected using non-random criteria; thus, not every individual has a chance of being included. However, non-probability sampling was appropriate in identifying the population that suited the research questions (Benoot et al., 2016) and was therefore chosen based on the inclusion criteria used in this study. Three non-probability sampling techniques, namely purposive, convenience, and snowball sampling, were employed in this study's participant recruitment process.

4.8.1 Purposive sampling

Purposive sampling was the first strategy used in this study; this strategy involved selecting a sample depending on the researcher's assessment. This means that participants were chosen based on their knowledge of the phenomenon being studied and were deemed most useful for the purpose of the research (Benoot et al., 2016). Purposive sampling, according to Kathane and Sharma (2017), is commonly used in qualitative research when precise information about a specific phenomenon is required. Through the use of purposive sampling, justified conclusions can be drawn based on the results of the study (Palinkas et al., 2015). Pace (2021) argues that appropriate purposive sampling possesses clear inclusion criteria with predefined characteristics used to identify participants included in a study best suited to address its aims and objectives. This sampling method allowed the purposive inclusion of participants who provided insight on the use and influence of macronutrients and energy information labelling on their intention to purchase packaged food products.

4.8.2 Convenience sampling

The second sampling strategy used to recruit participants was convenience sampling. This sampling strategy is mainly used when the researcher intends to obtain an approximation of reality (Taherdoost, 2016). Convenience sampling includes participants to whom the researcher has access, including family, friends and coworkers (Jansen & Warren, 2020). However, in this research, the researcher did not include friends, family and colleagues but recruited participants on Facebook who were willing and able to engage in the study. The researcher also used convenience sampling by extending the recruitment to snowball sampling, as briefly discussed in section 4.8.3. The researcher thus requested the participants

who had already participated to refer potential individuals who met the inclusion criteria to partake in the study.

4.8.3 Snowball sampling

The final sampling strategy employed to recruit participants for this study was snowball sampling. This sampling strategy is used to recruit participants through referrals (Kathane & Sharma, 2017). The advantages of snowball sampling are that it is used to reach low-incidence groups and consumers that are difficult to connect with (Creswell & Poth, 2016). Through referrals, participants are easily and quickly recruited without effort from the researcher (Baltar & Brunet, 2012). When snowball sampling was used in this study, it was important for the researcher to ensure that the participants who conformed to the inclusion criteria were, in fact, referred by previous participants. Employing the snowball sampling strategy to recruit participants for this study was quite effective since some participants were more comfortable participating in the study when they were asked by a person they were familiar with, rather than a stranger.

This study used the three sampling strategies outlined above because they were considered best suited for a qualitative methodology (Showkat & Parveen, 2017), where a descriptive, exploratory, phenomenological design was applied to address the research objectives.

4.9 SAMPLE SIZE

According to Andrade (2021), sample sizes for qualitative research are relatively small because the focus is on the saturation of data and not the number of participants. Therefore, since this study was based on exploratory research, 15 individual online interviews were conducted and the sample size was directed by the principle of data saturation (Sim & Waterfield, 2019). Data saturation can be defined as a technique to measure the sample size in qualitative research; saturation is achieved when the researcher obtains sufficient and similar data for the study. Similarly, Faulkner and Trotter (2017) describe data saturation as a state when the ability to obtain additional new information has been reached and when further coding is no longer feasible.

Data were collected between August and November 2022. The researcher conducted all 15 individual online interviews and simultaneously transcribed the data obtained from completed interviews. Woods-Jaeger et al. (2020) state that although transcription is often referred to as part of the data collection process, it is also an act of analysis. While transcribing the data, the

researcher identified ideas that were continuously mentioned by the participants to note when the study reached saturation. Data saturation is an important concept used in qualitative research studies to validate the study's rigour (Daher, 2023); saturation for this study was reached at the 11th interview, when no new ideas were emerging, but the researcher conducted four additional interviews to confirm that data saturation had truly been achieved.

4.10 FACEBOOK AS A RECRUITMENT TOOL

The researcher used Facebook to recruit participants for this study by applying the inclusion criteria proposed in section 4.7. Facebook is an internet application that consumers use to share and study content posted by other users (Caers et al., 2013). This social networking site offers a variety of platforms to communicate and exchange knowledge and preferences, while ensuring that participants retain physical segregation and anonymity (Pedersen & Kurz, 2016). It offers researchers the opportunity to bring their research to the attention of Facebook users, especially when specific participants are needed to participate in a study. Welch (2020) agrees that Facebook recruitment facilitates efficient and cost-effective communication with specific users. However, by using this platform, participants who do not use Facebook are excluded even if they meet the inclusion criteria (Whitaker et al., 2017).

To facilitate participants' recruitment for this study, the researcher created a page on her personal Facebook profile and extended an invitation introducing the study. Individuals who met the inclusion criteria were requested to voluntarily engage in the study (see Appendix E). Once participants accepted the invitation, they were asked to privately share their email addresses via Facebook inbox. This was done so that the researcher could forward the demographic questionnaire, information letter and consent form for the participant to complete and return before the interview. A date was scheduled with the participant at their earliest convenience for the interview to take place. Interviews were scheduled between 12 August 2022 and 3 November 2022.

4.11 DATA COLLECTION METHODS

Kabir (2016) defines data collection as the process of obtaining and analysing collected information in a structured and organised manner to assist the researcher in generating responses to research questions. Individual online interviews were the main data collection approach employed in this study, and they were enhanced through the use of an interview guide. The interview guide included open-ended questions that encouraged participants to share their thoughts on the questions asked. The questions in the interview guide were

developed to address the study's objectives. The researcher also used probing where necessary to obtain a deeper understanding of the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products.

Creswell and Poth (2016) describe data collection methods as tools used to collect data for the research study. Participants in this study completed a demographic questionnaire, and semi-structured individual online interviews were carried out using an interview guide. Microsoft Teams was used to conduct online interviews with participants, allowing participants to be interviewed from their homes, offices, or anywhere they felt most comfortable sharing their experience with the researcher.

When an interview was about to commence on Microsoft Teams, the researcher welcomed the participant, explained the purpose of the study, and reminded the participant that the interview would be recorded and that they were welcome to withdraw from the study at any time should they no longer wish to participate. They were welcome to depart at any time if they no longer wanted to participate. The researcher then proceeded to the questions listed in the interview guide. All interviews were recorded for transcription purposes.

4.11.1 Demographic questionnaire

The initial tool for obtaining data in this study was the demographic questionnaire (see Appendix C). Demographic data are significant as this information permits the researcher to gain sufficient data to define the sample of participants who took part in the study (Hughes et al., 2016a). The demographic questionnaire was sent to the participants via their email addresses, and they had to complete the form and send it back to the researcher before a date for the online interview was scheduled.

For the researcher to get more in-depth impressions of the participants, the demographic questionnaire explored participants' age, gender, educational status and occupation. The researcher did not include information on race and ethnicity since the study found no relevance in racial or ethnic disparities (Nguyen et al., 2019a). The demographic information was only used to describe the study's sample and not to make any inferences related to the demographics of the participants or compare the findings. The recruitment of both male and female participants were recruited to participate in the study as the study was not designed to distinguish between genders but to achieve a general view of consumers' views, irrespective of their gender.

4.11.2 Semi-structured individual online interviews

Semi-structured individual online interviews were used in this study to gather data from the research participants. Ruslin et al. (2022) describe semi-structured interviews as a conversation with a purpose, where the researcher seeks to obtain as much information as possible by asking open-ended and follow-up questions. In this study, the researcher used an interview guide, which consisted of predefined questions that addressed the study's objectives (Mathers et al., 2000). Open-ended questions were followed by probing questions to ensure detailed explanations from the participants.

Probing allowed the researcher to obtain a deeper understanding of the phenomenon (Creswell & Poth, 2016). Therefore, during the individual online interviews, the researcher employed the echoing probing method of DeJonckheere and Vaughn (2019), and repeated the participants' responses in order to elicit further clarification. In this case, the researcher probed by asking the participants to further elaborate on their answers. The researcher had to be vigilant of responses that required more in-depth justification, but this strategy ensured that data saturation was achieved (Creswell & Poth, 2016). Consequently, semi-structured online interviews assisted the researcher in exploring the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products.

Although COVID-19 restrictions and regulations were lifted before the researcher commenced data collection, individual online interviews were used to collect data from participants. This was done because some individuals were still hesitant to engage in face-to-face interviews at the time. Saloniki et al. (2019) state that since the COVID-19 epidemic, researchers have started collecting data by transitioning to internet-based techniques. The University of South Africa established COVID-19 criteria that all researchers and postgraduate students were required to follow; this is another reason the researcher preferred individual online interviews. Face-to-face interviews between researchers and participants were limited by the university's recommended avoidance of physical interaction. Therefore, individual online interviews were more appropriate because they restricted physical interaction with participants.

4.12 OPERATIONALISATION OF THE STUDY

Operationalisation is a method that helps the researcher ensure that each question is designed to address a research objective (Maccora et al., 2020). For this study, the operationalisation described how each of the three objectives was explored. For the semi-structured interviews that were used to gather information on each of the study's objectives,

operationalisation was also taken into consideration. The information obtained during the interviews was discussed and analysed; the study's objectives were met by posing specific questions (see Appendix D). These questions were developed to explore the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. Each objective and the related questions are presented in Appendix D.

The interview guide below comprised three sections exploring the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products. The first section (Section A) focused on consumers' understanding and use of FOPL, BOPL and nutrition information labelling. The second section (Section B) addressed consumers' use and understanding of macronutrients and energy information, and the last section (Section C) posed questions related to the three components (attitude, subjective norms and PBC) of the TPB in relation to the phenomenon being studied. The questions for each section are also presented in Table 4.1.

Table 4.1: The interview guide used to conduct individual online interviews

SECTION A: Explore consumers' use and understanding of:
Front-of-pack labelling
1.1.1 What is your understanding of the term "front-of-pack labelling"?
1.1.2 If you think about "front-of-pack labelling", what type of information does it include? Please give examples.
1.1.3 Do you make use of "front-of-pack" label information when making food purchases? If so, when?
1.1.4 For what purpose do you use "front-of-pack" labelling?
Back-of-pack labelling
1.1.5 What is your understanding of the term "back-of-pack labelling"?
1.1.6 If you think about "back-of-pack labelling", what type of information does it include? Please give examples.
1.1.7 Do you make use of "back-of-pack" label information when making food purchases? If so, when?
1.1.8 For what purpose do you use "back-of-pack" labelling?
Nutrition information labelling
View the picture of the nutrition information label below and answer the following questions:

Figure 4.1: Typical nutrition information label on South African Liqui Fruit product

Source: TravelingMarla

1.1.9 What is your understanding of the term "nutrition information labelling"?

1.1.10 If you think about "nutrition labelling", what type of information does it include? Please give examples.

1.1.11 What is the most important part of nutrition information labelling to you and why?

1.1.12 Do you make use of a "nutrition information label" when making food purchases? If so, when?

1.1.13 For what purpose do you use "nutrition information labelling"?

SECTION B: Examine consumers' use and understanding of macronutrients and energy information by focusing on:

Consumers' understanding of the word 'macronutrient'

1.1.14 When you hear the word 'macronutrient', what comes to mind?

1.1.15 To confirm, please list the macronutrients that you know of.

1.1.16 How important are macronutrients in the diet?

1.1.17 Which of the macronutrients that you previously mentioned provide energy to the body?

Consumers' use and understanding of macronutrient information

Nutrition

Typical values	100g contains	Each slice (typically 44g) contains	% RI*	RI* for an average adult
Energy	985kJ 235kcal	435kJ 105kcal	5%	8400kJ 2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	45.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

This pack contains 16 servings

*Reference intake of an average adult (8400kJ / 2000kcal)

Figure 4.2: Nutrition information label on South African bread

Source: Open Food Facts

Fats

1.1.18 What is your understanding of fat in the diet?

1.1.19 When considering the fat content in the above food label, how do you interpret fat?

1.1.20 Based on your understanding of fat in the diet, how important is the food label to you when it comes to the fat content of food?

1.1.21 Does fat in a food product determine your intention to purchase the product?

Carbohydrate

1.1.22 What is your understanding of carbohydrates in the diet?

1.1.23 When considering the carbohydrate content in the above food label, how do you interpret carbohydrates?

1.1.24 Based on your understanding of carbohydrates in the diet, how important is the food label to you when it comes to the carbohydrate content of food?

1.1.25 Does carbohydrates in a food product determine your intention to purchase the product?

Protein

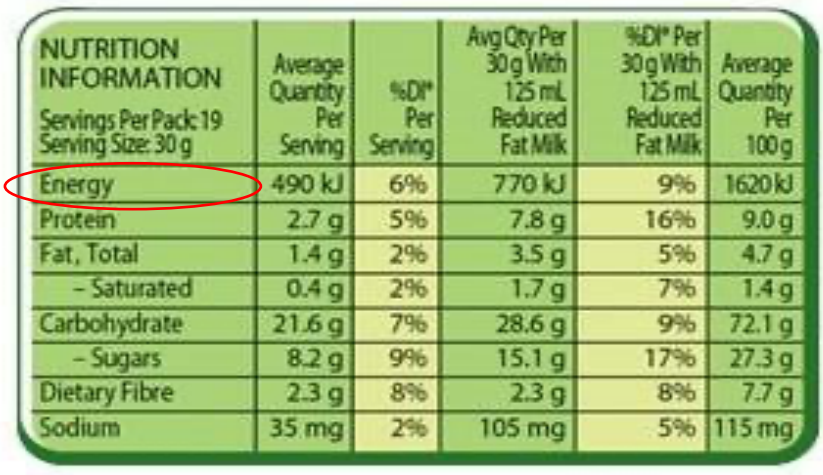
1.1.26 What is your understanding of protein in the diet?

1.1.27 When considering the protein content in the above label, how do you interpret protein?

1.1.28 Based on your understanding of protein in the diet, how important is the food label to you when it comes to the protein content of food?

1.1.29 Does protein in a food product determine your intention to purchase the product?

Consumers' use and understanding of energy information



NUTRITION INFORMATION Servings Per Pack: 19 Serving Size: 30 g	Average Quantity Per Serving	%DI* Per Serving	Avg Qty Per 30 g With 125 mL Reduced Fat Milk	%DI* Per 30 g With 125 mL Reduced Fat Milk	Average Quantity Per 100 g
Energy	490 kJ	6%	770 kJ	9%	1620 kJ
Protein	2.7 g	5%	7.8 g	16%	9.0 g
Fat, Total	1.4 g	2%	3.5 g	5%	4.7 g
– Saturated	0.4 g	2%	1.7 g	7%	1.4 g
Carbohydrate	21.6 g	7%	28.6 g	9%	72.1 g
– Sugars	8.2 g	9%	15.1 g	17%	27.3 g
Dietary Fibre	2.3 g	8%	2.3 g	8%	7.7 g
Sodium	35 mg	2%	105 mg	5%	115 mg

Figure 4.3: Nutrition information label on South African milk product

Source: Nestle

1.1.30 What is your understanding of energy in the diet?

1.1.31 When considering the above label on food products, which information do you use to determine the energy provided by the food product and why?

1.1.32 Does the energy content in a food product determine your intention to purchase the product?

SECTION C: Describe the influence of attitude, subjective norms and perceived behavioural control on:
Consumers' opinion of macronutrients
1.1.33 What is your view/opinion on the quantity of the following when you purchase a food product? • carbohydrates • fats • proteins • energy
1.1.34 In what way does your attitude towards macronutrients/energy influence your decision to purchase a food product?
Energy Information
1.1.35 Do you feel socially pressured to consider the macronutrients/energy contained in food products? If so, why?
1.1.36 If you previously answered yes, from whom does the pressure originate?
1.1.37 In what way do family, friends, and social networks influence your use of macronutrients /energy when making a decision to purchase a food product?
1.1.38 How important is it to you that your friends and family support your buying decisions of these food products?
Intention to purchase packaged food products
1.1.39 Is it easy for you to consider or use the macronutrients and energy information in food products?
1.1.40 What has been your main hindrance in applying the macronutrients and energy information to the product you wish to purchase?
1.1.41 To what extent have these hindrances stopped you from using macronutrients and energy information to make a decision to purchase a food product?
1.1.42 If you had to share your beliefs about how you look at macronutrients in food products, what would you say are your beliefs that you would like to share?

4.12.1 The interview guide

For this study, an interview guide (containing a set of questions) was used to conduct the semi-structured online interviews. Mathers et al. (2000) state that an interview guide supports the researcher in covering all of the study's substantial topics and questions. The purpose of an interview guide is also to ensure that questions are relevant to the study (Kabir, 2016). The interview guide assisted the researcher in maintaining consistency with the questions posed to the participants and ensured that all questions were asked. These questions were open-ended, and clarifying questions were included to gain a deeper understanding of the participants' experiences as they responded to the question.

Participants were allowed to elaborate on their answers in their own words, which assisted in explaining their responses. Probing was applied to gain a greater insight into participants' experiences of the use and influence of macronutrients and energy information labelling (DeJonckheere & Vaughn, 2019). The researcher employed projective techniques to enable participants to disclose their opinions, ideas and thoughts through the use of images (Pinto et al., 2018). Projective techniques were also used to facilitate questions on nutrition information labelling and consumers' understanding of macronutrients and energy information by including digital images in the interview guide. During the interviews, participants were asked to interpret the information in the images.

4.12.2 Pilot testing of the interview guide

After receiving ethical clearance from the CAES Health Research Ethics Committee, the interview guide (see Appendix A) was piloted. Pretesting and piloting the interview guide assisted the researcher in identifying any issues that would have compromised the findings' trustworthiness. Majid et al. (2017) suggest that interview guides should be pilot tested for the following reasons: (a) to test whether the research instrument is asking the intended questions, whether the format of the question is comprehensible, and whether the selected data collection tool is appropriate for the target population; (b) to test the appropriateness of data collection using the selected interview technique (electronic interviews in terms of this study); (c) to evaluate the process of data collection, duration to complete the interview and the participants' interest in partaking in the study; (d) to examine data entry, coding of the items, and accuracy; and (e) to collect preliminary data for the primary outcome sample size calculation.

In this study, the interview guide was pilot tested using online interviews (using Microsoft Teams) with two participants who met the inclusion criteria. The researcher conveniently approached these participants, who also met the inclusion criteria of the study, to schedule an electronic interview with them after providing information about the study. The researcher enforced all ethical principles required to conduct research under COVID-19 restrictions and research specifications. The researcher also obtained consent from the participants before conducting the pilot test interviews. Participation remained voluntary, and the supervisor also attended the piloting of the interview guide to observe how the researcher conducted the interviews.

During the pilot test, the researcher introduced herself and explained the process of the pilot testing interview, then recorded the start and end times to assess how long it took to address

the questions listed in the interview guide. The researcher noted occasions where the participants hesitated to respond or asked for clarification. This suggested that the questions were possibly vague, difficult to understand or had more meaning than expected and needed to be rephrased (Wilcox et al., 2022; Hamilton et al., 2021). After piloting the interview guide, the supervisor provided feedback to the researcher and made suggestions to enhance the online interviews that were to follow. Some of the questions were rephrased because they were ambiguous and too complex, and some were removed from the interview guide because they were a repetition of what was already asked. The information obtained from each of the two pilot participants was also used to determine whether the interview guide produced the required information to achieve the aim of the study.

Creswell and Poth (2016) state that data pollution may occur, but it does not require the researcher to change the interview guide; instead, questions should be rephrased. Data pollution is the contamination of information supply with irrelevant, unsolicited and low-value information, such as misinformation (Ben-Shahar, 2019). The interview guide was constructed with appropriate questions to achieve each objective of the study to ensure the researcher obtained valuable information (Creswell & Poth, 2016) and improve her understanding of the use and influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products.

4.13 DATA GATHERING PROCEDURE OF THE MAIN STUDY

Data collection commenced after the researcher obtained the ethics approval letter from the CAES Health Research Ethics Committee. The researcher used Facebook as a recruitment tool, as explained in section 4.10. An invitation was extended on the researcher's Facebook page inviting everyone who met the inclusion criteria to willingly participate in the study. Individuals who were willing to participate in the study had to privately inbox the researcher for further details and to arrange for the interviews. Janghorban et al. (2014) indicate that recent technological advancements have led more qualitative researchers using Microsoft Teams and Skype to conduct online interviews and meetings, among other platforms. Therefore, for this study, all semi-structured individual online interviews were conducted via Microsoft Teams or Skype, depending on the participant's preference and familiarity with the platform. Once the invitation was accepted, an online individual interview for each participant was scheduled according to the participant's availability. A link that redirected the participants to join the interview was sent via their email address. All interviews were recorded online for transcription purposes.

The following data collection procedure was used during individual online interviews:

- Upon entering the online interview, the participant was welcomed by the researcher, and a brief explanation of the study's aim and objectives was presented.
- Thereafter, the participant was reminded that the session would be recorded for transcribing purposes. Participants' rights were explained, and the researcher reassured them of the confidentiality and anonymity of the interview.
- The researcher urged the participants to provide detailed and honest responses to assist her in better understanding their answers.
- The researcher then asked for verbal consent from the participants to continue with the interview.

The individual interviews lasted between 45 and 60 minutes, depending on how engaged the participants were during the interview. Most participants responded to the questions without difficulty, while others had to be probed by the researcher for a thorough explanation of their responses. When the online interview ended, the researcher thanked the participant for their time and participation. The researcher conducted 15 individual online interviews, with data saturation accomplished with the 11th interview; however, the researcher continued to interview four more participants to ensure data saturation had indeed been achieved. Thereafter, the researcher started analysing the data, as discussed in section 4.14.

Although COVID-19 regulations and restrictions were already lifted when data collection commenced, individual online interviews were the preferred method through which data were collected in this study to save on resources since electronic interviews require less time and money since they do not involve travel (Saarijärvi & Bratt, 2021). There is also a reduced risk to the researcher's and participants' personal safety linked to travel (Shapka et al., 2016). Online individual interviews were more effective under the circumstances as participants were from different parts of South Africa, and this interview strategy allowed the inclusion of participants across a wider geographical area and access to individuals in settings that may have been unfeasible or potentially unsafe for the researcher to enter (Zhang et al., 2017). To that effect, the study was not designed to gather information from participants from a specific location and allowed for any participant across South Africa who met the inclusion criteria to participate and share their experiences. By using online interviews, the researcher was able to reach every participant in South Africa regardless of the distance (Khan & MacEachen, 2022).

However, there were drawbacks in terms of some online interviews being interrupted due to bad network coverage, which was a result of load-shedding in South Africa. Naidoo (2023) states that the country's load-shedding crisis adversely impacts and violates individuals' rights and access to educational activities. During the data collection phase for this study, some interview slots conflicted with the load-shedding schedule, which caused significant disruptions since load-shedding occurs at different times depending on the location.

4.14 DATA ANALYSIS

Following the interviews, the recorded data were transcribed verbatim before data analysis commenced. Lester et al. (2020) describe data analysis in qualitative research as the process of scientifically searching and organising interview transcripts, observation notes, or other non-textual materials that the researcher collected to increase their understanding of the phenomenon. Qualitative data are more subjective and rich and consist of in-depth information presented in the form of words that are usually transcribed verbatim (Kabir, 2016). In this study, the researcher was required to make sense of large volumes of data, which necessitated a reduced volume of information. This was done by identifying significant patterns, drawing meaning from data, and subsequently building a logical chain of evidence (Roller, 2019).

The recorded individual online interviews were transcribed by the researcher. The researcher started by listening to the recorded interviews and taking notes of participants' responses to the questions (Adu, 2019). After the transcriptions were typed and saved on a Microsoft Word document, content analysis was the first step in the data analysis process. Content analysis is a methodical procedure for identifying and interpreting textual information (Kleinheksel et al., 2020). This can be done by isolating salient concepts of data in a way that clearly defines the phenomenon. Erlingsson and Brysiewicz (2017) indicate that content analysis effectively analyses significant volumes of text into summarised findings.

Thereafter, the researcher implemented coding. Coding or categorising the data is the most important phase in the qualitative data analysis process (Busetto et al., 2020). Coding involves sub-dividing a large amount of raw information or data and assigning it into categories (Noble & Smith, 2014). In simple terms, codes are tags or labels used to allocate identified ideas or thoughts from the data. The researcher first used open coding to identify the main concepts by breaking the data into discrete parts and creating codes to label them (Glaser, 2016). The researcher started the data analysis process by manually coding the transcripts using coloured pens to identify specific concepts in the data, and subsequently organised the data

(Elliott, 2018). In this case, an analysis was done of the themes and the main ideas in the text. By focusing on meaning through a dataset, the researcher was able to make sense of collective or shared meanings and experiences (Braun & Clarke, 2019), which allowed her to draw interpretations from the data (Bhandari, 2020).

To maintain the quality of code extraction, a systematic approach was implemented, ensuring accuracy and reliability in the data analysis process. As part of this approach, a rigorous quality control measure was instituted, wherein the supervisor played a pivotal role in reviewing and approving the extracted codes. After the initial coding phase, where themes and patterns were identified within the data, the supervisor conducted a thorough examination of the coded data. This involved scrutinising the codes to assess their relevance, consistency, and coherence with the research objectives. The supervisor provided valuable feedback and guidance, offering insights into potential discrepancies in the coding process. Furthermore, the supervisor's review served as a critical quality check, helping to ensure the reliability and validity of the extracted codes. Any discrepancies or uncertainties identified during the review process were addressed through discussions and consensus meetings among the researcher and the supervisor. By incorporating the supervisor's feedback on reviewed codes, high standards of data analysis were upheld, enhancing the trustworthiness and credibility of the findings. The supervisor's involvement in reviewing and approving the codes underscored the researcher's commitment to maintaining the integrity of the research process and the accuracy of the results.

Axial coding was employed as the second level of coding. It is defined as a qualitative approach that involves merging data to uncover codes, categories, and subcategories within the participants' voices, as reflected in the collected data (Allen, 2017). Axial coding focuses on refining concepts to establish categories (Williams & Moser, 2019). Data were then organised into relevant categories that best represented the ideas related to a particular research question. A category was created based on the existing code or a new, more abstract category was developed that encompassed several different codes (Medelyan, 2020).

The third level of coding used in this study was selective coding, where the researcher connected all the categories around one core category. The core category in selective coding is developed by elevating one of the categories from the axial coding stage to a new category that is derived based on the other categories (Gallicano, 2013). Ensuring that the data from the participants is presented verbatim is another important component of data analysis. Inoue (2018) defines 'verbatim' as the art of capturing each verbal sound in an audio recording into a text format. In this study, the researcher used verbatim quotes for all the words spoken by

participants. The tables in Chapter 5 contain all the emerging data's verbatim quotes for each category. The data were presented according to each question that was responded to during the interviews to clarify the participants' ideas, thoughts and attitudes regarding a specific aspect of the study (Allen, 2017). Furthermore, data validation was required throughout the analysis process to confirm the findings' trustworthiness.

4.15 TRUSTWORTHINESS

Trustworthiness in qualitative research refers to the researcher's level of confidence in the interpretation of their data (Connelly, 2016). Amankwaa (2016) states that for researchers to ensure trustworthiness in their studies, various established etiquettes and measures are followed. Moser and Korstjens (2018) state that trustworthiness has many available explanations, and these authors constructed their trustworthiness principles based on Lincoln and Guba's (1985) criteria. These were implemented to ensure the trustworthiness of this study and addressed credibility, confirmability, dependability, transferability and reflexivity.

4.15.1 Credibility

Credibility is defined as the extent to which a research account is accurate, valid and appropriate, particularly with reference to the level of agreement between participants and the researcher (Rosito & Kassem, 2019). Moser and Korstjens (2018) state that credibility establishes whether the research findings represent plausible information drawn from the participants' original data and are a correct interpretation of the participants' original views. credibility establishes whether the research findings represent plausible information drawn from the participants' original data and are a correct interpretation of the participants' original views. In this study, credibility was ensured through the accurate and truthful depiction of participants' lived experiences, using effective engagement and triangulation to minimise distortions that might creep into the data (Stumpfegger, 2017).

4.15.2 Confirmability

A study's confirmability relates to its ability to produce findings that can be acknowledged (Ravitch & Carl, 2019). Confirmability is important to ensure the results are formed by participants rather than the qualitative researcher (Tausch et al. 2007). For this study, the researcher employed an audit trail to ensure confirmability; an audit trail is the most popular criterion for establishing confirmability because it keeps current information and documents processes that occurred during the data-gathering process.

4.15.3 Dependability

Another important aspect of research is dependability, which refers to the degree to which the study's findings are dependable and consistent, based on clarity and documentation of the methods followed during the research (Connelly, 2016). With this information, an outside researcher can follow, audit and review the research process. In this study, the researcher used an inquiry audit, which, according to Korstjens and Moser (2018), provides a comprehensive explanation of the techniques used in conducting a study. For example, in this study, the researcher recorded the participants during the online interviews and saved the audio files for transcribing purposes.

4.15.4 Transferability

For research to be transferable, the study's results or findings can be used in a different context to address a similar research problem, context, situation and population (Roller & Lavrakas, 2015). To ensure transferability, the researcher employed a thick description of the phenomenon. Thick descriptions provide detailed information about the study, thus allowing readers to make an informed judgement about whether they can transfer the findings to their own situation.

4.15.5 Reflexivity

Reflexivity in qualitative research refers to an awareness that the researcher and the object of the study affect each other mutually and continually in the research process (Palaganas et al., 2017). However, it involves thinking about how the researcher's assumptions came to be, how pre-existing understanding is constantly revised in light of new understandings, and how this affects the research (Barrett et al., 2020). Within the context of this study, the researcher's knowledge of the food sector was not disclosed to the participants because the researcher wanted them to feel free and unafraid to answer every question without thinking of what the researcher might say about their answers. According to Von Unger (2021), reflexivity is the researcher's influence on the study and results.

4.16 BRACKETING

Weatherford and Maitra (2019) describe bracketing as the researchers' ability to isolate their experiences and knowledge of the phenomenon being studied so they do not misinterpret or misreport intended perceptions. Bracketing eliminates assumptions that are inherent in the researcher's natural attitude (Moran, 2019). During data collection and analysis, the

researcher used the bracketing strategy by using an interview guide that directed the semi-structured individual online interviews. The interview guide addressed all the study's objectives allowing the researcher to probe the participants where necessary to gain a clear understanding of the participants' knowledge (Chan et al., 2013). The researcher's use of bracketing did not affect the participants' understanding of the phenomenon, ensuring unbiased findings and a greater understanding of their views (Tufford & Newman, 2012).

4.17 ETHICAL CONSIDERATIONS

Ethics is a sensitive area in research and should be carefully considered (Botma et al., 2015). In South Africa, ethical clearance from a distinguished ethics committee must be obtained before any research study that involves human participants. According to Sanjari et al. (2014), anonymity, confidentiality, and informed consent are all important aspects of qualitative research. The CAES Health Research Ethics Committee (HREC) granted ethical approval for this study prior to data collection. The participants provided both verbal and written consent before the individual online interviews commenced. Each participant received a digital consent form (as seen in Appendix B) before the data collection process started, and verbal consent was obtained at the start of the interview. Online interviews were conducted with one participant at a time. The potential participants were asked respectfully to participate voluntarily in the study and the researcher explained the study's requirements. Bishop and Bridges (2012) advise that data must be de-identified before the researcher releases their findings, and the outcomes of the analysis must not allow participants to be re-identified. The researcher ensured that the principles of confidentiality and anonymity were observed. Confidentiality refers to what is done with the information as soon as it is accessible to the researcher, and anonymity focuses on identifying knowledge (Bos & Bos, 2020). Individuals can be classified by the data provided or from other information relating to them (Sim & Waterfield, 2019), so only the researcher and supervisor had access to the data. The researcher ensured that no harm occurred to participants as a result of this study. The measures taken to protect participants included maintaining the highest level of confidentiality, anonymising the names of participants and ensuring the security of the collected data (Bishop & Bridges, 2012). Participants were reminded that they could withdraw from participating in the interview at any time. No compensation was given for their participation, reflecting there was no coercion to participate. There were also no unforeseen events during data gathering, but the researcher would have stopped the interview and reported the occurrence to her supervisor who would inform the CAES HREC if it happened. Data gathering would have ceased until further notice from the CAES HREC.

4.18 SUMMARY

This chapter described the qualitative paradigm as the study's research approach. An exploratory research design was used to explore the use and influence of macronutrients and energy information labelling on consumers' intentions to purchase packaged food products. This study was carried out within the borders of South Africa. Inclusion criteria were discussed, and the study's participants were recruited using non-probability sampling methods, specifically convenience, purposive and snowball sampling. Data collection methods and the data gathering instrument (the interview guide) were discussed. The data analysis process was also highlighted, and the study's trustworthiness was described. Ethical considerations reflected on how the researcher obtained consent prior to conducting the study. The next chapter presents the findings in accordance with the study's objectives.

CHAPTER FIVE: DATA ANALYSIS AND PRESENTATION OF FINDINGS

5.1 INTRODUCTION

This study explored the use and influence of macronutrients (fat, carbohydrate and protein) and energy information labelling on consumers' intention to purchase packaged food products. The previous chapter presented the methodology used to gather data related to the study's objectives. This chapter presents the data gathered to address the objectives that were established to achieve the aim of this study. The first section of this chapter focuses on the participants' demographic profile. The qualitative findings are then provided, beginning with the main objective and sub-objectives and progressing to categories derived from the analysis of each question posed to the participants. Figures and tables are supplied to help in interpreting and presenting the study's findings.

5.2 BACKGROUND OF THE STUDY SAMPLE

The study's inclusion criteria, as presented in Chapter 4, were used to purposefully and conveniently recruit participants. Since this study was exploratory in nature, the researcher did not intend to differentiate between gender, age groups or ethnicities, nor was the study designed to distinguish between participants' marital status, level of education, or occupation. Their demographic data were solely used to describe the participants, giving the researcher a clearer picture of who took part in this study. The researcher worked from the perspective that all participants who met the inclusion criteria were taken into consideration since general consumers' opinions and experiences were required.

5.3 PARTICIPANTS' DEMOGRAPHIC INFORMATION

Collecting demographic data in the research setting is crucial because it allows the researcher to obtain sufficient information to define and describe the sample of participants who took part in the study (Hughes et al., 2016b). The first part of the data collection process required the participants to provide their demographic information. Prior to the scheduled online interviews, the researcher sent a demographic questionnaire to the participants via their email addresses, and they had to fill it in and return it to the researcher. As shown in Appendix C, the demographic questionnaire required the participants to provide information on their (i) gender, (ii) age, (iii) marital status, (iv) level of education, and (v) occupation.

All the participants who took part in this study resided in South Africa and met the inclusion criteria. Fifteen participants formed the study sample; data saturation emerged during the 11th individual online interview. The demographic data presented in Figure 5.1 indicate that the majority of the participants were female (60%, n=9), with fewer male participants (40%, n=6). The study's preponderance of female participants could be linked to the fact that women typically make food-purchasing decisions for themselves and their families (Dhuria et al., 2021). A study by Alotaibi et al. (2023) indicates a considerable disparity in male and female knowledge and awareness of macronutrients and energy information labelling, which may have resulted in fewer male participants volunteering to take part in this study. Alotaibi et al. (2023) further found that sociodemographic and lifestyle factors varied among their participants and were substantially linked, either positively or adversely, to the use of macronutrients and energy information labelling. The number of factors influencing men's knowledge and awareness was higher than that of women (Alotaibi et al., 2023). However, while Alotaibi et al.'s findings were considered, this study was not designed to compare male and female responses. The number of male participants was therefore not increased to obtain an equal number of male and female responses in this study.

The research participants were mostly between the ages of 18 and 29 (54%, n=8), with the remainder between the ages of 30 and 59 (46%, n=7), as indicated in Figure 5.1. Most participants were between the ages of 18 and 29 since young people are on social media platforms to a greater extent than their older counterparts. The researcher used Facebook as a recruitment tool for this study, which may have influenced the number of young adults who participated.

The participants were asked to indicate their marital status, and more than half indicated they were single (67%, n=10), with the remainder being either married (27%, n=4) or divorced (6%, n=1). The participants were also asked to indicate their level of education. Most participants had obtained a degree (54%, n=8), while the rest had attained a diploma (13%, n=2), were still at university (20%, n=3), or had Grade 12 as their highest level of education (13%, n=2). Participants were asked to indicate their present occupation, and more than half of them were employed (53%, n=8), some were unemployed (20%, n=3), and others were still full-time students (27%, n=4).

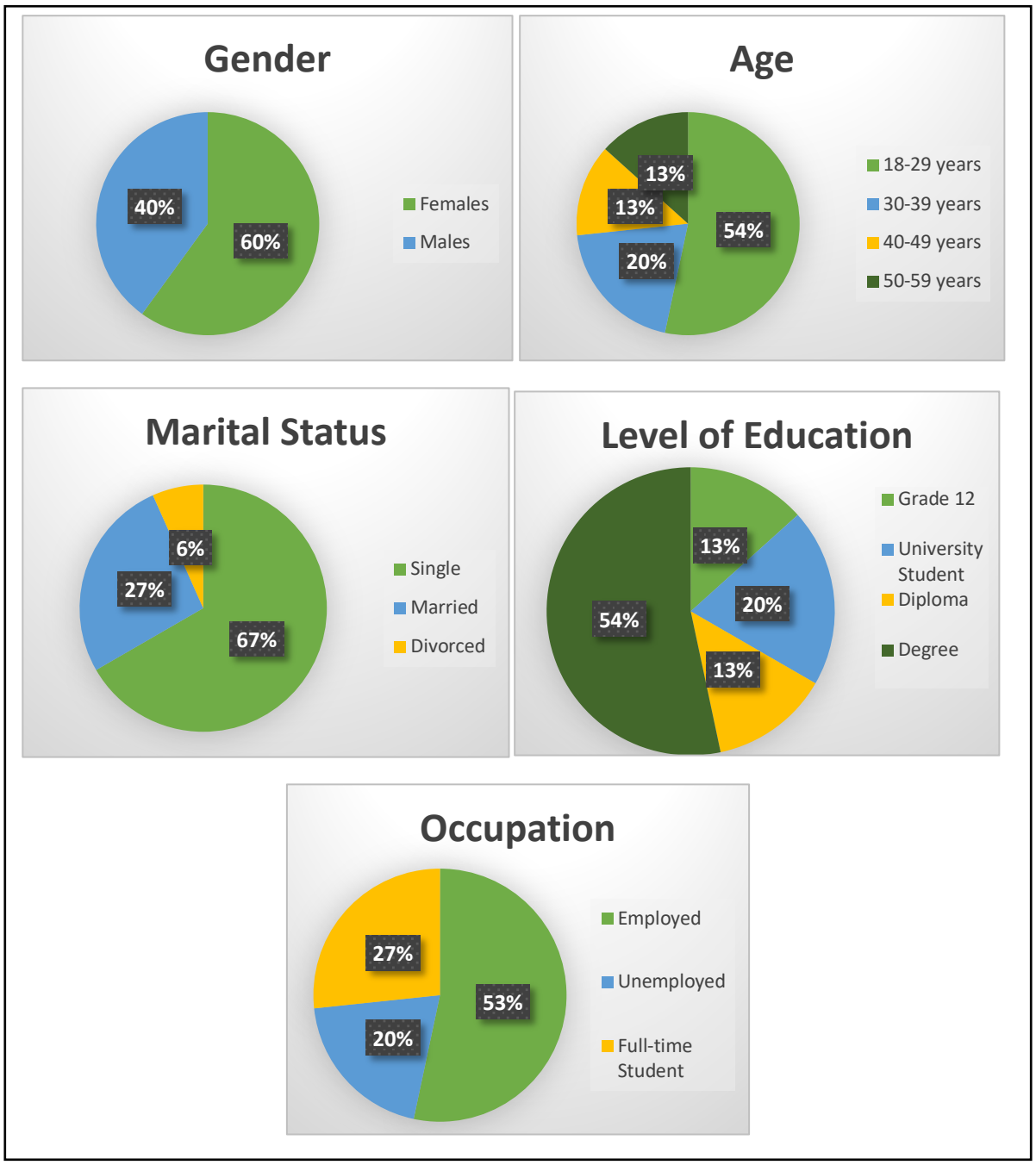


Figure 5.1: Participants' demographics

The qualitative findings that surfaced in response to the three objectives are provided in the sections that follow: Objective 1 – Explore consumers' use and understanding of front-of-pack, back-of-pack, and nutrition information labelling; Objective 2 – Examine consumers' use and understanding of macronutrients and energy information; and Objective 3 – Describe the influence of attitude, subjective norms, and PBC on consumers' opinions of macronutrients, energy information, and intention to purchase packaged food products.

5.4 QUALITATIVE FINDINGS RELATING TO CONSUMERS' USE AND UNDERSTANDING OF FRONT-OF-PACK, BACK-OF-PACK, AND NUTRITION INFORMATION LABELLING (OBJECTIVE 1)

To explore the use and influence of macronutrients (carbohydrates, fats and proteins) and energy information labelling on consumers' intention to purchase packaged food products, the first part of the interviews explored the participants' use and understanding of (sub-objective 1.1) FOPL (sub-objective 1.2), BOPL, and (sub-objective 1.3) nutrition information labelling. The findings related to each type of labelling are discussed based on the key categories that emerged from the data. Rønnow (2020) argues that the front of the food product's packaging typically exhibits a particular brand picture and special offers, and allows a graphic designer to create a pleasing layout. Conversely, BOPL communicates important and valuable information about the food product and assists consumers in making informed purchases.

5.4.1 Qualitative findings regarding the participants' use and understanding of front-of-pack labelling (sub-objective 1.1)

FOPL is one of the most important features of a product and has been identified as a potential strategy to improve consumers' eating patterns and help prevent obesity and non-communicable diseases (Egnell et al., 2021). The question that was asked to start the conversation on FOPL was, **"What is your understanding of the term front-of-pack labelling?"** (Question 1.1.1 in Appendix D).

From the analysis of this question, three categories emerged that defined the participants' understanding of the term "front-of-pack labelling". Participants identified FOPL to be (1) **front positioning**; participants explained it is the *"front part that is displayed*" or the *"front part that greets me"* or "*something that you see on the front".* Participants also understood FOPL as the (2) **front information** on the product. A participant said it is the "*front information of the product" or "information on what the product contains"*. Some participants also thought that FOPL refers to the (3) **front package cover**, with specific explanations that it is "*the cover of the package*" or the "*front product cover*".

Based on the findings, participants understood FOPL as information on the front cover of a food product. These findings are consistent with previous studies that determined a growing awareness of food labelling in South Africa (Hutton & Gresse, 2020). Extant literature indicates that consumers are generally aware of the need to read the FOP food labels, and most consumers read the most basic information, such as the manufacturing and expiration dates

(Moreira et al., 2021; Washi, 2012; Shangguan et al., 2019). Hutton and Gresse (2020) found that in Nelson Mandela Bay, South Africa, consumers were aware of front-of-pack labels and highlighted that these labels helped them recognise healthier food options. Each category is presented with relevant quotes in Table 5.1.

Table 5.1: Understanding of the term "front-of-pack labelling"

CATEGORY	QUOTES
1. It is front positioning	*"front part that is displayed"* *"front attraction of the product"* *"front part that greets me"* *"something that you see on the front"* *"anterior part of the product"* *is the label in packaging that is displayed in the front"*
2. It denotes front information	*"information of the product"* *"brief overview"* *"information on what the product contains"* *"front information of the product"* *"give description of the product"* *"the name of the product"* *"it the inscription that is written in the front-side of the product"* *"it the information that appears in front of the product"* *"it gives an overview of what exactly is inside the product"*
3. Front package cover	*"the cover of the package"* *"product front cover"* *"front brand name and cover"*

The second question required the participants to elaborate on the information they recalled being included on FOPL by asking, **"If you think about front-of-pack labelling, what type of information does it include? Give examples."** (Question 1.1.2 in Appendix D). From the analysis of this question, two groups of participants emerged, representing those who were either (1) **informed** or (2) **uninformed** about the information on FOPL. The first category of informed participants focused on (1) **product features**, which they considered part of FOPL. This category reflected informed participants mentioned information such as the *"product name*" or the *"flavour"* or *"brand name".* Uninformed participants focused on (1) **product ingredients and manufacturing details**. Uninformed participants mentioned information that appears at the back or on the side of the packaging as the information that is on the front. For instance, participants mentioned the *"product information table"* or *"allergies"* or *"the expiry date*".

Based on the findings, only a few participants understood what type of information is included in FOPL. The findings are consistent with other studies on consumer awareness of front-of-pack food labelling. According to Bopape et al. (2022), South Africans from a wide range of

socioeconomic backgrounds understand that FOPL provides clear, succinct information about the nutritional makeup of food products. Conversely, less-informed consumers confuse the role of front-of-pack food labelling (Ikonen et al., 2020). Each group and category are presented with accompanying quotes in Table 5.2.

Table 5.2: Information about front-of-pack labelling and examples

CATEGORY	QUOTES
Informed participants	
1. Product features	*"product name"* *"flavour"* *"size of the product"* *"name of the product"* *"brand name"* *"weight of the product in grams, litres or kilograms"*
Uninformed participants	
1. Product ingredients and manufacturing details	*"ingredients"* *"product information table"* *"manufacturers name"* *"the manufacturers address"* *"allergies"* *"total fat and saturated fat"* *"expiry date"* *"most ingredients of the product"* *"company that produce the product"* *"the amount of salt, sugar and fiber of the product"*

After the participants named the type of information available on the front of food packaging, the following question was asked: **"Do you make use of front-of-pack label information when making food purchases? If so, when?"** (Question 1.1.3 in Appendix D). Two groups of participants emerged based on the responses to this question, namely those who (1) **use front-of-pack label information**, and those who (2) **do not use front-of-pack label information**.

Three categories were linked to the first group. Participants considered using FOPL when making (1) **first-time purchases**. This is evident in participants' quotes, "*when I buy a product for the first time",* and *"I think I do, when I am buying a new product".* These findings are supported by the International Food Information Council Foundation of 2019, which states that consumers buying a food item for the first time had a higher propensity to look out for the food labelling than consumers who were familiar with the product (Bassarab et al., 2019). Other participants used the front-of-pack label because of the (2) **product presentation,** citing that an "*eye-catching product"* attracted them to read the front-of-pack label. Previous research shows that attractive and interpretive packaging attracted consumers to read front-of-pack

food labels (Zafar et al., 2022). The findings also showed that participants used FOPL based on their (3) **personal interests**, which is suggested in the following quote: *"when there is something specific, I want to know*".

Two categories were linked to the second group of participants. Some participants did not use FOPL due to a (1) **lack of understanding**, supported by a participant saying, *"I can't interpret the information"*. Another category emerged illustrating participants' (2) **lack of interest**. One participant said, *"I just buy without looking";* this may be why consumers do not use the information on the front of food packaging. Literature concurs that consumers lack awareness of food labelling (Roberto et al., 2021). Previous studies highlight that the lack of awareness about food labelling and what it means limits consumers' willingness to pay for certain food products (Hutton & Gresse, 2020). Research further shows that consumers who did not read or use food labels when they were shopping failed to choose healthier options when making food purchases (Penzavecchia et al., 2022). Each group and category are presented with relevant quotes in Table 5.3.

Table 5.3: Use of front-of-pack labelling information when making food purchases

CATEGORY	QUOTES
Participants who use front-of-pack labelling	
1. First-time purchasing	*"with the product I usually buy".* *"when I buy a product for the first time".* *"if I buy a product I never bought before".* *"when I'm buying the product that I'm not used too".* *"I think I do when I am buying a new product".* *"I use it a lot when I am buying a product for the first time".*
2. Product presentation	*"eye-catching product".* *"if it's attractive than the one I am used to, I buy the one that is more appealing".* *"I go for a product that is attractive to my eye".*
3. Personal interest	*"I must read about the product that I am buying".* *"when there is something specific".* *"I use it mostly when I don't know the product".*
Participants who do not use front-of-pack labelling	
1. Lack of understanding	*"I can't interpret the information".* *"I don't use front-of-pack labelling".* *"not really," "I only worry about the expiry date".*
2. Lack of interest	*"with a product I usually buy, I buy without checking".* *"I just buy without looking".* *"I usually don't use front-of-pack labelling".* *"honestly, I don't".*

Based on the participants' use of FOPL discussed above, the researcher wanted to determine their reasons for reading FOPLs. Thus, the question was: **"For what purpose do you use**

front-of-pack labelling?" (Question 1.1.4 in Appendix D). Five categories emerged reflecting the reason participants read FOPL. Some read the information to (1) **make an informed purchasing decision**; a participant said it *"assists in making informed food choices".* Findings also revealed that participants used FOPLs to gain (2) **health-related information**, as one participant explained it is used to *"choosing food with good nutrition".* Conversely, some participants believed that FOPL helped them to identify (3) **local brands** so that they could buy these. A participant mentioned purchasing *"products that are African engraved".* The generated findings also indicate that (4) **product presentation** plays a role in convincing participants to buy particular products, as one emphasised, *"I go for something catching my eye".*

A study by Muraski (2016) found that consumers spend only four to ten seconds making a purchasing decision about food products. Therefore, eye-catching products are more likely to be purchased first because of how they are presented. The fifth category that emerged shows that participants used FOPL to improve their (5) **knowledge about the products**; this view is supported by a participant's quote: *"to know exactly what is in the product".* Previous evidence indicates that consumers' subjective knowledge significantly predicts their likelihood to buy food products (Baker, 2022). Similarly, Topolska et al. (2021) concur that consumers' knowledge of food labels is the most essential factor influencing consumer preferences and purchasing decisions. Each category is presented with accompanying quotes in Table 5.4.

Table 5.4: Purpose for using front-of-pack labelling

CATEGORY	QUOTES
1. To make an informed purchasing decision	*"assist in making good, informed food choices".* *"in making informed decision about the product".*
2. Health-related information	*"choosing food with good nutrition".* *"understanding benefits the product has".* *"alerting about allergies".*
3. Identify local brands	*"products that are African engraved".* *"prefer certain brands".*
4. Product presentation	*"I go for something catching my eye".* *"more appealing to me to be interested in it".* *"should speak to me, and it must say buy me".*
5. Knowledge about the product	*"to find out about the product".* *"guides and directs me information of the product".* *"to know exactly what is in the product".* *"it is more of being aware about what is in the product".* *"to verify the product as some are re-branded every now and then".* *"to obtain information about the product".* *"I sue to become familiar with the product".*

According to Croker et al. (2020a), the Funnel Model was developed to describe the functional and visual characteristics of FOPL. This model focuses on various aspects of a label, which fall into the following broad categories: components (qualifying or disqualifying), methodology (including the reference unit, e.g. per 100 g or per serving, and the measurement method, e.g. compliance with scores/thresholds), and expression, including whether voluntary or mandatory; whether aiming to help the consumer or promote reformulation (Cecchini & Warin, 2016). This model allows FOPL to be described consistently and systematically. FOPL schemes are mandatory in some countries, while others promote voluntary schemes. FOPL can be interpretive or non-interpretive, and they can also provide aggregate (overall judgement on the product) or analytical information that includes detailed information on specific nutrients (Kelly & Jewell, 2018). From the information presented relating to the Funnel Model, it is reasonable to conclude that food labelling attempts to reconcile marketing, ethical and legislative guidelines to ensure consumers are influenced to buy products that meet their needs.

5.4.2 Qualitative findings regarding the participants' use and understanding of back-of-pack labelling (sub-objective 1.2)

BOPL is the most prevalent format of labelling worldwide, and approximately 75% of the global population lives in countries with BOPL regulations that stipulate mandatory labelling on all food products (Mandle et al., 2015). However, to explore each participant's understanding of BOPL, they were asked: **"What is your understanding of the term back-of-pack labelling?"** (Question 1.1.5 in Appendix D).

From the analysis of this question, three categories were identified that clearly define the participants' understanding of the term "back-of-pack labelling". They stated it (1) **provides nutrition information**; a participant emphasised, *"it should contain nutritional information".* Rønnow (2020) confirms that BOPL indeed provides nutrition information such as ingredient lists and nutrition tables or facts. Some participants also mentioned that BOPL (2) **informs about product benefits**, as reflected in the quote, *"how it benefits me nutritionally".* Research indicates that according to regulation, the BOPL of most pre-packed products contains nutrition information, which may be beneficial to consumers when choosing different food products (Jayashree et al., 2022). Findings further revealed that BOPL (3) **provides key information about the food product**, which is explained by a participant's claim that it *"describe in detail as to what a particular product contains"*.

The findings reflect that participants understood BOPL is the information that is positioned on the back cover of a food product's packaging. Food label information helps consumers to better understand the nutritional value of food and enables them to compare the nutritional values of similar food products. It also empowers consumers to make healthy decisions based on the relevant nutrition information (Karim et al., 2022). Food labels are important public health tools that are used to promote a balanced diet and enhance public health and well-being (Jayashree et al., 2022). A study conducted by Ramaswamy et al. (2020), focusing on Indian consumers, found that a majority of consumers reported having high levels of nutritional awareness due to BOPL. However, it was also found that consumers preferred food products with clear food labels. Each category is presented with relevant quotes in Table 5.5.

Table 5.5: Understanding of the term "back-of-pack labelling"

CATEGORY	QUOTES
1. Provides nutrition information	*"it should contain nutritional information"* *"it should specify energy and nutrients that are contained in the product"* *"it mostly nutritional information"* *"nutritional table would also fall under back-of-pack"* *"nutritional labelling systems that are presented at back-of-pack"* *"detailed information on the nutritional composition of food"* *"it basically has nutritional information, what is contained inside the product"*
2. Informs about product benefits	*"what am I going to get from consuming the product"* *"how it benefit me nutritionally"* *"how they nourish us"* *"breakdown of nutrition you getting from consuming the product"*
3.Provides key information about the food product	*"it just all the information that is listed behind the product"* *"describe in details as to what a particular product contains"* *"it is the information we get behind the container of the food product"* *"it would be a table at the back of the product"* *"it the labelling that is usually at the back of the package"* *"briefly describe the components of the product"* *"it is the ingredients of that particular product"*

The second question on BOPL required the participants to elaborate on the information they recalled being included in BOPL. The question was: **"If you think about back-of-pack labelling, what type of information does it include? Give examples."** (Question 1.1.6 in Appendix D). Four categories emerged from the participants' responses. Most participants indicated that BOPL provides (1) **nutrition information** about a food product. A participant explained it as the *"nutritional information*" and *"nutritional information per serving*'. In the second category, participants indicated that BOPL provides information on (2) **expiry dates**, as reflected in quotes stating it reflects the "*date suitable for consumption",* or *"expiry date".*

The third category indicated that BOPL provides (3) **instructions for use**. A participant mentioned it reflects *"instructions on how to use the product" and "serving size".* The fourth category indicated that BOPL provides (4) **product manufacturing information**, explained by a participant as the *"manufacturers details and address"*.

These findings are consistent with previous studies that attempted to trace the factors behind consumers' interest in food labels and ignorance thereof. Consumers who had some awareness about food products were often interested in manufacturers' details and all manufacturing information (Khandpur et al., 2018). Moreover, first-time users have been found to be more interested in understanding instructional information on food products. The findings ultimately indicated that product characteristics, such as brand name, ingredients, packaging, display strategies, labels, and regulatory policies influence consumers' acceptance of food products (Bandara et al. 2016). Each category is presented with accompanying quotes in Table 5.6.

Table 5.6: Information about back-of-pack labelling and examples

CATEGORY	QUOTES
1. Nutrition information	*"nutritional information"* *"nutritional information per serving"* *"carbohydrate, fats and sugar"* *"energy, salt and vitamin content"* *"it includes constituents of the product"*
2. Expiry date	*"date suitable for consumption"* *"expiry date"*
3. Instructions for use	*"instructions on how to use the product"* *"serving size"* *"storage instructions after opening the product or at what temperature"* *"grams per single serving"*
4. Product manufacturing information	*"manufacturers details, address"* *"how the product was manufactured"*

After the participants listed the types of information they thought were found at the back of products' packaging, the next question was: **"Do you make use of back-of-pack label information when making food purchases? If so, when?"** (Question 1.1.7 in Appendix D). The findings show that some participants responded 'yes', and three categories emerged indicating that they used this information when making (1) **first-time purchases**, as suggested by a participant who said, *"when it is my first time buying the product"*. The findings are consistent with earlier research that determined first-time consumers are more interested in understanding the nutritional makeup of the product, such as protein, fat, and carbohydrate content (Cofre & Morales, 2022). Another category emerged indicating that participants used

BOPL information to (2) **check product quality**. A participant explained: *"I seek to find out exactly what it is all about".* The findings also showed that participants used BOPL information based on their (3) **product preferences**, which was suggested by a participant who mentioned they look at BOPL *"when there is something specific"*. A few participants indicated they did not use the BOPL, and no further responses were obtained on this topic.

The findings are consistent with previous studies that reported first-time consumers have a greater interest in understanding the nutritional composition of their food (Cofre & Morales, 2022). As a result, they are motivated to read the food label. Other studies have found that reading food labels is associated with sociodemographic factors (Shahrabani, 2021). In this instance, people whose level of education is low generally do not have an interest in reading food labels (Dutta & Patel, 2017). However, Ranga and Venter (2017) found that even educated people, such as university students, have shown a low interest in reading food labels. Therefore, education's impact on consumers' understanding of food labels remains unclear. Each category is presented with accompanying quotes in Table 5.7.

Table 5.7: Use of back-of-pack labelling information when making food purchases

CATEGORY	QUOTES
1. First-time purchases	*"unless it is my first time buying the product".* *"when I am unfamiliar with the product".* *"when I buy a product that I don't know of".* *"unless it is something new".*
2. Checking product quality	*"I do consider the expiry date of each and every product I am purchasing".* *"I seek to find out exactly what it is all about".*
3. Product preferences	*"I look at ingredients for certain products".* *"when there is something specific".*

Based on the participants' use of BOPL information discussed above, it was necessary to determine their reasons for reading BOPL. The question posed to participants was: **"For what purpose do you use back-of-pack labelling?"** (Question 1.1.8 in Appendix D). Four categories emerged, with the first being (1) **nutrient consideration**, as indicated by a participant's claim: *"to check the amount of nutrients in the nutritional table".* The second category showed that participants used BOPL considering the (2) **health benefits of a product**, as pointed out by a participant saying, "*I want to improve my health",* which may suggest that some participants consider the health benefits associated with the product they are purchasing. Conversely, some participants mentioned that BOPL assisted them in determining the (3) **storage of a product**; a participant claimed they use BOPL information to determine *"If it should be kept refrigerated or in a cool dry place".* Other findings on this

question also suggest that BOPL was used to identify the (4) **duration for consumption**, which was mentioned by a participant explaining, *"I don't want to buy something that is already off"*. These findings may suggest that some participants read back-of-pack information specifically to see the product's expiry date. The findings are demonstrated in Table 5.8, and relevant quotes are provided.

Table 5.8: Purpose for the use of back-of-pack labelling

CATEGORY	QUOTES
1. Nutrient consideration	*"It shows how many nutrients are in that food product".* *"for getting nutritional information".* *"to check the amount of nutrients in the nutritional table".* *"I need to know how much fat, salt and sugar is contained in a product I am about to consume".* *"to check energy the product contains".*
2. Health benefits of a product	*"It will be because I want to benefit from it".* *"I want to improve my health".* *"the purpose would be for health purposes".* *"I look at the list of ingredients for allergies".* *"I use it, so I know what I am consuming".*
3. Storage of a product	*"how to store the product".* *"I check the storage of the product".* *"If it should be kept refrigerated or in a cool dry place".* *"I look at storage and preparation instructions".*
4. Duration for consumption	*"I mostly check the expiry date".* *"before I buy the product, I check the expiry date".* *"I don't want to buy something that is already off".*

Research on food labels shows that BOPL provides consumers with crucial information and outlines the health benefits of a food product (Khandpur et al., 2018). This information includes interpretive symbols or logos that meet a certain nutritional criterion (Pettigrew et al., 2017). The food label may also influence consumers' attitudes towards a food product, in turn influencing a consumer's purchase intention (Aitken et al., 2020; Krige et al., 2018). Instructional information on food products is both a moral and legal duty of food manufacturers, educating consumers on how to use a food product (Mandle et al., 2015). Karim et al. (2022) add that instructional information and information relating to ingredient lists, allergens within the food product, and storage instructions are presented on the back of packaging.

5.4.3 Qualitative findings regarding the participants' use and understanding of nutrition information labelling (sub-objective 1.3)

Nutrition information labelling is a significant source of information, providing consumers with a clear understanding of what a product contains (Miller & Cassady, 2015). Therefore, to

establish the way in which each participant understood nutrition information labelling, the following question was asked: **"What is your understanding of the term nutrition information labelling?"** (Question 1.1.9 in Appendix D). To better understand participants' understanding of nutrition information labelling, a digital image was presented to assist participants in answering the questions (see Figure 5.2).

Figure 5.2: Typical nutrition information label on South African Liqui Fruit product
Source: TravelingMarla

From the analysis of this question, two categories were identified that clearly defined the participants' understanding of the term 'nutrition information labelling'. The first category that emerged was participants' understanding of (1) **nutrient composition**, as indicated by quotes from participants stating: *"types of nutrients the product contains",* and *"it displays all forms of nutrients that are in a product in terms of quantity".* The second category that emerged was participants' understanding of (2) **product benefits**, which was suggested by a participant mentioning that *"it is all about the benefits of the product.".* Taylor et al.'s (2023) study on consumers' awareness of the nutritional value of whole grains found that their level of knowledge of nutritional value was low. Eze et al. (2017) found that most Nigerian bank workers who participated in their study were aware of the nutritional worth of foods and possible product benefits. Studies that focused on consumers' awareness of the nutritional composition of food in developing countries reported that consumers' knowledge has a significant effect on their food choice behaviour (Baker et al. 2022). Each category and accompanying quotes are presented in Table 5.9.

Table 5.9: Understanding of the term "nutrition information labelling"

CATEGORY	QUOTES
1.Nutritient composition	*"types of nutrients the product contains"* *"it all about the nutrient content of the product"* *"summarised nutrition information that is in the product"* *"it displays all forms of nutrients that are in a product in terms of quantity"* *"it breakdown of nutrients you are getting from consuming that particular product"* *"its the label about the nutrients"* *"it the type of nutrition the product contains"* *"its a labelling information that gives exactly the amount of nutrients contained"*
2.Product benefits	*"it is all about the benefits of the product"* *"it is the important health benefits I must be made aware of before consuming the product"* *"it guides consumers food selection"* *"it is the information that we get and support our nutritional status"* *"it is the information that tells me about what am I getting after consuming that particular product"* *"nutrition information is all about the benefits of a particular product"*

The participants were asked to detail and elaborate on nutrition information labelling by answering the question: **"If you think about nutrition labelling, what type of information does it include? Give examples."** (Question 1.1.10 in Appendix D). One main category emerged from the findings: participants specified the (1) **types of nutrients** included in nutrition information labelling. They mentioned proteins, carbohydrates, fats, energy, calcium, vitamins, fiber, sodium and sugar, as presented in Table 5.10, with accompanying quotes to support the category.

Several studies in South Africa and internationally show that most consumers have a general understanding of the importance of food labelling and what information to expect (Duvenage et al., 2015). Depending on the type of consumer, some have knowledge of the type of nutrition in the food and the uses of the nutrients (Gordon et al., 2022). For example, Duvenage et al. (2015) suggest that individuals who take part in sports are conscious of the specific nutrients in the food they eat and may show a keen interest in the nutrition information label. The same behaviour has been reported among women who want to lose weight (Van den Berg et al., 2012) and use nutrition information labelling to guide and influence their selection of more appropriate food products to support the weight-loss attempt.

Table 5.10: Information about nutrition information labelling and examples

CATEGORY	QUOTES
1. Types of nutrients	*"it includes nutrients such as proteins, carbohydrates, fats, energy, calcium, vitamins, fiber, sodium and sugar"* *"it includes the serving size"* *"it mostly the macronutrients"* *"the amount of energy, carbohydrates, fats, sugar"* *"the percentage also in which dosage or quantity"*

After the participants listed the types of information included in nutrition information labelling, the following question was asked: **"What is the most important part of nutrition information labelling to you (the participants), and why?"** (Question 1.1.11 in Appendix D). Three categories emerged. The first said (1) **fat** is most important, as reflected in a quote from a participant saying, *"I have to check if it has unsaturated or saturated fat".* This indicates that some participants were most concerned about the types of fats that were contained in the food products they intended to purchase. These findings are consistent with several studies that have explored consumers' awareness of fat, energy, and sugar components in food products. For example, Vargas-Bello-Pérez et al. (2020) investigated consumers' perceptions of milk fat in Denmark, the United Kingdom (UK), and the USA. That study discovered that more respondents in the UK (31 and 10%, respectively) and the USA (37 and 19%) felt milk fat was "healthy" or "very healthy" than respondents from Denmark (23 and 6%). In these three countries, milk fat was considered good because of its nutritional value (Vargas-Bello-Pérez et al., 2020). Conversely, Jahn et al. (2023) also conducted a study with 760 respondents in the USA exploring "truthful yet misleading consumer responses to 'low-fat' food with high sugar content". According to that study, consumers are blindfolded with 'low-fat labels' on food products, yet these products are found to contain high sugar content. As a result, it is evident that consumers are aware of foods high in fat and check for information relating to fat.

The second category stated (2) **energy** information was important, as a participant mentioned, *"I want to know how much energy I am I consuming"*. For some participants, energy is the most important information they look for on a nutrition label. The third category that emerged was (3) **sugar**; one participant mentioned, *"for me, I am very cautious of stuff that has a lot of sugar".* These findings suggest that some participants were conscious of products with high sugar content. This knowledge may prevent the risk of diabetes mellitus and other health conditions related to the high consumption of sugar. The findings align with Alam and Zakaria's (2021) views that most informed consumers are aware of product energy and sugar information and other various characteristics of food products when making purchase decisions. Each category and accompanying quotes are presented in Table 5.11.

Table 5.11: Participants' most important part of nutrition information labelling

CATEGORY	QUOTES
1. Fats	*"I have to see if it has unsaturated or saturated fat".* *"total fat".* *"fat content of the product".* *"for me, it's fat. It's important to know the amount of fat".* *"for me to know that if consume it, will it not clog my arteries or is it good for me".* *"Because they tell me exactly how much I am consuming".* *"because my body does not need fatty food, due to my poor digestive system".* *"because I am in the process of losing weight".*
2. Energy	*"I check the energy section".* *"total energy".* *"it would be energy".* *"I would say kilocalories".* *"I am more concerned about how much energy".* *"I want to know how much energy I am I consuming".* *"because it's all about the energy that my body needs".* *"as for me, I am a sports person".*
3. Sugar	*"after that, I go to the sugar content".* *"sugar content of the product".* *"I do concern myself with the amount of sodium and sugar".* *"for me, I am very cautious of stuff that has a lot of sugar".* *"I am very cautious in terms of what I consume".* *"If it has too much sugar, I will not buy it".* *a lot of things have hidden salt and sugar".* *"mainly because of health reasons".*

After exploring the participants' opinions about the most important part of nutrition information labelling, the researcher wanted to establish the participants' use of nutrition information labelling. The question asked was: **"Do you make use of a nutrition information label when making food purchases? If so, when?"** (Question 1.1.12 in Appendix D). Two groups of participants emerged from the findings: those who (1) **used nutrition information labelling** and those who (2) **did not use nutrition information labelling**. The first group emerged with two categories indicating the participants' (1) **frequent use** of nutrition information labelling. A participant mentioned, *"every time I use it*". Another category highlighted that other participants used nutrition information labelling for (2) **health benefits**, as a participant shared that, *"I consider it to maintain my health condition"*. Wartella et al. (2012) argued that consumers who claim to be health conscious are more likely to examine nutrition information on food labels and are at an advantage of gaining benefits from the food products.

The second group's participants reflected a (2) **lack of understanding** of nutrition information labelling, as suggested by a participant's explanation that *"I do not understand measurements*

used". According to Hammond et al. (2023), although nutrition information labelling is widely used on pre-packaged foods, it is poorly understood by consumers. Each category and accompanying quotes are presented in Table 5.12.

Table 5.12: Participants' use of nutrition information labelling

CATEGORY	QUOTES
Participants who use nutrition information labelling	
1. Frequent use	*"every time I use it".* *"with both products, the one I am familiar with and the new one."* *"when I am buying the product for the first time".* *"yes I do, a lot".* *"yes, when I buy the food product for enjoyment".*
2. Health benefits	*"when I am trying to eat healthy".* *"yes, I look at how much fat and sugar is in the product".* *"I consider it to maintain my health condition"*
Participants who do not use nutrition information labelling	
1. Lack of understanding	*"do not understand measurements used".* *"Information is confusing"* *"I cannot interpret the information reflecting".* *"requires a lot time for understand this information"* *"the font size is smaller, sometimes it's not clear".* *"the terminology used is confusing"*

It was necessary to determine the participants' reasons for using nutrition information labelling. They were asked: **"For what purpose do you use nutrition information labelling?"** (Question 1.1.13 in Appendix D). From the analysis of the collected data, two categories emerged, with the first one being (1) **health considerations**, explained by a participant's reference to, "*when I am trying to eat healthy, I do look at the nutritional content"*, which may suggest that some participants use nutrition information labelling to maintain a healthy diet. The second category that emerged was participants' (2) **personal interest**, which is supported by the quote, *"I am very interested in what I put in my mouth, at what quantity".*

The study's findings reflected various personal reasons influenced consumers' use of nutrition information labelling, including health considerations and personal interest in food products. Studies on food label reading behaviours suggest a positive relationship between knowledge of nutrients and the use of nutritional tables when shopping for food products (Xazela et al., 2019), which may support consumers' personal reasons for using nutrition information labelling. Consumers who are concerned about the health implications of the nutrients in food products have a greater interest in reading food labels because they may understand the purpose of the information better than other consumers who are less health conscious (Moore et al., 2018). Similarly, consumers may read food labels for different personal interests, like

determining if the nutrients in the food products meet their health goals, which may include aspects such as weight loss or muscle gain (Duvenage et al., 2015).

Table 5.13: Participants' reasons for using nutrition information labelling

CATEGORY	QUOTES
1. Health considerations	*"if I am trying to eat healthy, I do look at the nutritional content".* *"It's all about the energy my body needs".* *"the purpose remains, it is for my health".* *"to check the products that are not good for my health".* *"to know that I am within the nutrient count for the day".*
2. Personal interest	*"I must read about the product that I am buying".* *"when there is something specific".* *"I am very interested in what I put in my mouth, at what quantity".* *"to check fat and sugar content".* *"I need to make sure it doesn't contain lots of fat".* *"so that I know how much salt and sugar I am ingesting".* *"It all about knowing the benefits of the product".* *"I use it for my own protection, as I have to get value for money".* *"safety of the product".*

5.5 QUALITATIVE FINDINGS RELATING TO CONSUMERS' USE AND UNDERSTANDING OF MACRONUTRIENTS AND ENERGY INFORMATION (OBJECTIVE 2)

The second part of the participants' online interviews examined consumers' use and understanding of macronutrients and energy information by focusing on the following sub-objectives: sub-objective 2.1 – consumers' understanding of the word "macronutrient"; sub-objective 2.2 – consumers' use and understanding of macronutrient information; and sub-objective 2.3 – consumers' use and understanding of energy information. These sub-objectives are presented according to the questions that were asked to explore the second objective. The findings related to each sub-objective and question are discussed in terms of key categories that emerged from the data. It was ultimately found that consumers who care about a healthy lifestyle were more interested in reading food labels and understanding macronutrient information (Bellissimo & Akhavan, 2015; Kim et al., 2020).

5.5.1 Qualitative findings regarding consumers' understanding of the word 'macronutrient' (sub-objective 2.1)

Hernandez (2023) defines macronutrients as a class of chemical compounds that provide the energy needed for growth, metabolism, and other bodily functions. To examine the participants' understanding of the word macronutrient, the first question asked: **"When you hear the word 'macronutrient', what comes to mind?"** (Question 1.1.14 in Appendix D). Based on participants' responses to this question, two categories emerged that define participants' understanding of the word 'macronutrients'. The first category identified macronutrients as (1) **essential nutrients**; a participant stated, *"it is the nutrients that are required to be consumed in large amounts"*. The second category suggested macronutrients are (2) **body-building nutrients**, as supported by a participant's quote that macronutrients *"are the immune boosters that our body needs".* Awareness about macronutrients is an area that has received much attention, and this study's findings concur with previous research (Sethi & Raina 2020) that consumers' awareness of macronutrients encouraged them to make informed decisions related to the purchase and consumption of food items. Conversely, Agize et al. (2017) found that mothers in Ethiopia were very interested in food products that provided nutrients for building their children's bodies. Each category is presented with relevant quotes in Table 5.14.

Table 5.14: Participants' understanding of the word macronutrients.

CATEGORY	QUOTES
1. Essential nutrients	*"nutrients that are found in larger quantities"* *"it something our body requires in bigger/larger amounts"* *"they are large nutrients required by the body"* *"macro it must be something big and then nutrients"* *"macro means big and obviously nutrient is food"* *"it is the nutrients that are required to be consumed in large amounts"* *"nutrients our body need in larger amounts"* *"are those nutrients that are bigger"* *"Macronutrients are body builders"*
2. Body-building nutrients	*"are the immune boosters that our body needs"* *"it is a balanced diet"* *"macronutrients are ingredients of that particular food product"*

After the participants explained their understanding of the word macronutrient, the researcher wanted to determine if they knew any of the macronutrients. The following question was **"To confirm, please list the macronutrients that you know of"** (Question 1.1.15 in Appendix D). From the analysis of this question, two groups of participants emerged. The first group

were (1) **informed participants** who correctly listed some of the macronutrients as including "*carbohydrates, fats, protein, fiber, water*". The second group were (2) **uninformed participants** who were unable to correctly list macronutrients. These participants mentioned "*vitamins, minerals, magnesium, zinc, fruits, oils and spices and water*"; although some of these were macronutrients, others were micronutrients.

Extant literature on consumers' understanding of macronutrients has revealed that informed consumers have a better awareness of macronutrients than uninformed consumers (Rampersaud et al., 2014; Lach et al., 2016). In this study, uninformed participants lacked an understanding of the nutrients that are considered macronutrients, which supports the earlier findings that uninformed consumers do not consider nutrients contained in the food products, nor are they aware of macronutrients. Each category is presented with accompanying quotes in Table 5.15.

Table 5.15: Participants' examples of macronutrients

CATEGORY	QUOTES
1. Informed participants	*"carbohydrates, fats, protein"* *"fiber, lipids, water"* *"carbohydrates and fibre"* *"fibre, carbohydrate and protein"* *"saturated fats"* *"dietary fibre"*
2. Uninformed participants	"*vitamins, minerals, magnesium"* *"vinegar, salt, sugar"* *"zinc, calcium, iron"* *"fruits"* *"type of oils and spices"* *"vitamins and minerals"* *"water"*

The next question explored the importance of macronutrients to the participants. The researcher asked, **"How important are macronutrients in the diet?"** (Question 1.1.16 in Appendix D). From the participants' responses to this question, three categories emerged that defined the importance of macronutrients in the participants' diet. The first category was the participants' views relating to (1) **well-being**, as supported by a quote from a participant stating, *"they help overall health"*. The second category that emerged focused on the importance of macronutrients in maintaining (2) **body functionality**, which is explained by a participant reflecting, *"each macronutrient plays an important role in the human body"*. The third category emphasised the importance of macronutrients in sustaining (3) **energy** within the body, a view that was supported by a participant's claim, *"they provide energy"*. Moore et al. (2018) found that consumers who were concerned about the health consequences of

nutrients in food products were more likely to read product labels because they understood the purpose of the information. In Moore et al.'s study, participants who understood the significance of macronutrients were consumers who read food labels. Zhao and Araki (2021) revealed that although the association between dietary intake and non-communicable diseases is well established, little is known about the macronutrient intake status of adult Chinese people. Each category is presented with relevant quotes in Table 5.16.

Table 5.16: Importance of macronutrients in the diet

CATEGORY	QUOTES
1. Well-being	*"I think they are essential to my health".* *"I think they benefit my health".* *"they prevent diseases".* *"they help overall health".* *"they are important for our bodies to be well nourished".* *"they are very important when it comes to my health".*
2. Body functionality	*"maintain body functions".* *"allow body to function properly".* *"are needed for functionality of the body".* *"they help body to function correctly".* *"they play an important role in the body".* *"each macronutrient plays an important role in the human body".*
3. Energy	*"because they give us energy".* *"they provide energy".* *"we need energy to function".* *"they provide energy in order to maintain body functions".* *"they provide energy needed to carry out daily functions".*

Based on participants' understanding of macronutrients, it was necessary to examine participants' knowledge of which macronutrients provide energy to the body. The question was, **"Which of the macronutrients that you previously mentioned provide energy to the body?"** (Question 1.1.17 in Appendix D). From the participants' responses to this question, one category emerged, reflecting participants' views that macronutrients are a (1) **source of energy**, which is explained by the participants' quotes, *"fats and carbohydrates", "carbohydrates, fats and proteins".* Seemingly, most participants identified carbohydrates and fats as the main macronutrients that provide energy. However, in some instances, these nutrients were combined with other nutrients such as sugar, calcium, protein and fibre as macronutrients, which suggests that some participants did not have the correct information about which macronutrients provide energy. Fellows (2009) explains macronutrients are energy suppliers required for development, metabolism, and other bodily activities. Macronutrients were further classified as chemical compounds such as carbohydrates, proteins, fat, water and atmospheric oxygen. Some participants thus provided correct

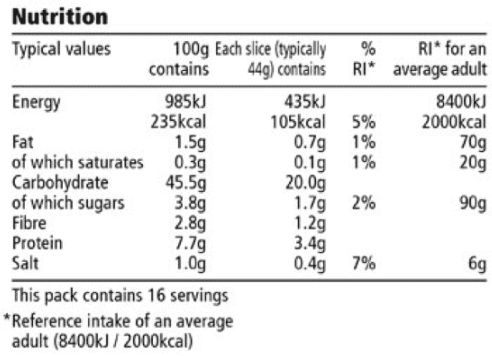
information, while others were unsure in their responses. According to Prentice (2005), the three major types of macronutrients that provide energy to humans are carbohydrates, fats, and proteins, which align with the findings of this study's participants mentioning carbohydrates, fats and proteins as part of macronutrients, as seen in Table 5.17.

Table 5.17: Macronutrients that provide energy

CATEGORY	QUOTES
1. Source of energy	*"carbohydrates and fat"* *"I would say it carbohydrates"* *"sugar, carbohydrates and fat"* *"carbohydrates and fiber"* *"carbohydrates"* *"carbohydrates, fat and proteins"* *"carbohydrates, fat and calcium"* *"carbohydrates and sugar"* *"energy"*

5.5.2 Qualitative findings regarding consumers' use and understanding of macronutrient information [fats, carbohydrates, and protein] (sub-objective 2.1)

Fats are crucial nutrients for various functions in the human body as they insulate organs and make up cell membranes (Kumar & Kapoor, 2017). To examine the participants' understanding of fat in the diet, a digital image (see Figure 5.3) was presented to them to assist in answering the questions that related to this sub-objective. This was done to ensure that participants focused on the fat-related information on the label when answering the questions.



Nutrition

Typical values	100g contains	Each slice (typically 44g) contains	% RI*	RI* for an average adult
Energy	985kJ 235kcal	435kJ 105kcal	5%	8400kJ 2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	45.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

This pack contains 16 servings

*Reference intake of an average adult (8400kJ / 2000kcal)

Figure 5.3: Nutrition information label on South African bread

Source: Open Food Facts

5.5.2.1 Fat

The first question was: **"What is your understanding of fat in the diet?"** (Question 1.1.18 in Appendix D). Based on participants' responses on their understanding of fat in the diet, three categories emerged. The first category presented a (1) **description of fats**, with participants saying, *"fats are essential oils"*. The second category that emerged stated that fat in the diet is a (2) **source of energy** since the *"body stores fat to be used later as energy"*. The third category that emerged associated fat with (3) **body temperature**; a participant explained, *"they help to warm up the body"*. Savarino et al. (2021) found that individuals' awareness of fat did not imply consumers understood its association with heart disease. However, Lin et al. (2010) found that consumers who had heard of trans fat and n-3 fatty acids knew that these fats increased and reduced the risk of heart disease, respectively. Literature indicates that consumers observe the benefits of fats in food products, yet they forget or overlook the harmful effects that come from the excessive consumption of fats. Similarly, in this study, participants focused on the benefits of fats in their food products. Each category is presented with a quote in Table 5.18.

Table 5.18: Participants' understanding of fats

CATEGORY	QUOTES
1. Description of fats	"*fats are the oils that the body use".* *"it would be considered as oils".* *"fats is oily staff".* *"fats are essential oils".*
2. Source of energy	*"body stores fat to be used later as energy".* *"we need energy to function".* *"they give us energy".* *"they give our body energy".* *"they also assist in giving energy".* *"they help the body to build energy".*
3. Body temperature	*"they help to warm up the body".* *"to keep us warm".* *"they are important because they give body warmth".*

Based on the participants' understanding of fat in the diet, the researcher next examined their interpretation of fats and asked: **"When considering the fat content in the above food label, how do you interpret fat?"** (Question 1.1.19 in Appendix D). The analysis of this question led to the emergence of two categories reflecting participants' interpretation of fat. The first was in terms of the (1) **fat content level**, as supported by a quote that *"the fat content is low".* The second category was (2) **indicator interpretation** of the information provided in the panel of nutrition information. This category was supported by a participant's statement

that "*100g of the bread has 1.5g of fat".* The qualitative findings indicated that some participants interpreted fat content based on how low it was, and others used the indicator information to gain some understanding of the amount of fat in the food products. It is not certain whether the values were meaningful to the participants or how they related to the information. Research shows that consumers have a general understanding of fat and its impact on health (Bucher & Siegrist, 2015), but it is unclear against which benchmarks consumers evaluate the fat content of food products. Each category is presented with relevant quotes in Table 5.19.

Table 5.19: Participants' interpretation of fats

CATEGORY	QUOTES
1. Fat content level	*"the fat content is low".* *"the fat content from the RI is low because it 1%".* *"I would say fat is low".* *"the amount of fat is okay".* *"our slices, it means I would have consumed 2.8g of fat".*
2. Indicator information	*"Fat level between 100g to 2.8 g"* *"100g of the bread has 1.5g of fat".* *"recommended average for an adult is 70g".* *"a 100g each contains 1.5g of fat".* *"I use the RI percentage to determine fat content".* *"I normally consider RI for an average adult".* *"the fat amount is 0.7g".* *"in a 100g of bread, 1.5g the amount is fat".* *"since I normally eat fat"*

Based on the findings on participants' interpretation of fats in the diet, the following question was: **"Based on your understanding of fat in the diet, how important is the food label to you when it comes to the fat content of food?"** (Question 1.1.20 in Appendix D). Three categories emerged during the analysis that best describe the importance of the food label when considering the fat content. The first category reflected it creates (1) **participants' awareness**, as a participant explained, *"I need to know how much fat I am going to consume"*. This suggests that some participants were concerned about the fat content in the food products they purchased. The second category illustrated that the food label informs participants about the (2) **health considerations** they should look out for when purchasing the food product. This view was supported by a participant's view that *"high consumption of fat can lead to many diseases".* The third category that emerged suggests that the food label supports (3) **participants' knowledge** about fat in the diet, and they may use this information to interpret the fat content of the food product, as explained by a participant who said, *"it is important because fats absorb nutrients in the body".*

From the participants' responses to this question, it can be deduced that some participants had some knowledge of why fats are important, and they used food labels to review the amount of fat products contained before they purchased a food product. Ranga and Venter's (2017) findings revealed that the first-year students in self-catering residences at the Cape Town University of Technology had average fat food knowledge and poor or below-average fat-nutrition knowledge. Other findings from Field and Robinson's (2019) study suggest that insufficient intake of fat, together with inadequate protein and carbohydrate intake, may lead to negative energy balance and weight loss. This study indicates that participants had average fat knowledge but poor fat-nutrition knowledge. Each category and accompanying quotes are presented in Table 5.20.

Table 5.20: Importance of fats in the food label

CATEGORY	QUOTES
1. Participants' awareness	*"to know the amount of fat in a product that I am purchasing".* *"I need to know how much fat I am going to consume".* *"so you would know how much you should take and cut down".* *"I have to know, for food to be of great value for money".* *"it shows me fat content that is contained by the product".* *"it tells me the quantity of fat I am consuming".*
2. Health considerations	*"also for health purposes".* *"high consumption of fat can lead to many diseases".* *"because of minding my health".* *"so that I can limit fat intake if it's too much".* *"my body cannot tolerate fatty food".*
3. Participants' knowledge	*"it is important because fat must not be consumed excessively".* *"it is important because fat absorb nutrients in the body".* *"it has the information I need on fat".*

Based on the importance participants placed on fat information on the food label, the researcher next examined if fat determined participants' purchase intentions. The question was, **"Does fat in a food product determine your intention to purchase the product?"** (Question 1.1.21 in Appendix D). Some participants responded 'yes', fat does influence their intention to purchase a food product, which was attributed to (1) **health considerations** as supported by a quote from a participant, *"I usually avoid foods with high fat and sugar content because of my health"*. This indicates that some consumers consider fat content in the food products they purchase because they must maintain their health and well-being. Some participants responded 'no' to this question, and two categories emerged. Some said 'no' due to a (1) **lack of understanding**, as a participant said, *"I don't understand the breakdown of amounts".* This suggests that some participants did not know how to interpret the information on fats, which did not affect their purchase intention of food products with fat content. The

second category that emerged indicated that food purchases were made on the basis of participants' (2) **personal interest** in the food product and not the fat content, as evident in a quote from a participant explaining, *"I buy for satisfaction"*. Some participants thus fulfilled their desire to purchase a food product not based on the fat content but on their enjoyment of the food product.

Other participants responded they 'sometimes' take the fat content of a food product into consideration because they are considering their (1) **body weight**; this is explained by a participant stating they review the fat content *"when I see that I am gaining too much weight"*. Existing research indicates that non-communicable diseases may cause consumers to reduce their weight after being overweight (O'Brien et al., 2007; Moreira & Washi, 2012; Shangguan et al., 2019). Each category is presented with accompanying quotes in Table 5.21.

Table 5.21: Participants' intention to purchase of food items with fats

CATEGORY	QUOTES
Yes	
1. Health considerations	*"I usually avoid foods with high fat and sugar content because of my health".* *"if the product contains high amount of fat, I won't buy it".* *"I have to consume small amount of fat to reduce the risk of heart diseases".* *"I avoid buying products with high amount of fat".* *"I buy low-fat products".*
No	
1. Lack of understanding	*"I don't understand the breakdown of amounts"*
2. Personal interests	*"when I want to eat something nice, I don't consider the amount of fat".* *"I buy for satisfaction".* *"I am very particular with margarine; I only buy low-fat".*
Sometimes	
1. Body weight	*"when I see that I am gaining too much weight".* *"when I want to lose weight".*

5.5.2.2 Carbohydrates

After the participants shared their understanding and interpretation of the importance of fats and their impact on their purchase intention of food items, they also had to answer some questions on carbohydrates, based on Figure 5.2. Carbohydrates are an important part of a nutritional diet and are relatively known as the body's main energy source (Holesh et al., 2023). The first question was: **"What is your understanding of carbohydrates in the diet?"** (Question 1.1.22 in Appendix D). Based on the participants' understanding, three categories emerged suggesting that carbohydrates are related to (1) **energy supply**, as a participant

stated, carbohydrates *"are the main energy source to the body"*. This possibly indicates that some participants understood and distinguished carbohydrates as the main source of energy for the body. The second category that emerged reflected the (2) **knowledge** participants had about carbohydrates. A participant mentioned, *"it's the main macronutrient"*. The third category was specific to bodily function in maintaining (3) **body temperature**, as explained in the quote from a participant saying, "*they help with insulating body with warmth"*. The findings suggest that participants understood what carbohydrates are and their role in the diet as they were able to offer a brief description of carbohydrates and their benefits. Each category and quotes are presented in Table 5.22.

Table 5.22: Participants' understanding of carbohydrates

CATEGORY	QUOTES
1. Energy supply	"*in a diet it gives energy".* *"they are a source of energy".* *"are responsible to give us energy".* *"a source of energy in the body".* *"assists in energy storage".* *"provide body with energy".* *"are main energy source to the body".* *'it is the energy the body needs during an exercise or movement".*
2. Knowledge	*"they are very filling as compared to other nutrients".* *"it's the main macronutrient".*
3. Body temperature	*"they help with insulating the body with warmth".* *"they keep us warm".*

Based on the participants' understanding of carbohydrates in the diet, the researcher explored their interpretation of carbohydrates and asked: **"When considering the carbohydrate content in the food label above, how do you interpret carbohydrates?"** (Question 1.1.23 in Appendix D). From their responses, two categories emerged. The first category used an (1) **analytic approach** to the detail on the food label in terms of how much carbohydrates the product contained. A participant mentioned, *"100g contains 45.5g and each slice contributes to 20g"*, indicating that some participants could interpret the carbohydrate content provided on a food label. However, it is uncertain what they understood of the amounts and what judgements they made of the specific amounts listed on the food label. The second category that emerged rather disclosed consumers' (2) **lack of understanding** of what the carbohydrate information on the product presented. A participant said, *"it is very difficult to interpret*", suggesting that some participants could not interpret the carbohydrate content presented in a food label.

Previous research has found that a lack of understanding about food labelling and what it implies restricts consumers' readiness to pay and how much they are prepared to pay for food products (Hutton & Gresse, 2020). According to research, consumers who do not read food labels, possibly because of a lack of understanding, do not choose healthier products (Penzavecchia et al., 2022). Each category is presented with accompanying quotes in Table 5.23.

Table 5.23: Participants' interpretation of carbohydrates

CATEGORY	QUOTES
1. Analytic approach	"*for every 100g you will find 45.5g of carbohydrate".* *"45.4g of carbohydrate is in 100g of bread".* *"in each slice which is roughly 44g you will get 20g of carbohydrate".* *"with 100g of bread, there is 45.5g of carbohydrate content".* *"there is 45.4g per 100g".* *"it contains 20g of carbohydrate in each slice".* *"I can see 45.5g".* *"100g contains 45.5g and each slice contributes to 20g".* *"I think the carbohydrate content is moderate".* *"this product has much carbohydrate in it".* *"I think the food label has a large amount of carbohydrate".*
2. Lack of understanding	*"I cannot interpret it correctly".* *"I don't know how to interpret?"* *"it does not make sense".* *"it is very difficult to interpret".* *"I do not understand".* *"I really don't understand everything that is going on this table".*

After generating qualitative findings of participants' interpretation of carbohydrates, the researcher queried the importance of food labels when it comes to products' carbohydrate content. The researcher asked: **"Based on your understanding of carbohydrates in the diet, how important is the food label to you when it comes to the carbohydrate content of food?"** (Question 1.1.24 in Appendix D). From the analysis of this question, three categories emerged; the first category reflected that food labels containing carbohydrate information created (1) **awareness**, as supported by a participant stating, *"so that we are aware of how much we are consuming"*. This information indicates that some participants are interested in knowing what quantity of carbohydrates are contained in a food product before making any food purchases. Regardless of whether they were added or naturally present in the food, knowing what amount of carbohydrates are in food is crucial because excessive consumption can contribute to overweight, obesity, and cardiovascular disease (Ludwig, 2018). The second category that emerged was reflective of the (2) **health considerations** participants made based on the food label information on carbohydrates. A participant shared,

"it also helps our sugar levels", suggesting that some participants first consider the health benefits of a product based on its carbohydrate content before purchasing it. Marinangeli et al. (2019) indicate that over the last decade, carbohydrates have been scrutinised by the media and consumers as having the potential to negatively affect human health. In this study, participants were aware that if they consumed an excess of carbohydrates, it may cause sugar levels to rise and lead to serious diseases, such as hypertension.

The last category that emerged was indicative of (3) **participants' knowledge** about carbohydrates, which is evident in a quote from a participant that, *"they tell me how much carbohydrate are contained in a product"*. Kanter (2018) found that people who are involved in fitness training have a greater interest in the carbohydrate content in the foods they buy. This may further relate to the findings in this study, as participants were cautiously knowledgeable in observing the carbohydrate content in their food products. Each category and accompanying quotes are presented in Table 5.24.

Table 5.24: Importance of carbohydrates in a food label

CATEGORY	QUOTES
1. Awareness	*"it is important to know".* *"definitely need to know how much you take".* *"so that we are aware of how much quantity we are consuming".* *"to know how much carbohydrate are in that particular food product".*
2. Health considerations	*"especially when you want to cut down on calories".* *"they help to regulate blood clots".* *"it relates to my daily diet".* *"it also helps our sugar levels".*
3. Participants' knowledge	*"for the diet to be balance it also need carbohydrates".* *"are very key mainly on what we consume".* *"it is the mother of all macronutrients".* *"because everyone needs energy".* *"it gives information on how much carbohydrate you supposed to take".* *"it provides our body with energy".* *"they inform about how much carbohydrate provide energy to the body".* *"they are the main source of energy".* *"they tell me how much carbohydrate are contained in a product".*

Based on the importance of carbohydrate information on the food label, it was necessary to examine if carbohydrate content determined participants' intention to purchase packaged food products. The following question was posed: **"Does carbohydrate in a food product determine your intention to purchase the product?"** (Question 1.1.25 in Appendix D). Some participants responded 'yes', agreeing that the presence of carbohydrate information

on the food product label influenced their intention to purchase the food product due to their (1) **health consciousness**; a participant said, *"I am one of those consumers that are health conscious"*. Or they were interested in the (2) **energy content** *"because carbohydrates are important for energy"*. It is evident that all the participants who answered 'yes' to the question had specific reasons as to why carbohydrate information impacted their intention to purchase packaged food products.

None of the participants indicated that they did not use the carbohydrate information when purchasing food products. Some participants responded 'sometimes', and only one category emerged, namely (1) **personal interests**, as suggested by this participant mentioning that *"it depends on my purpose for that time"*. This indicates that some participants' purchase intention of food products is dependent on the reason they need food items with specific carbohydrate contents. Each category and quotes are presented in Table 5.25.

Table 5.25: Participants' intention to purchase of food items with carbohydrates

CATEGORY	QUOTES
Yes	
1. Health consciousness	*"because carbohydrate play an important role in our diet".* *"I am one of those consumers that are health conscious".* *"in each and every item that I buy, it should contain carbohydrate".*
2. Energy	*"because carbohydrate are important for energy".* *"I have to eat food that will give me more energy".*
Sometimes	
1. Personal interests	*"it will depend on my intention".* *"it depends on my purpose for that time".* *"if there is anything that is particular, I make use of it".* *"sometimes I overlook because the body also does not need too much carbohydrate".*

5.5.2.3 Protein

Once the researcher examined the participants' understanding, interpretation, the importance of carbohydrates in the diet and their purchase intention of food items with carbohydrate content, they also had to answer some questions on proteins. According to Roth (2018), proteins particularly provide structure to bones, muscles and skin, and they also provide nitrogen to human body cells. Participants were asked: **"What is your understanding of protein in the diet?"** (Question 1.1.26 in Appendix D). From the analysis, two categories emerged that best represented participants' understanding of protein. The first category reflected proteins is a (1) **muscle-building nutrient** *"important for building muscles in the body"*. The second category that emerged reflected protein's impact on the (2) **body's**

functionality, as explained in the quote that it, *"contributes to health, body and healing of wounds"*. These findings indicate that some participants understood the functionality of proteins curing injuries in the body. Each category is presented with accompanying quotes in Table 5.26.

Table 5.26: Participants' understanding of proteins

CATEGORY	QUOTES
1. Muscle-building nutrient	*"are very good because they build muscles and also for energy".* *"are like building blocks of the body".* *"they are needed in the body to build and repair cells".* *"they help to build muscles when you have an injury".* *"important for building muscles in the body".* *"they contribute on building tissues and repair skin molecules".* *"they assist with building our body organs and tissues".* *"they build muscles and also they assist in healing of wounds".* *"protein help with muscles".*
2. Body functionality	*"are very good for processing nutrients".* *"protein is what we get from meat, beans, fish".* *"contributes to health, body and healing of wounds".* *"obviously we have meat-protein and then plant-protein".* *"they help with mental health as well".* *"they also help when it comes to blood".* *"is the nutrient your body needs to grow, repair cells and work properly".* *"they keep us warm".*

Based on participants' understanding of proteins in the diet, the researcher examined their interpretation of proteins based on the food label provided in Figure 5.3. The researcher asked: **"When considering the protein content in the above label, how do you interpret protein?"** (Question 1.1.27 in Appendix D).

Two categories emerged from the analysis that indicated whether participants considered the protein content on the food label. The first category reflected an (1) **analytic approach**, as a participant explained, *"I think 100g of bread contains 7.7g of proteins, so each slice contains 3,4g of proteins";* this may suggest that some participants were able to understand and interpret the amount of protein in the food product. Again, it is unclear what the amounts meant to them and what their judgement of the amounts was. However, extant literature shows that there are consumers in both developed and underdeveloped countries who take measures to understand food components before deciding to make a purchase (Rønnow, 2020; Zafar et al., 2022). However, reading food labels is an activity typically associated with health

consciousness (Bryla, 2019), and may require some consumers to understand the amount of proteins food products contain.

The second category reflected a (2) **lack of understanding**, as participants said, *"it's a bit confusing"*, indicating that some participants had difficulties interpreting protein information on the food label. Sarkodie and Boakye-Kessie (2017) found that individuals with lower educational levels lacked an understanding of food labels and were consequently unable to use the information. Each category is presented with accompanying quotes in Table 5.27.

Table 5.27: Participants' interpretation of proteins

CATEGORY	QUOTES
1. Analytic approach	*"7.7g talks about the whole amount of protein in the bread".* *"3.4g per slice".* *"I think with protein there is 3.4g that is contained in each slice".* *"I think 100g of bread contains 7.7g of proteins so each slice contains 3.4g of proteins".* *"this amount of protein which is 7.7g is acceptable".* *"proteins are not too much, and they are not too less".* *"proteins are in a right amount".* *"I think this amount of bread is acceptable".*
2. Lack of understanding	*"it doesn't make sense to me".* *"it is a bit confusing".* *"I don't understand".* *"I do not understand the information on grams".* *"I am unable to interpret".* *"I don't know how to interpret it, specifically for this one but I find it very difficult for all macronutrients".* *"I don't know how to interpret the protein content".*

After generating qualitative findings from participants' interpretation of proteins, the researcher explored the importance of the food label when it comes to the protein content. The question asked was: **"Based on your understanding of protein in the diet, how important is the food label to you when it comes to the protein content of food?"** (Question 1.1.28 in Appendix D). Four categories emerged from the analysis that showed the importance of the protein content on the food label for participants. The first category that emerged showed its use in determining the product's (1) **body-building** capacity, and a participant explained protein *"helps in building body muscles, blood clotting and repairing body tissues"*. This indicates that some participants understood proteins' significant function, which is body-building. Bhupathiraju and Hu (2023) also argued that individuals who want to lose weight are typically more concerned with the protein content in their food products. However, those with a low level of education are less likely to interpret protein levels in their food products (Dutta

& Patel, 2017; Shahrabani, 2021). The second category that emerged was that the food label content created (2) **consumer awareness**, as a participant explained, *"they also make consumers aware of protein content each product has"*.

The third category suggested that the protein content in a food label is specified for (3) **dietary purposes** since *"it's helpful when it comes to counting protein intake for the day"*. This category reflects that some participants consider their recommended daily protein intake when making food purchases so that they limit it according to their dietary requirements. According to Ranga and Venter (2017), people who are health-conscious and those involved in dietary and weight-loss programmes have a greater propensity to read food labels and protein-rich products are highly observed. Similarly, the findings indicate that participants considered the amount of protein contained in their food products. The fourth category focused on protein as an (4) **important dietary element**, and a participant mentioned that "*it's definitely important"*. The last category was (5) **indifference**, which indicated the participants' lack of interest in explaining the importance of protein content on the food labels of products they purchase. A participant reflected, *"I really don't pay much attention to proteins"*. Research shows that when a consumer considers the dietary component 'protein' as important, they pay more attention to food labels to gain more insight into the food's content (Dutta & Patel, 2017). Each category and accompanying quotes are presented in Table 5.28.

Table 5.28: Importance of proteins in a food label

CATEGORY	QUOTES
1. Body-building	*"protein content help in building healthy body".* *"helps in building body muscles, blood clotting and repairing body tissues".* *"they help body building tissues".*
2. Consumer awareness	*"vegetarians, vegans, health-conscious consumer, body builders and people who want to lose or gain weight they want to know how much protein content is in a product".* *"they also make consumers aware of protein content each product has".*
3. Dietary purposes	*"it's helpful when it comes to counting protein intake for the day".* *"because some people for health reasons don't eat meat".*
4. Important dietary element	*"it's definitely important".* *"I guess it quite important".*
5. Indifferent	*"it's really not important".* *"I rarely check the protein content".* *"I don't know how to interpret the information".* *"I really don't pay much attention to proteins".*

Based on the importance of proteins on the food label, the next question determined if protein influences participants' purchase intention of food products. The question was: **"Does protein in a food product determine your intention to purchase the product?"** (Question 1.1.29 in Appendix D). From the responses, four categories emerged. The findings revealed that some participants said 'yes', and one category emerged focusing on (1) **specific products**. A participant shared, *"I usually check with smaller items"*, suggesting that some participants only review the protein content of specific products. A study conducted in the USA by Hartmann and Siegrist (2017) on consumers' perceptions and behaviours regarding sustainable protein consumption revealed that the majority of consumers believed protein is crucial to maintaining a healthy and balanced diet. Therefore, its volume should be considered before the consumption of any food product.

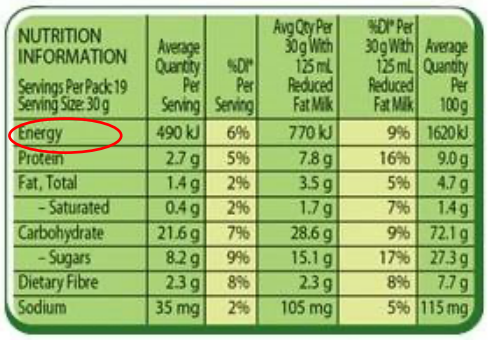
Other participants responded with a 'no', and one category emerged that showed a (1) **lack of interest** since they mentioned that protein content on a food label does not determine their purchase intention. A participant reported, *"I don't focus on proteins*, *I know I get proteins from different food sources"*. Extant literature shows that some sociodemographic characteristics, such as a lack of education and distance from urban areas were associated with a lack of interest in food labels among consumers (Freire, Waters, Rivas-Mariño, Nguyen & Rivas, 2017). Each category is presented with accompanying quotes in Table 5.29.

Table 5.29: Participants' intention to purchase of food items with proteins

CATEGORY	QUOTES
Yes	
1.Specific products	*"I do consider proteins on that particular product".* *"I usually check with smaller items".* *"although not with everyday product".*
No	
1. Lack of interest	*"it really doesn't matter".* *"not necessarily, I don't think I actually look at protein".* *"because I already know how much protein I take per day".* *"it doesn't really stick out or make me want to understand more about protein content".* *"it's just something that is there".* *"I don't focus on proteins, I know I get proteins from different food sources".* *"it is very difficult to check this kind of information".* *"because I am rushing to do other things in a day".*

5.5.3 Qualitative findings regarding consumers' use and understanding of energy information (sub-objective 2.3)

Once the researcher had examined the participants' use and understanding of macronutrient information, it was also necessary to examine their use and understanding of energy information. Food energy is defined as the energy released by substances known as nutrients, which mainly include carbohydrates, fats, proteins, and other organic compounds (Jiang et al. 2014). A digital image (see Figure 5.4) was presented to the participants to help them answer some questions related to energy information.



NUTRITION INFORMATION Servings Per Pack: 19 Serving Size: 30 g	Average Quantity Per Serving	%DI* Per Serving	Avg Qty Per 30 g With 125 mL Reduced Fat Milk	%DI* Per 30 g With 125 mL Reduced Fat Milk	Average Quantity Per 100 g
Energy	490 kJ	6%	770 kJ	9%	1620 kJ
Protein	2.7 g	5%	7.8 g	16%	9.0 g
Fat, Total	1.4 g	2%	3.5 g	5%	4.7 g
– Saturated	0.4 g	2%	1.7 g	7%	1.4 g
Carbohydrate	21.6 g	7%	28.6 g	9%	72.1 g
– Sugars	8.2 g	9%	15.1 g	17%	27.3 g
Dietary Fibre	2.3 g	8%	2.3 g	8%	7.7 g
Sodium	35 mg	2%	105 mg	5%	115 mg

Figure 5.4: Nutrition information label on South African milk product
Source: Nestle

The first question was: **"What is your understanding of energy in the diet?"** (Question 1.1.30 in Appendix D). From the qualitative findings, three categories emerged. The first category was (1) **consumers' description of energy**, which is explained by the participant's quote: *"it is derived from nutrients"*. This response indicates that some participants understand that energy is sourced from the nutrients individuals consume from their food products. Watson et al. (2015) explored Australian shoppers' understanding of energy information on food labels, and found that for consumers to completely understand energy, they must realise that it is the body's fuel and concretise this concept by applying the information in the context of their own lifestyle. Moreover, Jebb and White (2018) state that an understanding of what energy is assists consumers in realising its significance to their health; in particular, how excess energy intake leads to obesity.

The second category reflected on the (2) **strength obtained** from food products that provide energy, as suggested by a participant stating, "*it's the constituents that are contained in the product that will give me energy"*. Some participants knew energy is attained from the food they consume and that it gives the body its ability to function. According to research, providing information on energy content facilitates healthy food choices (Littlewood et al. 2016). The last

category that emerged showed the participants' (3) **lack of understanding** as a participant explained, "*I don't understand energy*". Recent studies show that most consumers misunderstand the nutritional values of food products without specific details (Correa et al., 2019; Freire et al., 2017). However, there is a scarcity of literature evaluating food labels' effect on consumers' purchasing intentions, with some studies indicating that food labels may improve the nutritional quality of consumers' choices and others reporting limited or null effects (Eze et al., 2017; Gordon et al., 2022). Each category and accompanying quotes are presented in Table 5.30.

Table 5.30: Participants' understanding of energy

CATEGORY	QUOTES
1. Consumers' description of energy	*"is a combination of nutrients".* *"is a total of kilojoules".* *"it is derived from nutrients".* *"energy is combination of different nutrients".* *"is what drives us".* *"is the component in food that helps support immune system".* *"should not exceed 1000kJ per that particular product".*
2. Strength obtained	*"I think energy is what you get from what you consume".* *"could be something that will give energy".* *"without energy you cannot function".* *"it's the constituents that are contained in the product that will give me energy".* *"energy usually keep us going".* *"if you don't have energy or low on energy you obviously feel tired".* *"if you have energy, you become more productive".* *"if you do not have energy, you do not have strength".* *"it helps us to have more energy to do our daily activities".* *"we all need energy to function, to work from one place to another".*
3. Lack of understanding	*"I don't understand energy".* *"when it comes to nutritional thing, I get confused".* *"I usually don't know how to interpret energy".* *"I don't understand at all".* *"I think energy comes from carbohydrates and sugar".* *"normally it comes in the form of starch or sugar".*

Based on participants' understanding of energy in the diet, the researcher next established what information participants used to determine what energy is provided by the food product. The question asked was: **"When considering the label on food products, which information do you use to determine the energy provided by the food product, and why?"** (Question 1.1.31 in Appendix D). Two categories emerged from the analysis, and the

first category described (1) **information used by participants**, as supported by a quote from a participant saying, *"I use average quantity per serving because it tells me how much I am getting in each serving"*. These findings suggest that each participant had specific information that they usually used to determine the energy provided by the food product. Van der Merwe et al. (2013) concurred that South African consumers judiciously read and interpret nutrition information on food labels. The second category indicated the participants' (2) **avoidance** of the energy information found on food products they purchase, and this was evident in a participant's claim, *"I don't go to such details"*. A study of the relationship between health awareness, lifestyle behaviour and food label use in Gauteng, conducted by Kempen et al. (2012), indicated that not reading nutrition labels may be attributed to consumers' lack of understanding of the information. Each category and accompanying quotes are presented in Table 5.31.

Table 5.31: Information participants' use to determine energy provided by the food product

CATEGORY	QUOTES
1. Information used by participants	*"I use information appearing as quantity per serving because per serving I know exactly that this item contains 490kJ".* *"I usually look at average preserving, it tells me about the amount of energy I am consuming".* *"I use average quantity per serving because it tells me how much I am getting in each serving".* *"the average quantity preserving and the average quantity per 100g".* *"I use average quantity per serving, it shows how much a food product contains".* *"I look at the energy part".*
2. Avoidance	*"I don't go to such details".* *"I just don't use it at all".* *"I cannot tell much because I am not well educated about these things, I don't look at it".* *"I won't lie and say I look at energy".*

After generating qualitative findings on the information participants use to determine the energy provided by food products, the researcher examined their purchase intention based on energy information. The researcher asked: **"Does the energy content in a food product determine your intention to purchase the product?"** (Question 1.1.32 in Appendix D). Some participants responded 'yes', and one category emerged reflecting their view of (1) **energy intake**; a participant explained, *"especially during the day the products that I consume, I make sure they are full of energy because I can't operate without energy".* This indicates that some participants considered the energy contained in food products to ensure they had

sufficient energy to perform their daily activities. Liu and Juanchich (2018) indicate that energy information is readily available as kilojoules on most food labels and is consistently included as key information in nutrition labelling, since it is relied upon by consumers when considering healthy food choices.

Some participants responded 'no', and one category showed their (1) **confusion**. Participants seemed not to understand what energy all is about, and a participant said, *"I really do not understand the energy information"*. This indicates that some participants had no knowledge about the energy contained in food products, and therefore could not use this information to benefit their health. Liu et al. (2015) suggest that the food label information has a null influence since decisions about the nutritional information of food products are made without engaging the consumers in reviews on whether the label is user-friendly. Therefore, evidence suggests that consumers often misunderstand the significance of energy or its contribution to their needs (Liu & Jaunchich, 2018). Other participants responded 'sometimes', and one category emerged, namely (1) **activity reliant**. Thus, they sometimes consider energy intake based on their energy requirements for scheduled activities. A participant explained: *"it depends on the activity I am about to do"*. Swartz et al. (2013) indicate that depicting energy in terms of physical activity may be more effective in prompting consumers to think about how the energy information label pertains to their lifestyle and diet. Each category and accompanying quotes are presented in Table 5.32.

Table 5.32: Participants' intention to purchase of food items with energy

CATEGORY	QUOTES
Yes	
1. Energy intake	*"exactly it does, if contains a lot that I don't need, then I wouldn't go for it".* *"I also consider drinking energy drinks when I am training because they contain a lot of energy".* *"especially during the day, the products that I consume, I make sure they are full of energy because I can't operate without energy".*
No	
1. Confusion	*"not at all, it does not determine my intention because I don't have much knowledge on this".* *"I really do not understand the energy information".*
Sometimes	
1. Activity reliant	*"most of the time it doesn't really matter, but when I am fasting the energy drinks speaks volume, that when I consider energy".*

CATEGORY	QUOTES
	"I will say sometimes because when I am something like Powerade when I am preparing for a workout sometimes, I check the energy". *"it depends on the activity I am about to do."*

5.6 QUALITATIVE FINDINGS RELATING TO THE INFLUENCE OF ATTITUDE, SUBJECTIVE NORMS, AND PERCEIVED BEHAVIOURAL CONTROL (OBJECTIVE 3)

The third part of the interview guide (section c) addressed the participants' attitude, subjective norms and PBC by focusing on the following sub-objectives: sub-objective 3.1 – consumers' opinion of macronutrients; sub-objective 3.2 – energy information; and sub-objective 3.3 – intention to purchase packaged food products, using Ajzen's (1991) TPB. These sub-objectives are presented according to the questions that were asked to describe the third objective of the study, and the information that emerged was based on the questions outlined in Appendix D. The findings related to each sub-objective, and questions are discussed in terms of key categories that emerged from the data.

5.6.1 Findings on consumers' opinions of macronutrients (sub-objective 3.1)

The first question to describe the participants' opinions of macronutrients was: **"What is your view/opinion of the quantity of carbohydrates, fats, proteins and energy when you purchase a food product?"** (Question 1.1.33 in Appendix D). Based on participants' responses to carbohydrates, three categories emerged. The first focused on (1) **high carbohydrate content**, and a participant stated: *"I expect the products I buy to show high content of carbohydrate"*. The second category that emerged was (2) **personal control**, which was highlighted by a participant mentioning that, "*with carbohydrate obviously, it is going to be the highest in most products, but I go for low-carb products for health reasons"*. The third category showed participants' (3) **individual perceptions**; a participant said, *"I would say I don't want too much carbohydrate because sometimes it makes me sleepy"*. A study by Clemente-Suraez et al. (2022) to explore the burden of carbohydrates in health and disease, described foods high in carbohydrates are a significant part of a healthy diet because they provide the body with glucose to sustain biological functions and physical activity. However, the extant literature suggests the abusive consumption of refined, simple, and low-quality carbohydrates has a direct impact on individuals' physical and mental health.

From the analysis of responses relating to fats, two categories emerged. The first category indicated the participants' (1) **individual needs**, which is suggested in the participant's quote, *"I expect the products I buy to show less of fat"*. The second category was attributed to participants' (2) **dietary restrictions**, and participants mentioned that "*with fat it is low-fat or fat-free"*. A study by Diekman and Malcolm (2009), on consumers' perceptions and insights of fat and fatty acids and their impact on the quality of their diet, revealed 38% of consumers claimed to avoid foods containing fat, while 59% of consumers believed fat should be avoided, and 65% believed a low-fat diet is a healthy diet. This suggests that consumers' understanding of fat is superficial since they are aware of the various forms of fat, but unaware of which are beneficial to health.

From the participants' responses on protein, three categories emerged. The first showed the (1) **specific necessity** of proteins, and a participant explained, *"sometimes I need proteins when I am injured"*. The second category indicates that there is a (2) **lack of attention** with regard to protein information; participants reported *"I don't usually look for information about proteins"*. The third category reflected a (3) **limitation of high protein intake**, as evident in the quote of a participant stating, *"I don't take much time to consider how much proteins are in the product"*. Extant literature shows that a plant-based diet may be perceived as unhealthy since many consumers still consider meat an indispensable and irreplaceable source of protein, which is why alternative protein sources have not gained much traction in the market. Consumers are hesitant to limit their meat intake and adopt a plant-based diet (Malek & Umberger, 2023). Gryson et al. (2014) and Pederson et al. (2014) mentioned that high-protein diets are increasingly recommended for weight management, muscle loss related to ageing and high-blood pressure control, as well as for combating obesity and ageing. However, it is unclear whether consumers really understand the difference between products that are inherently rich in protein and those with artificially increased protein content (Banovic et al. 2018).

Additionally, the participants had to share their opinions about the energy quantity in the food products they purchased. Two categories emerged, with the first focusing on (1) **key requirements**, supported by a quote from a participant: *"when I am buying a product it has to have all four nutrients because each provides different functions to the body"*. The second category showed participants' (2) **lack of interest** in using the energy information. A participant explained, *"I don't usually look for information about energy"*. Each category is presented with accompanying quotes in Table 5.33.

Table 5.33: Participants' opinion on the quantity of carbohydrates, fats, proteins and energy

CATEGORY	QUOTES
Carbohydrate	
1. High carbohydrate content	*"I expect the products I buy to show high content of carbohydrate".* *"carbohydrates are very important, I think we have to change our attitude as people of South Africa, as our country is classified as one of those countries with high obesity, so it is important to know how much we need per day and to know how much we need per serving".*
2. Personal control	*"with carbohydrate obviously is going to be the highest in most products but I go for low-carb products for health reasons".* *"it depends on the type of diet I am on, and as to how much of carbohydrate I am needing on that particular period".* *"it will depend on how much carbohydrate I am needing on that particular period, it will depend on what type of diet I am on".* *"I don't take much time to consider how much carbs are in a product".*
3. Individual perceptions	*"I would say I don't want too much carbohydrate because sometimes it makes me sleepy".* *"carbohydrates must be moderate otherwise you gain weight".*
Fats	
1. Individual needs	*"I expect the products I buy to show less of fat".* *"it depends on the type of diet I am on, and as to how much fat I am needing on that particular period".* *"it will depend on how much fat I am needing on that particular period, it will depend on what type of diet I am on".*
2. Diet restriction	*"I need fat not that much".* *"I think for fat products must have less fat, because there is no need to consume much fat".* *"with fat it is low-fat or fat-free".* *"especially those that I know has a lot of fat in them, that the only thing "I will be more cautious about other than that the rest I simply grab and take".* *"I do look at fat".* *"I may say in South Africa there a lot of people who are overweight and obese, in my opinion they should consider their fat intake".* *"any product that contains fat we need to know whether it contains saturated or unsaturated fat".* *"we need to know the fat content so that we can use the product accordingly".*
Proteins	
1. Specific necessity	*"sometimes I need proteins when I am injured".* *"I would protein it would be high protein".* *"in terms of protein it is very important for our immune system, it prevents bleeding, so we definitely need to know how much protein we take daily".*
2. Lack of attention	*"I don't usually look for information about proteins".*
3. Limitation of high protein intake	*"I don't take much time to consider how much proteins are in the product".* *"I expect product I buy to have medium of protein".*

CATEGORY	QUOTES
Energy	
1. Key requirement	*"when I am buying a product, it has to have all four nutrients because each provides different functions to the body".* *"they must all be in a product, because they are all needed in the body but in good quantity".*
	"I think they are important for us to consider because it does help our body". *"all four are important because they may contribute to a person being obese".* *"I need energy very much".* *"I know it's important because it does contribute to my body".* *"in terms of energy it is important if you have children to know how much energy is contained because some of the sugars that are contained will either make the kids hyperactive or if a child is weak you might need to opt or increase a bit".* *"I expect product that buy to show high content of energy".*
2. Lack of interest	*"with energy not so bothered about that".* *"I don't usually look for information about energy".*

The following question was: **"In what way does your attitude towards the macronutrients/energy influence your decision to purchase a food product?"** (Question 1.1.34 in Appendix D). From the participants' responses on macronutrients and energy, four categories emerged. The first category focused on participants' (1) **mood**, since participants said "*my purchasing decision depends on my mood for the day or how am I feeling like in terms of what to eat. If I feel like indulging on certain food product, I just do so"*. The second category that emerged highlighted participants' (2) **financial constraints**, and it was supported by a participant's claim that "*I would say my intention depends on that particular situation because sometimes you purchase a product while not having enough money so you buy what you can get"*. The third category showed participants' (3) **health consciousness**, and a participant shared, *"I think it influences me in a good way because when I am purchasing the product, I would really know what I am purchasing to assist myself to eat healthy food for my body".* The fourth category indicated that macronutrients and energy influence participants' (4) **purchasing decisions**, as supported by a participant's claim that, *"I would say it influences my buying decision"*. Macronutrients and energy information influence participants' intention to purchase packaged food products. The findings suggest that purchasing circumstances can affect the consumer's product selection process (Nguyen et al. 2019), which also influences the consumer's behaviour and perception of food products, as consumers demand a new range of shopping experiences from time to time (Gao et al. 2022). Each category is presented with accompanying quotes in Table 5.34.

Table 5.34: Participants' attitude towards macronutrients and energy

CATEGORY	QUOTES
1. Mood impact	"*my attitude is that it does play a role in my decision to buy a food product, most importantly if I am going to use the product immediately".* *"my mood depends on my mood for the day or how am I feeling like in terms of what to eat. If I feel like indulging on certain food product, I just do so".* *"most of the time it is my mood that influences my decision to purchase packaged food products with macronutrients and energy".* *"it depends on how I feel at that particular time, so if I am more focused on being health conscious, I would steer more to buy low-carb, fat-free products".*
2. Financial constraint	*"I would say my intention depends on that particular situation because sometimes you purchase a product while not having enough money so you buy what you can get".* *"sometimes I cannot afford health product, then I would end up buying cheap food stuff".*
3. Health consciousness	*"I would say it all about the intake of food and the type of food I am consuming because I am not that health conscious".* *"I think it influences me in a good way because when I am purchasing the product, I would really know what I am purchasing to assist myself to eat healthy food for my body".*
4. Purchasing decision	*"it does contribute highly on me buying the product, all of them".* *"I would say it influences my buying decision".* *"it influences the decision because any body needs good food products that has macronutrients and energy to have a good health".* *"it doesn't really influence it that much because some of the information I know how to interpret it and some of it I don't know".*

5.6.2 Findings related to energy information (sub-objective 3.2)

The first question to describe the participants' subjective norms on energy information was: **"Do you feel socially pressured to consider the macronutrients/energy contained in food products? If so, why?** (Question 1.1.35 in Appendix D). Some participants responded 'yes', and three categories emerged from this answer. The first category showed they experienced (1) **public-associated pressure** and mentioned, *"sometimes when I want to please my followers because they also get influenced by seeing me try to be health conscious"*. This indicates that some people do feel pressure from social media platforms to purchase certain food products with macronutrients and energy information labelling. The second category that emerged showed (2) **behaviour influence**, and a participant shared, *"I can say I feel socially pressured because purchasing food items for the family you must*

consider everyone's health". Extant literature shows that consumers' behaviour when purchasing food products can be influenced by the information provided on food labels (Perumal et al. 2023). The third category that emerged indicated (3) **health promotion practices** led participants to consider the information on the food label. A participant mentioned, "*our government is promoting less fat and less salt, so we literally pressured to check these things before purchasing any product"*.

Other participants responded 'no' to this question, and two categories emerged from this answer. The first showed that the participants were (1) **resistant to social influence**, and a participant said, *"I don't allow pressure, I buy as I need and what best suit me at that time"*. The second category that matched the participants' responses was (2) **consumer resistance to pressure**, as indicated in the participant's feedback *"really, I am not pressured because I do what works for me, what works for me might not work for someone, so outside pressures they don't really matter to me".* Each category is presented with accompanying quotes in Table 5.35.

Table 5.35: Information on pressure associated with macronutrients and energy

CATEGORY	QUOTES
Yes	
1. Public-associated pressure	*"if I am attending a particular event then I am pressured to eat whatever that is being served in that event".* *"sometimes when I want to please my followers because they also get influenced by seeing me try to be health conscious".* *"when it comes to food, yes because when it comes to being healthy and I want to lose weight I need to make sure that I eat certain amount of fat, starch and protein so I achieve my goal".*
2. Behaviour influence	*"I can say I feel socially pressured because purchasing food items for the family you must consider everyone's health".* *"I do feel sometime more pressure, I am a sports person when sometimes I go for a tournament so our coach/trainer will make sure you try to be strict on your diet".*
3. Health promotion practices	*"our government is promoting less fat and less salt, so we literally pressured to check these things before purchasing any product".* *"I would say there is a bit of pressure to actually consider, because there is a health movement, now everyone is trying to be healthy and be aware and know what they are actually consuming".*
No	
1. Resistant to social influence	*"I don't allow pressure, I buy as I need and what best suit me at that time".*

CATEGORY	QUOTES
	"I don't feel socially pressured because most people they don't really pay much attention to this kind of information".
2. Consumer resistance to pressure	*"really I am not pressured because I do what works for me, what works for me might not work for someone, so outside pressures they don't really matter to me".* *"I never felt pressured about that, I buy what works for me, what I want".* *"I don't think there is any pressure in terms of how much I should take, I think it a health-conscious thing, something I do it myself".*

After establishing if the participants felt socially pressured to consider macronutrients and energy contained in food products, the researcher wanted to determine where the pressure originated. Therefore, the researcher asked: **"If you previously answered yes, from whom does the pressure originate?"** (Question 1.1.36 in Appendix D). Three categories emerged from participants' responses. The first was (1) **peer-associated pressure**, and a participant mentioned their *"teammates and my instructor"*. The second category demonstrated (2) **family related pressure**, supported by the quote: *"family, when it comes to family it influences the type of things that I eat in terms of culture purposes because if certain family members don't eat pork, now the whole family won't eat pork"*. The third category was associated with the participants' use of (3) **social networks**. Participants mentioned *"social media because on social media you see certain body types, so now you want to achieve that by eating healthy certain products because you heard that it worked for them now you want to attain the body type they have"*, indicating that social media has a significant impact on consumers' decision to buy certain food products.

These findings support previous studies demonstrating the impact of social networks on consumer purchasing decisions, including social media (Kreft, Smith, Hopwood & Blaauw, 2023), television's social influence (Verma, Aggarwal, Nath & Kakkah, 2023), and religious social networks (Minton, Johnson & Liu, 2019). In urban communities, other elements, such as family influence and peer pressure were dominant (Talagala & Arambepola, 2016). A study by Hanaysha (2018), which focused on examining the factors affecting consumers' purchase decisions in the Malaysian retail market, discovered that both social responsibility and social media marketing influenced consumers' purchasing behaviour. Each category and accompanying quotes are provided in Table 5.36.

Table 5.36: Information on where pressure originates

CATEGORY	QUOTES
1. Peer-associated pressure	*"teammates and my instructor".* *"friends and social networks".*
2. Family related pressure	*"family because we are taught to finish our food".* *"family, when it comes to family it influences the type of things that I eat in terms of culture purposes because if certain family members don't eat pork, now the whole family wont eat pork".* *"the government, family, even health status".*
3. Social networks	*"social media because on social media you see certain body types, so now you want to achieve that by eating healthy certain products because you heard that it worked for them now you want to attain the body type they have."* *"social networks".*

The next question was: **"In what way do family, friends and social networks influence your use of macronutrients/energy when making a decision to purchase a food product?"** (Question 1.1.37 in Appendix D). From the analysis of participants' responses, five categories emerged. The first category reported on the (1) **impact of social networks**, which is supported by the quote from a participant sharing, *"for social networks, I think it influences me to use macronutrients, if they are doing social media videos, when they are cooking or when they post healthy foods"*. Social networks are a very prominent platform that influences the use of macronutrients/energy information, especially when making a purchasing decision. Social media platforms that recruit influencers have become a significant source of influence on consumers' habit of reading food labels because they usually explain the benefits of the food products they promote, which has a positive impact on consumers seeking more information about the food product, encouraging them to read the food labels (Kreft, Smith, Hopwood & Blaauw, 2023).

The second category participants mentioned was (2) **gym club influence**, which is supported by a quote *"on the use of energy, when going to the gym they will tell you that you struggle a particular exercise and they would suggest some energy drinks that will you give you stamina"*. Wade and Kennedy (2010) discovered that 88% of individuals who attended gyms occasionally read nutrition labels, with women reading more than males, regardless of gym membership status. The third category mentioned (3) **family allied influences**, supported by the quote, *"I think family members that does not require too much carbohydrate in the body like starch, you then have to buy another product for him or her"*. The findings are consistent with previous research that showed the degree of influence exerted by each family member when making a purchasing decision varies depending on the product category, economic circumstances, the influence of promotional activities, socialisation, time, and technology

(Kumar 2019). Nørgaard and Brunsø (2009) indicate that when there is an overflow of information that is too technical or when there is a difficult presentation of energy information on food labels, consumers rarely consider the product's nutrition information. This has an impact on their decision to read food labels, and consumers are more inclined to select food labels that provide legible information. Moreover, Kumar (2019) suggests that children have a considerable involvement in shaping family purchasing decisions.

Some participants mentioned that for them it is more of a (4) **self-consideration decision**, where participants expressed that they only consider themselves when purchasing food items without listening to external influences from other people. A participant shared *"None whatsoever, as I am making my own purchasing decisions"*. In addition, other participants indicated a type of diet such as (5) **banting practices**, with some participants reporting that most people are considering banting as an option to reduce body fat. This category was supported by the quote *"actually they don't, I make my own decisions, even social media they don't. I say okay they are banting on protein, carbohydrate and fat so I say let them bant, me I am not going to starve my body, I am not going to restrict it from getting certain nutrients just because I have to achieve a certain unrealistic goal"*. Each category and accompanying quotes are provided in Table 5.37.

Table 5.37: Influence of use of macronutrients and energy when making food purchases

CATEGORY	QUOTES
1. Impact of social networks	*"for social networks, I think it influences me to use macronutrients, if they are doing social media videos, when they are cooking or when they post healthy foods".* *"social networks they do influence my purchasing decisions because these days it all about healthy living, so if I see it on social networks I also want to buy certain products that I have seen".*
2. Gym club influence	*"on the use of energy, when going to the gym they will tell you that you struggle a particular exercise and they would suggest some energy drinks that will you stamina".* *"it depends which people at that particular time when I am purchasing the food items, sometimes when I am with my team mates so friends who train with, I do consider more on energy".*
3. Family allied influences	*"I think family members that does not need so much of carbohydrate in the body like starch, you have to buy another product for him or her".* *"with my family and friends not so much, because we buy what we are familiar with, what we know".*
4. Self-consideration decision	*"None, whatsoever as I am making my own purchasing decisions".*

CATEGORY	QUOTES
	"I don't think there is any influence or pressure coming from my family". *"they really don't focus on the macronutrients and all that. They buy what they need, so they don't influence me in any way instead I prioritize myself".*
5. Banting practices	*"actually they don't, I make my own decisions, even social media they don't. I say okay they are banting on protein, carbohydrate and fat so I say let them bant, me I am not going to starve my body, I am not going to restrict it from getting certain nutrients just because I have to achieve a certain unrealistic goal".*

The last question relating to the participants' subjective norms on energy information was: **"How important is it to you that your family and friends support your buying decisions of these food products?"** (Question 1.1.38 in Appendix D). From the analysis, four categories emerged. The first category focused on (1) **household support and control** being important, which is supported with a quote *"it is important because there are people that I live with, so what they say also matters"*. The second category shared (2) **self-control** was important to them. A participant explained: *"for me I would say it's not important, I am a disciplined person so I know what I am buying"*. The third category reflected participants' (3) **mission to lose weight**, which is supported by a quote *"it is important if I want to lose weight, I cannot have my family have full-cream milk and full-fat products whereas I have low-fat and fat-free, it is going to be very difficult to achieve those goal because of their way of eating"*. The fourth category that emerged was (4) **friends' support** and participants said *"it is important so that there is alignment, we don't want to fight over what we buy and what we consume. We need that for the sake of peace and harmony in the house"*. Extant literature shows that family and friends play a pervasive role in shaping consumers' emotions, perceptions, and behaviour (Kurtz, 2011). The importance of health, healthy eating, and the nutritional content of food, as well as nutritional knowledge, was found to be positively related to the frequency of food label use (Vijaykumar, Lwin, Chao & Au, 2014). Additionally, subjective norms and dietary concerns were important predictors of food label usage intention. Each category and accompanying quotes is presented in Table 5.38.

Table 5.38: Importance of support from friends and family

CATEGORY	QUOTES
1. Household support and control	*"it is important because there are people that I live with, so what they say also matters".* *"it is important because if they don't support me, even if I can purchase a product they won't eat it".* *"it is important it is not a bad decision and they can also be aware of the type of food that they consume".*

CATEGORY	QUOTES
	"with macro balanced one it is very important, they have to adopt a well-balanced diet, especially if you are family centred".
2. Self-control	*"it is very important to consider what my body needs, rather than other food products that are not good for my health".* *"for me I would say it not important, I am a disciplined person so I know what I am buying".* *"for me I would say it is not that important, as I am making my own purchasing decisions".*
3. Mission to lose weight	*"it is important if I want to lose weight I cannot have my family have full-cream milk and full-fat products whereas I have low-fat and fat-free, it is going to be very difficult to achieve those goal because of their way of eating".* *"people always tell me to lose some kilos, so I then I prefer less calorie product".*
4. Friends support	*"it is important so that there is alignment, we don't want to fight over what we buy and what we consume. We need that for the sake of peace and harmony in the house".* *"when it comes to my friends there is no influence and it does not matter that much".* *"it is very important because the food that has macronutrients is what my body needs, rather than other food products that are not good for my health".*

5.6.3 Findings related to the intention to purchase packaged food products (sub-objective 3.3)

The first question to describe the participants' intention to purchase packaged food products was: **"Is it easy for you to consider or use the macronutrients and energy information in food products?"** (Question 1.1.39 in Appendix D). From the analysis of this question, two groups of participants emerged. The first group responded 'yes', and one category was associated with the participants' (1) **knowledge acquisition** when using the information on macronutrients and energy content. This finding is supported by a participant's claim, *"I don't find it very confusing, especially now having gone through this interview with you. There is a little bit of enlightenment"*.

Other participants responded 'no', and one category described participants' (1) **struggle to comprehend information** on macronutrients and energy found on food product labels. This finding is reflected in the quote, *"it's not easy for me because some of the information is hard to interpret".* The findings suggest that while manufacturers include nutrition statistics on their food products, it is vital to consider consumers' understanding of this information, as well as their willingness to read, interpret, and use the information as a guide when determining which products to purchase (Contini et al., 2023). According to research conducted in Ghana,

purchasing decisions are significantly impacted by consumers actively reading and critically examining food labels before purchasing (Laz et al., 2015). This behaviour was in response to several cases of non-certified, expired, or fake products being marketed to the public. Each category and accompanying quotes are presented in Table 5.39.

Table 5.39: Participants' consideration and use of macronutrients and energy information

CATEGORY	QUOTES
Yes	
1. Knowledge acquisition	*"I can interpret some, but then it difficult to interpret most of the information".* *"it is easy for me because it is clear and simple".* *"I would say for me it easy, even though sometimes there are things that I don't understand".* *"I don't find it very confusing, especially now having gone through this interview with you. There is a little bit of enlightenment".* *"I can interpret some, but it is difficult to interpret most of the information".* *"yes, it easier for me, it makes it easier for me to purchase. It is not complicated".*
No	
1. Struggle to comprehend information	*'it not easy for me because some of the information is hard to interpret".* *"I would say it a bit difficult and confusing when I am buying a product, sometimes it is the terminology and the way it is displayed".* *"it is not an easy thing to do because it needs a lot of time to go through this information and it also complicated to interpret and understand this information".* *"I wouldn't say it easy because sometimes I do not know how to interpret the information on the nutritional content, so it would affect my buying reason".*

A question to understand what hindrances participants experienced in terms of using macronutrients and energy information was: **"What has been your main hindrance in applying the macronutrients and energy information to the product you wish to purchase?"** (Question 1.1.40 in Appendix D). From the researcher's analysis of the data, two categories emerged. The first category stated it was (1) **difficult to interpret the information**, which is supported by the quote, *"terminology used, and the interpretation are difficult to understand"*. The second category was (2) **unclear information labelling** being a hindrance, supported by the quote, *"the amounts are no standard because we don't carry scale everywhere, it would be easier if it would be in another metric or household measurements"*. Existing research indicates that barriers to using nutrition information include a lack of prior

knowledge of nutrition (Miller & Cassady, 2015); confusion over numbers, especially when key codes are used to display nutrition information; a lack of time and attention being given to reading menus; low expectations of the nutritional quality of restaurant food; and restaurant discounts, promotions, and social influences that either overwhelm or reinforce disinterest in nutrition (Chopera, Chagwena & Mushonga, 2014). Each category and accompanying quotes are presented in Table 5.40.

Table 5.40: Information on participants' main hindrance in applying the macronutrients and energy information

CATEGORY	QUOTES
1. Difficulty to interpret the information	*"terminology used and the interpretation are difficult to understand".* *"there are abbreviations that are not easy to interpret, sometimes you end up leaving the item at store because you don't want to buy what you don't know".* *"the labelling information, grams, kilojoules. I do not understand this kind of information".* *"the way in which they present the amounts of nutrients".* *"the units used are quite difficult to interpret"*
2. Unclear information labelling	*"the amounts are not standard because we don't carry scale everywhere, it would be easier if it would be in another metric or household measurements".* *"I would say lack of knowledge because growing up we never looked at the nutritional content, we just buy the product".*

After establishing the participants' main hindrances in applying the macronutrients and energy information from the products they wished to purchase, it was also necessary to establish the hindrances' impact on their purchasing decisions. Therefore, the researcher asked: **"To what extent have these hindrances stopped you from using macronutrients and energy information to make a decision to purchase a food product?"** (Question 1.1.41 in Appendix D). Two categories emerged from the analysis. The first category showed the participants' (1) **loyalty towards the food products** impacted their decision, as supported by a participant's claim: *"no I haven't stopped to purchase the products because they haven't given me any problems".* The second category that emerged showed the participants' (2) **decision to leave the food product at the store**, which is explained by the quote, *"sometimes I end up leaving the item at the store"*. The findings suggest that consumer loyalty stems from a consumer's emotional commitment to a certain brand, resulting in a distinct preference over other brands providing the same service or product (Srivastava et al. 2013). However, the quality of the product, cost and consumer satisfaction are factors that influence consumers' loyalty to the brand or food product (Coste et al. 2022). According to Miller and Cassady (2015), the more nutrition information consumers have, the more likely they are to

comprehend and use food labels to help them make good selections. In these instances, hindrances will not prevent consumers from using the information. However, there are challenges to effective food label use, such as a lack of time, difficulty in interpreting the information, or lack of interest (Samson, 2012). Each category and accompanying quotes follow in Table 5.41.

Table 5.41: The way hindrances have affected participants' use of macronutrients and energy information

CATEGORY	QUOTES
1. Loyalty towards the food product	*"no it hasn't stopped me".* *"they haven't stopped me from purchasing GaoUhe products what I need".* *"no I haven't stopped to purchase the products because they haven't given me any problems".* *"it has stopped me, when buying milk when I go to the shop and find full-cream milk whereas I was looking for low-fat or fat-free milk".*
2. Decision to leave the food product at the store	*"sometimes I end up leaving the item at the store".* *"I wouldn't say it has really stopped me but sometimes you usually buy something that you are familiar with instead of buying something new".*

The last question of the interview guide required the participants to share how they look at macronutrients in food products. The question was: **"If you had to share your beliefs about how you look at macronutrients in food products, what would you say are your beliefs that you would like to share?"** (Question 1.1.42 in Appendix D). From the analysis of this question, four categories emerged reflecting participants' beliefs. The first category indicated participants' views that their beliefs were formed by (1) **learnt behaviour**, which is supported by a quote *"I wouldn't say it belief but more like learned behaviour, for example in my household it doesn't matter, but then if I get on social media it does matter because everyone is trying to eat healthy and somehow it influences me to become more aware about food and macronutrient information"*. This indicates that some beliefs are learnt at a young age and people retain these beliefs even as they age. The second category that emerged was (2) **societal customs**, which are implemented across society and impact consumers' beliefs. A participant shared: *"considering that we are a very sickly society, we suffer from what we eat, we are as a result of what we consume most of the time. Well, if we were to pay more attention to what we consume we could be a better society, more healthier. Assisting us, deciding and making our mind as to what we buy. Most of the time we buy blindly"*.

The third category showed that consumers' beliefs about macronutrients in food products might also be shaped by (3) **public opinions**. A participant explained: *"our beliefs as people I don't think they are right, we as people we believe on the label, you just look at the label and you think just because it cool then its good. You might even find that we consider it as a good brand in South Africa, but then maybe in terms of the macronutrients it not that good. So we need to move away from that mentality that you buy something because you believe it's a good brand. We have to stop to think that way and from there, look at the macronutrients"*. The fourth category referred to (4) **uninformed individuals**, which is supported by the quote, *"as much as it is difficult to read and understand, I believe that it also important. But then it assists in knowing how much content does it product contains";* however, most people are deprived of knowledge because they do not understand the important information contained on the food product label; instead, they consider the item's taste and packaging.

The research findings that were described are consistent with previous studies that show food label reading behaviour is influenced by peers through information-sharing (Boatemaa, Badasu & de-Graft Aikins, 2018). Studies have also found that most consumers shared beliefs that foods are expected to supply nutrients to help with growth, health, strength, and life support. In addition, to help consumers make better food-purchasing decisions, this knowledge can promote community health and illness prevention (Moreira et al. 2019). Each category and accompanying quotes follow in Table 5.42.

Table 5.42: Participants' beliefs associated with macronutrients

CATEGORY	QUOTES
1. Learnt behaviour	*"my belief is that these macronutrients are very important for everyone because if we don't have time for nutrition education they can make our bodies become sick".* *"all three components have to be well-balanced and it has to be used in small or balanced quantities".* *'I would say consumers they need to read more and actually look at what they are consuming. It is important to know what you are consuming and what you are adding to your body for health purposes".*
2. Societal customs	*"considering that we are a very sickly society, we suffer from what we eat, we are as a result of what we consume most of the time. Well, if we were to pay more attention to what we consume we could be a better society, more healthier. Assisting us, deciding and making our mind as to what we buy. Most of the time we buy blindly".* *"we must pay attention on what we put in our bodies, mostly on macronutrients, we have to pay attention and read about the back-of-pack of that particular product when making*

CATEGORY	QUOTES
	purchases because it is very important to know what you are putting in your body". *"I believe macronutrients in food products are very important because they give us information that is important for our health".*
3. Public opinions	*"our beliefs as people I don't think they are right, we as people we believe on the label, you just look at the label and you think just because it cool then its good. You might even find that we consider it as a good brand in South Africa, but then maybe in terms of the macronutrients it is not that good. So we need to move away from that mentality that you buy something because you believe it's a good brand. We have to stop to think that way and from there, look at the macronutrients".* *"macronutrients are important in food products and we should all try to understand the food labelling so that we are aware of the type of food we are purchasing and also help us in making informed decisions about the food we consume".*
4. Uninformed individuals	*"as much as it is difficult to read and understand, I believe that it also important. But then it assist in knowing how much content does it product contains".* *"everyone as a consumer have to be well-educated and informed about the information on macronutrients and food labelling".* *"well firstly they will have to understand the terms used so that they know that each macronutrient is very essential to the body and that the more you consume, the more the danger. So I say they have to be informed about the information on macronutrients".*

5.7 SUMMARY

The findings were presented in this chapter in accordance with the main objectives of the study. The findings revealed the participants' differences and similarities regarding their views and experiences of macronutrients and energy information labelling and their intention to purchase packaged food products. The next chapter presents the conclusions and interpretations of the most significant findings. The study's contribution, limits, recommendations, and ideas for potential future research on macronutrients and energy information labelling are all included in the chapter that follows.

CHAPTER SIX: CONCLUSION

6.1 INTRODUCTION

The previous chapter presented the data gathered on the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products based on the aim and the objectives of this study. In this chapter, the study's most prominent findings are discussed based on the study's objectives. The study's contributions, limitations and recommendations for future research are provided. To ensure that the conclusions were drawn from the context of the study that was conducted, a brief summary of the participants' demographic profile is also provided.

6.2 PARTICIPANTS' DEMOGRAPHIC PROFILE

Fifteen participants took part in this study, all residing within different geographical locations across South Africa. Most participants were between the ages of 18 and 29, with the remainder between 30 and 59. The participants were almost split equally between female and male participants; however, no comparative findings were sought relating to the gender or age of the participants in this study. The participants primarily had degrees as their highest level of education.

6.3 OVERVIEW OF THE RESEARCH PROBLEM

South Africa is currently experiencing challenges with high statistics of obesity and chronic illnesses attributed to the overconsumption of macronutrients that affect consumers' health status (Goetjes et al., 2021). Various factors influence the overconsumption of macronutrients, including educational status, age, gender, religion and cultural beliefs (Espinosa-Salas & Gonzalez-Arias, 2023; Fardet et al., 2022). All these factors influence the overconsumption of macronutrients differently and further determine consumers' dietary patterns and food intake. South African food products contain nutrition information labelling, although it is still challenging for consumers to understand this information when making food-purchasing decisions (Miller & Cassady, 2015; Guthrie et al., 2015; Koen et al., 2016). Terminology, abbreviations and measurements used to explain the nutritional content of the food product may be unhelpful to consumers making a purchase decision due to their lack of nutritional education and knowledge (Aschemann-Witzel et al., 2013). In South Africa, most food products are evaluated in terms of nutritional content, portion sizes, shelf-life and storage to

ensure they are safe for human consumption (Corradini, 2018). However, some food products are sold to consumers without this information, which might contribute to the overconsumption of macronutrients because there is nothing to guide consumers on how to use that particular product. There is also a lack of understanding in South Africa of the way consumers use nutrition information labelling on macronutrients and energy, and how this influences their intention to purchase packaged food products. Should a lack of understanding continue, it could negatively impact consumers' diets and healthy lifestylesIn the next section, the implications of the main findings are discussed as they pertain to each of the study's objectives.

6.4 FINDINGS FROM THE PRIMARY STUDY

6.4.1 Objective 1: Explore consumers' use and understanding of front-of-pack, back-of-pack, and nutrition information labelling

The concept of FOPL seemed to be well-understood by most participants as they were able to explain this type of labelling appears on the front of food products, with information specific to the front of the food product, such as the product's name, flavour, size or brand name, among other front-of-pack details. The findings may suggest that it was easy for most participants to explain what FOPL was because it is the first feature of a food product that the consumer is introduced to, providing specific information that is expected to be present on the front of the packaging. However, some participants also identified elements that do not belong on the FOPL, indicating some participants were less knowledgeable about the information that should appear on the front of the package. Eye-catching front-of-pack information was specifically used when first-time purchases were made, again indicating the importance of front-of-pack information's attraction when introducing a product to the consumer. It was obvious that some participants did not use front-of-pack information because they lacked an interest in reading the product information, which could also support the reason why they were unable to identify the information found on the front of the packaging. A lack of knowledge and understanding was ultimately identified as a hampering factor contributing to consumers not using the front-of-pack information, which may limit consumers' knowledge about the food product they are purchasing.

The participants understood the term BOPL as they were also able to explain that it provides key information about the product and informs consumers about its benefits. Some participants could clearly identify the information on the back of packaging, for example, nutrition information, instructions for use and product manufacturing information. This clearly indicates that participants were more aware of BOPL and used it for different purposes,

reviewing products' expiry dates, storage recommendations, and health benefits. Health was the most significant reason for consumers' use of BOPL because their reasons for reading BOPL revolved around the health benefits related to the product. Moreover, some participants confused BOPL with only nutrition information labelling because everything they mentioned referred to the information that appears on the nutrition information table, and nothing else. Although the information they shared is not far from correct (since nutrition information labelling forms part of BOPL information), it is evident some participants understood the terms but did not know the difference between BOPL and nutrition information labelling.

The participants seemed to understand nutrition information labelling because they indicated that it all has to do with the types of nutrients products contain and how it benefits them as consumers. However, it was also found that some participants did not understand nutrition information labelling because they were merely mentioning information that appeared on the back of packaging. These findings indicate confusion among some participants, which results from a lack of knowledge of nutrition information. Some participants mentioned that they typically used nutrition information labelling when buying a product for the first time and when purchasing products that they were unfamiliar with. This is an important finding suggesting that information labelling is a critical source of information on which the decision to purchase is based when a new product is introduced to the consumer. Conversely, other participants mentioned that they consider using the nutrition information to limit their fat and sugar intake to maintain their body weight. This may suggest that their fat and sugar intake mattered to some participants, and this behaviour may be related to what they know about the fat and sugar content of food products. Other findings also showed that some participants struggled to interpret the information on the nutrition information label; therefore, they did not use this information due to their lack of knowledge about the terminology used and quantities. This is not a new finding as literature has, for some time, suggested that nutrition information labelling is difficult for consumers to understand as they are unable to interpret information they do not fully understand.

6.4.2 Objective 2: Examine consumers' use and understanding of macronutrients and energy information

The concept of macronutrients seemed to be well-understood among most of the participants as they were able to define macronutrients as nourishment the body requires. The participants also highlighted that macronutrients provide energy to their bodies to maintain their overall health. Some participants seemed to be very well-informed about macronutrients because they were able to clearly list examples of macronutrients. Other participants could not

differentiate between macronutrients and micronutrients, suggesting a lack of knowledge of these nutrients, resulting in confusion.

The participants seemed to have an understanding of fat as they were able to explain that fat is stored in the body to be later used as energy. The findings suggest some participants had an understanding of fat because they could explain the information on fat in the provided food label, which was partly correct. The findings illustrate that the participants typically used food products' fat content information to determine the amount of fat contained in the product. Other participants further mentioned that they considered the fat content due to health conditions motivating them to limit their fat intake or maintain their body weight. In general, these findings may suggest that the fat content of food products is one of the macronutrients studied by consumers. However, it is unclear what they make of the quantities of fat food products contain and how they determine whether the fat content in the food product is at an acceptable level, prompting them to purchase the item. Other findings also show some participants had difficulties interpreting the information on fat, and they seldom used this information when making food purchases due to their lack of knowledge of the terminology, units and quantities. This may suggest that more education should be offered to address consumers' lack of understanding about the fat content of food and how to interpret this information. Consumers should understand products' fat content's contribution to the overall daily requirements for fat intake.

The participants seemed to be well aware of the concept of carbohydrates, because they were able to explain what carbohydrates are and their role in the diet and the body. Some participants could clearly identify the carbohydrate information on the food label, and their interpretation was partly correct. Their awareness of carbohydrates may be attributed to many diets, media releases and general healthy living advice related to carbohydrate intake. Conversely, some participants showed no understanding of carbohydrate information, indicating that there are still consumers who lack the necessary education on the purpose and role of carbohydrates in the functioning of the body. However, most participants indicated the importance of carbohydrates as the main energy source to the body, which forms an important part of a well-balanced diet. Most participants agreed that they considered carbohydrate content when making food purchases, and some highlighted that they considered this information depending on their purchase intention at that particular time. However, although they indicated that they used carbohydrates to guide their decision to purchase a food product, it is unclear what they make of the quantities of carbohydrates in food products and how this is related to the total intake of carbohydrates in the diet of the consumer.

The participants seemed to understand proteins as they were able to explain the necessity and role of proteins in the body; for example, building muscles. The participants were also able to identify the importance of proteins in the diet, which was linked to their health and dietary requirements. It was illustrated that the majority of participants could clearly identify the protein information on the food label, though they showed no understanding of the information since most mentioned that they could not interpret the information due to a lack of knowledge. The lack of understanding of protein information on food product labels may suggest that consumers do not have the necessary information to make a meaningful deduction based on the protein information on the food product. This may lead to an incomplete judgement of the food product and possibly a decision to purchase the item based only on one or more macronutrient information that they are confident in applying. The participants' views on the importance of proteins in the diet were linked to their awareness of the protein quantity in the food product, which assisted the consumers in choosing the food products that best suited their dietary needs. However, it is unclear how they applied the information reflecting the quantity of protein in the product to make a decision on whether to purchase the product. Although some participants shared that they considered information on protein when purchasing specific food products, it is unclear what this judgement was based on. Thus, even if the importance of using protein information on food labels was considered, this finding is not very useful as consumers could not interpret the information. In addition, other participants mentioned that they do not need to use protein information on food labels because they perceive that they receive proteins from different food sources they consume throughout the day. This does suggest that some consumers do not use the macronutrient information labelling to its full extent.

The participants seemed to understand what energy is and its role in the diet. The participants indicated that they consider information on the energy in food products they purchase based on their dietary needs to sustain their bodies depending on their activity level. In this instance, it is assumed that energy might be one of the most considered sources of information on the information label of a food product as it is usually the first line-item to consider with high values representing the kilojoule (kJ) or kilocalorie (kcal) information. Even though participants considered this information, it is unclear what they made of the values and how that related to their daily kJ intake. Moreover, some participants showed no understanding of what energy is; these participants mentioned that they were not clear on the energy information labelling because they could not interpret the information. The participants indicated terminology and the measurements used to depict the energy information as the main hindrance to their understanding when reading food labels. These findings suggest that a lack of understanding of energy information due to the way it is presented might be influencing consumers'

judgement about the appropriateness of the food products they purchase to sustain a healthy lifestyle.

6.4.3 Objective 3: Describe the influence of attitude, subjective norms, and perceived behavioural control

The study described the influence of attitude, subjective norms, and PBC on consumers' opinions about macronutrients and energy information. The findings illustrate that most participants had a positive attitude towards macronutrients and energy information labelling. However, their inability to interpret the information negatively affected their use of it when making food purchases. This realisation originated from examining participants' perspectives and opinions regarding macronutrients (proteins, fats, and carbohydrates) and energy information when purchasing food.

The participants suggested that they felt carbohydrate quantities should be high, and fats should be low in the products they purchase. Though the participants understood the importance of proteins in the diet, they showed no interest in the quantity of protein in the food products they purchased, and their focus was on carbohydrates and fats. The participants' thoughts on energy quantities suggested that food products should have all three macronutrients because they contribute to the energy that is required by the body and form a balanced diet or meal. Ultimately, participants' attitudes were mostly influenced by the affordability of food products with macronutrients and energy information labelling. This may suggest that the importance of macronutrients and energy information labelling may be overridden by the consumers' financial situation when making purchasing decisions. Health was another dominant factor influencing the participants' attitudes toward macronutrients and energy information on food products. The findings imply that consumers are interested in understanding macronutrients and energy information in food items if they believe this information helps them manage their healthy lifestyle. In addition, it is reasonable to conclude that consumers with health and wellness concerns develop favourable attitudes towards reading food labels to ascertain the macronutrients and energy content in products.

The study discovered that some consumers experienced pressure to purchase or not purchase food products that contained macronutrients and energy information labelling. Based on the analysis, this pressure mainly originated from the internet, social media, TV, friends and family. The media's impact on food-purchasing intention is driven by repeated exposure to particular food products, influencing consumers' purchase intentions. Similarly, social media platforms have a social influence on food purchase intention as social media

users are easily influenced by their peers, their social network, and social media influencers. Consumers' family members and friends also capitalise on their proximity to influence consumers' food purchase intentions. This social influence can be exerted via online platforms or offline.

The findings indicated that since some participants purchased the food for their households, they had to consider all the family members' dietary requirements. These individuals had to accommodate each family member's health conditions, which sometimes required them to change their diets, resulting in a change in the family's grocery list and budget. It is thus reasonable to conclude that food purchase intentions are not only individual choices but can be influenced by family preferences and health needs. This means that in a family environment, food purchase intentions and decisions should satisfy the choices and preferences of all family members.

When exploring the participants' post-purchase experience, the data revealed participants were not satisfied with the macronutrients and energy information labelling found on food products. Although the information was available, they found it difficult to interpret. A general negative post-purchase experience of food products with complicated macronutrients and energy information labelling ensued. This negative post-purchase experience could suggest that consumers' understanding of macronutrients and energy information labelling is not up to standard, since consumers' interpretation of the information is still an issue. In addition, negative post-purchase experiences reflected consumers' regret of the decision to purchase the food item due to factors such as a lack of satisfaction with the macronutrients and energy quantities, and fear that the macronutrients and energy information do not align with their health and wellness needs.

The findings suggest that terminology, quantities and units used to present macronutrients and energy information were complicated for consumers. It can be concluded that the information presented on food labels may be a barrier to consumers' understanding of macronutrients and energy information. A limited understanding of macronutrients and energy information labelling limits consumers' ability to interpret nutrition information. In addition, interpretation could have been improved by the clear use of abbreviations, terminology, and clear labelling. Still, some participants made habitual purchases based on the food products' attractiveness or brand loyalty.

Some consumers bought food products without understanding information that could benefit them. In addition, some consumers lacked interest in reading the macronutrients and energy information label simply because they were not interested in learning more about the product itself, and some believed that reading this information is time-consuming when you are already at the store making food purchases. These findings imply that without information and awareness about food labels, macronutrients and energy information, most consumers are influenced to purchase food items based on aesthetic appeal and not health benefits. As a result, consumers face the risk of purchasing food products that may have negative consequences for their health.

6.5 CONTRIBUTION TO THE STUDY

This study contributes to the body of literature, methodology and theory as elucidated in the following subsections:

6.5.1 Contribution to the body of literature

The study has made a contribution to South African food label research. The research focused on the context of macronutrients and energy information labelling and contributed to the gap within the research regarding consumers' understanding of macronutrients and energy information labelling. The study explored consumers' use of macronutrients and energy information, when it is used, and how they interpret the information when making food purchases. It has also illustrated that consumers struggle with the information when making purchasing decisions. The study also provided some context of the information supplied on nutrition information labels on food products and how it is presented, which influences consumers' use of macronutrients and energy information labelling. This data could assist food manufacturers in understanding the challenges consumers encounter when using nutrition information, motivating them to take preventive measures to safeguard the positive use of information found on food labels.

6.5.2 Contribution to the methodology

In this study, the phenomenological and exploratory research design offered an understanding of consumers' use and understanding of macronutrients and energy labelling information in South Africa. An interpretive paradigm was employed, and it allowed the researcher to deeply grasp the participants' ideas and thoughts about macronutrients and energy information labelling. The study contributes to qualitative research methods by highlighting consumers'

food purchase intention as a novel phenomenon that can be explored qualitatively. Using the qualitative methodology, the researcher was able to attain a greater understanding of participants' explanations and expressions about their difficulties with labelling, especially macronutrients and energy information labelling. The qualitative methodology also allowed the researcher to interpret the expressions and consumers' opinions, obtaining their lived realities relating to food purchase intentions, which would not have been achieved using quantitative and descriptive methods.

Individual online interviews were useful to explore the influence of macronutrients and energy information labelling on consumers' purchase intention of food products. The qualitative methodology applied in this study was beneficial in exploring the research topic since it allowed the researcher to examine the verbal conversations from online interviews with participants. The examination helped identify consumers' misconceptions regarding macronutrients and energy information labelling. This study further demonstrated the significance of using online interviews to establish a connection between participants and the researcher even further. Online interviews provided the participants with a safe setting to participate while in a comfortable physical setting. The study also demonstrated the value of projective approaches by providing participants with visuals of the nutrition information labels discussed in the online interview. The visuals enriched the discussion, and they helped the researcher probe participants for more information on the food labels in question.

6.5.3 Contribution to the Theory of Planned Behaviour

Research conducted in South Africa has not employed the TPB to determine consumers' intention to purchase packaged food products with macronutrients and energy information labelling. However, in this study, the TPB allowed the researcher to use consumer attitudes, subjective norms and PBC to further explain macronutrients and energy information labelling in an exploratory way. It also facilitated the structure of the questions in the interview guide, which clearly defined consumers' opinions and understanding of macronutrients and energy information. This study contributed to the TPB by exploring the research phenomenon in the context of South African consumers. The study's findings suggest that most consumers exhibited a favourable attitude towards macronutrients and energy information labelling. In addition, friends' and families' social influence on food purchase intention extends to social media platforms. The study extends the TPB by showing that social media has become a new arena of social influence on food purchase intention in South Africa.

6.6 LIMITATIONS

The study was qualitative in nature; therefore, the group of participants may have been influenced by the recruiting and non-probability sampling strategies used. The data can only be transferred to a similar group of people and cannot be generalised. As the study was qualitative, the consumers' actual understanding of food labelling, macronutrient and energy information labelling, and their experience with it, were limited to their perceptions of what they thought they knew. The study was also limited in terms of the data captured only being applicable to the sample that was used because of the exploratory nature of the study. Individuals who wish to implement a similar study must take note that they cannot generalise the findings to all South Africans because the study did not represent all consumers in South Africa. Due to data saturation being reached in the study, the number of participants was relatively small. Therefore, the data gathered on the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products might only be an accurate representation of some consumers' views. As the study was exploratory and participants had to meet specific inclusion criteria, some consumers may not have been recruited as they may not have been exposed to the social media platform recruitment strategy, which may be considered a limitation.

6.7 FUTURE RESEARCH

The influence of macronutrients and energy information labelling on consumers' intention to purchase packaged food products is of value for consumers, food manufacturers, and the government of South Africa to further develop this research. Further research could assist in exploring what has been done with macronutrients and energy information labelling to ensure that the nutrition information presented on the food products is easily understood and used by consumers. Research should focus on the actual interpretation of the quantities provided on nutrition information labelling to determine how consumers relate these quantities to their daily intake requirements. Future studies could also explore when a consumer considers the information of a specific macronutrient or energy to be too high, too low, or just right. This will give a better understanding of what the information means to consumers and if they are able to make a more informed decision about the food product they are considering purchasing. Furthermore, further research could assist the food and nutrition industry in taking interventions to improve the nutrition information labelling on food products.

The data suggested consumers with a positive attitude require more knowledge about macronutrients and energy information labelling before taking the action to purchase

packaged food products. Future research can use a quantitative paradigm to explore South African consumers' opinions of macronutrients and energy information labelling in a larger sample. Future research should establish inclusion criteria that do not focus on the experiences of participants who are familiar with the term 'nutrition information labelling' so that the findings are not limited to a small number of participants. Future research may be helpful in studying the difference between consumers who are literate and those who are illiterate where macronutrients and energy information labelling is concerned in South Africa. A similar study can be undertaken using a quantitative approach and a larger sample to examine consumers' knowledge of nutrition information on food labels.

6.8 RECOMMENDATIONS

The study's findings suggest that consumers require clear and straightforward information regarding macronutrients and energy information labelling on food products to enable them to make better-informed decisions when making food purchases. Macronutrients and energy information labelling usage and understanding will only improve through increased consumer education and awareness. As the findings show, consumers are aware of food labels and their uses, but they seem to lack an understanding of macronutrients and energy information, and they cannot use the information when making purchasing decisions. The food industry and the Department of Health may have a role in supporting consumer awareness of food products. To that end, food manufacturers could promote the in-store reading of food labels by including or using the nutrition information table whenever they are promoting a product and its benefits.

6.8.1 Recommendations for the food industry

When the participants shared their beliefs about macronutrients and energy information labelling, it was evident that most participants believed macronutrients are essential for human health and should be consumed in moderation to maintain a well-balanced diet. The data revealed that some participants believed certain brand names offer high quality and nutrition, but associating a brand name with good nutrition may be misleading. Nutrition education on macronutrients and energy information labelling is essential to assist consumers in becoming more knowledgeable about how to use this information and apply it when making food purchases. Interventions like nutrition education may also assist consumers in moving away from perceptions that certain brand names are automatically linked to good nutritional content.

The food industry and the Department of Health can implement the following recommendations to improve consumers' use of food labels, macronutrients, and energy information labelling:

6.8.1.1 Develop or use consumer awareness mobile applications

With rapid technological advancements, traditional communication platforms for awareness campaigns, such as radio, television, newspapers and magazines, are becoming less appealing to the new generation of consumers who have access to smartphones. To take advantage of the widespread use of smartphones, innovators are encouraged to develop consumer awareness mobile applications that, among other functions, provide nutritional and energy information on food products sold in any country of interest. Mobile applications might be more appealing to consumers than FOPL and BOPL, and smart users are likely to easily access macronutrients and energy information on their smartphones.

6.8.1.2 Develop a policy enforcing the inclusion of macronutrients and energy information in food product advertisements

The findings indicated that some consumers lacked awareness of food products' macronutrients and energy information. As a result, they purchase food products mindlessly and, in some cases, due to the attractiveness of the product's packaging. It might suggest that important information is not brought to the attention of consumers. To address this awareness gap, the study recommends introducing a national food legislation that mandates food advertisers to include macronutrients and energy information at the beginning of every food advertisement on all paid advertising platforms. Through repeated encounters with macronutrients and energy information, consumers consciously or unconsciously gain awareness about the advertised food products. The nutrition information table should be easily noticed on food products' packaging, which may be challenging based on the amount of information that must be presented to comply with labelling regulations.

6.8.1.3 Collaboration on messaging macronutrients and energy information

The Department of Health can also collaborate with food producers and advertisers and coordinate campaigns with community health workers to educate consumers about food preparation. Nutrition education could help to overcome all the confusion consumers encounter with information labelling (front-of-pack, back-of-pack and nutrition information labelling).

6.8.1.4 Restructuring and improvement of the curriculum

The Department of Education can focus more attention on the content of consumer studies at the school level to ensure that students receive accurate information. In addition, nutrition education at schools should be prioritised to ensure that all learners receive the basic information on macronutrients and energy to allow them to make more informed decisions about the food products they choose to consume from an early age.

6.9 CONCLUSION

This chapter presented significant insights on each objective that was formulated to understand how macronutrients and energy information labelling influence consumers' use and intention to purchase packaged food products. The study provided a theoretical basis for food purchase intentions through the TPB's application. The study reflected the current understanding of food purchase intentions in South Africa, and the need to acknowledge consumers' education level, the nature of family and social influence, geographical context and health awareness when creating food labels and the information found on them.

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APPENDIX A: ETHICS CLEARANCE

UNISA university of south africa

UNISA-CAES HEALTH RESEARCH ETHICS COMMITTEE

Date: 11/07/2022

Dear Ms Ndlovu

Decision: Ethics Approval from 07/07/2022 to 30/06/2025

NHREC Registration # : REC-170616-051
REC Reference # : 2022/CAES_HREC/119
Name : Ms SS Ndlovu
Student #: 10321535

Researcher(s): Ms SS Ndlovu
10321535@mylife.unisa.ac.za; 071-050-1919

Supervisor (s): Prof EL Kempen
kempeel@unisa.ac.za; 011-471-2241

Working title of research:

Exploring the influence and use of macronutrients and energy information labelling on the intention to purchase food products

Qualification: M Consumer Science

Thank you for the application for research ethics clearance by the Unisa-CAES Health Research Ethics Committee for the above mentioned research. Ethics approval is granted for three years, **subject to submission of yearly progress reports. Failure to submit the progress report will lead to withdrawal of the ethics clearance until the report has been submitted.**

The researcher is cautioned to adhere to the Unisa protocols for research during Covid-19.

Due date for progress report: 30 June 2023

The progress report is available on the college ethics webpage: https://w2.unisa.ac.za/www.unisa.ac.za/sites/corporate/default/Colleges/Agriculture-%26-Environmental-Sciences/Research/Research-Ethics.html

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*The **low risk application** was **reviewed** by the UNISA-CAES Health Research Ethics Committee on 07 July 2022 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.
2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Committee.
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
8. No field work activities may continue after the expiry date. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:
*The reference number **2022/CAES_HREC/119** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

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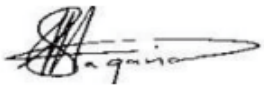
Yours sincerely,



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APPENDIX B: INFORMATION LETTER

PARTICIPANT INFORMATION SHEET

Title of the Study: Exploring the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products

My name is Sithabile Sharon Ndlovu and I am doing research with Professor Elizabeth Kempen in the Department of Life and Consumer Science towards a Master of Consumer Science Degree at the University of South Africa. We are inviting you to participate in a study entitled, "Exploring the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products".

Purpose of the research: I am conducting this research with an aim to address the use and influence of macronutrients (carbohydrate, fat and protein), and energy information labelling on the intention to purchase packaged food products of South African consumers'. There is a prevailing necessity to understand the use and influence of macronutrients and energy information labelling, particularly the influence it has on consumers' purchasing behaviour (Koen et al. 2016). Consumers' viewpoint on food labelling warrants the need for this research to be conducted as it will improve awareness, obtain a better understanding of the use and influence of macronutrients and energy information labelling and consumer purchasing patterns. The study will provide useful insight regarding the information consumers' have on information labelling, and the behaviour consumers have towards macronutrients and energy.

Why you were chosen as participants: You were selected as a participant in this study because you met our inclusion criteria. You are free to participate voluntarily throughout this study. The invitation/ selections of participants are made open on social media platform (Facebook) for all South African consumer meeting predetermined criteria in this study.

What is the nature of participation in this study: In this study the participants must be 18 years and older to ensure that they are consenting adults within the study and consumers residing in South Africa, which is the demarcated boundary for participation in this study. As the interviews will be conducted in English, participants must be conversant in English. It is

important that the participant perceives themselves knowledgeable about macronutrients such as carbohydrates, protein and fat as this study will focus on these three macronutrients in particular, as these three macronutrients are most commonly found on food products. Participants must also be familiar with the Nutritional Information Table/Label found on food products and be able to make their own purchasing decisions

Can I withdraw from this study even after having agreed to participate: Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researcher or any other group associated with this project.

Benefits of the research and benefits to you: The research findings may also contribute to a better insight of the difficulties consumers experience in terms of understanding, interpreting and utilising food labels in relation to macronutrients and energy information labelling. The research may also add to the body of nutrition knowledge and dietary practices of South African consumers and it will also assist in further researches.

Are there any negative consequences for me if I participate in the research project: There will be no risks or discomforts for participating in this project. Participation in this study is completely voluntary. If they decide not to participate, there will not be any negative consequences.

Will the information that I convey to the researcher and my identity be kept confidential: Your name will not be recorded anywhere and no one will be able to connect it to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data.

How will the researcher(s) protect the security of data: Hard copies of your answers will be stored by the researcher for a period of five years in a locked cupboard/filing cabinet for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. The hard copies will be shredded and/or electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

Will I receive payment or any incentives for participating in this study: There will be no payment or reward offered, or financial benefits in this study.

Has the study received ethics approval: This study has received written approval from the Health Research Ethics Committee of the College of Agriculture and Environmental Sciences, UNISA. A copy of the approval letter can be obtained from the researcher if you so wish.

The time required for participation: The study will take approximately 45 minutes to 1 hour.

How will I be informed of the findings/results of the research: If you would like to be informed of the final research findings, please contact Miss Sithabile Sharon Ndlovu on +27 71 050 1919 or email shazndlovu95@gmail.com/10321535@mylife.unisa.ac.za. The findings will be accessible for 1 to 5 years.

Should you have concerns about the way in which the research has been conducted, you may contact the research supervisor, Prof E Kempen on 011-471-2241 or kempeel@unisa.ac.za. Contact the research ethics chairperson of the CAES Health Research Ethics Committee, Prof MA Antwi on 011-670-9391 or antwima@unisa.ac.za if you have any ethical concerns.

Thank you for taking time to read this information sheet and for participating in this study.

Thank you.
Miss Sithabile Sharon Ndlovu (Principal researcher)

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the <insert specific data collection method>.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname…… (Please print)

Participant Signature…….. Date……

Researcher's Name & Surname…… (Please print)

Researcher's signature……..Date……

APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE

Dear participant

Invitation to participate in the 2022 Unisa student study interview to: Exploring the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products on South African consumers. There is a prevailing necessity to understand the use and influence of macronutrients and energy information labelling, particularly the influence it has on consumers' purchasing behaviour. Consumers' viewpoint on food labelling warrants the need for this research to be conducted as it will improve awareness, obtain a better understanding of the use and influence of macronutrients and energy information labelling on the intention to purchase packaged food products. Therefore this study will provide useful insight regarding the information consumers' have on macronutrients and energy information labelling.

For any queries regarding this study, kindly contact:
-Miss S Ndlovu (10321535@mylife.unisa.ac.za – 071 050 1919)
-Prof E Kempen (Kempeel@mylife.unisa.ac.za)

KINDLY ANSWER EACH QUESTION AS HONESTLY AND ACCURATELTY AS POSSIBLE. IMPORTANT INFORMATION: ALL INFORMATION WILL REAMIN CONFIDENTIAL AND WILL BE RECORDED

Demographics

Instruction: Please tick the appropriate box applicable to you.

AGE									
18-29 years		30-39 years		40-49 years		50-59 years		60 years and older	

GENDER			
Female		Male	

HIGHEST LEVEL OF EDUCATION COMPLETED							
Grade 5-7		Grade 8-11		Grade 12		Diploma/Degree	

OCCUPATION			
Employed		Unemployed	

APPENDIX D: INTERVIEW GUIDE

Instruction: This interview guide comprises of three sections with open-ended questions that will be used to explore each objective that have been proposed in the study.

SECTION A: Explore consumers' use and understanding of:

Front-of-pack labelling

- What is your understanding of the term "front-of-pack labelling"?
- If you think about "front-of-pack labelling" what type of information does it include, please give examples.
- Do you make use of "front-of-pack" label information when making food purchases? If so when?
- For what purpose do you use "front-of-pack" labelling?

Back-of-pack labelling

- What is your understanding of the term "back-of-pack labelling"?
- If you think about "back-of-pack labelling" what type of information it includes, please give examples.
- Do you make use of "back-of-pack" label information when making food purchases? If so when?
- For what purpose do you use "back-of-pack" labelling?

Nutritional information labelling

View the picture of nutritional information label below and answer the following questions subsequently.

Figure 1.1: Typical nutritional information label on South African Liqui Fruit product

Source: TravelingMarla

- What is your understanding of the term “nutrition information labelling”?
- If you think about “nutrition labelling” what type of information does it include, please give examples
- What is the most important part of nutrition information labelling to you and why?
- Do you make use of “nutrition information label” when making food purchases? If so, when?
- For what purpose do you use “nutrition information labelling?

SECTION B: Examine consumers’ use and understanding of macronutrient and energy information by focusing on:

Consumers’ understanding of the word macronutrient

- When you hear the word macronutrient what comes to mind?
- To confirm please list the macronutrients that you know of.
- How important are macronutrients in the diet?
- Which of these macronutrients that you previously mentioned provide energy to the body?

Consumers’ use and understanding macronutrients information

Nutrition

Typical values	100g contains	Each slice (typically 44g) contains	% RI*	RI* for an average adult
Energy	985kJ 235kcal	435kJ 105kcal	5%	8400kJ 2000kcal
Fat	1.5g	0.7g	1%	70g
of which saturates	0.3g	0.1g	1%	20g
Carbohydrate	45.5g	20.0g		
of which sugars	3.8g	1.7g	2%	90g
Fibre	2.8g	1.2g		
Protein	7.7g	3.4g		
Salt	1.0g	0.4g	7%	6g

This pack contains 16 servings

*Reference intake of an average adult (8400kJ / 2000kcal)

Figure 1.2: Nutritional information label on South African bread

Source: Open Food Facts

Fats

- What is your understanding of fat in the diet?
- When considering the fat content in the above food label, how do you interpret fat?.
- Based on your understanding of fat in the diet, how important is the food label to you when it comes to the fat content of food?
- Does fat in a food product determine your intention to purchase the product?

Carbohydrate

- What is your understanding of carbohydrate in the diet?
- When considering the carbohydrate content in the above food label, how do you interpret carbohydrate?.
- Based on your understanding of carbohydrate in the diet, how important is the food label to you when it comes to the carbohydrate content of food?.
- Does carbohydrate in a food product determine your intention to purchase the product?.

Protein

- What is your understanding of protein in the diet?
- When considering the protein content in the above label, how do you interpret protein?
- Based on your understanding of protein in the diet, how important is the food label to you when it comes to the protein content of food?
- Does protein in a food product determine your intention to purchase the product?

Consumers' use and understanding of energy information

NUTRITION INFORMATION Servings Per Pack: 19 Serving Size: 30 g	Average Quantity Per Serving	%DI* Per Serving	Avg Qty Per 30 g With 125 mL Reduced Fat Milk	%DI* Per 30 g With 125 mL Reduced Fat Milk	Average Quantity Per 100 g
Energy	490 kJ	6%	770 kJ	9%	1620 kJ
Protein	2.7 g	5%	7.8 g	16%	9.0 g
Fat, Total	1.4 g	2%	3.5 g	5%	4.7 g
– Saturated	0.4 g	2%	1.7 g	7%	1.4 g
Carbohydrate	21.6 g	7%	28.6 g	9%	72.1 g
– Sugars	8.2 g	9%	15.1 g	17%	27.3 g
Dietary Fibre	2.3 g	8%	2.3 g	8%	7.7 g
Sodium	35 mg	2%	105 mg	5%	115 mg

Figure 1.3: Nutritional information label on South African milk product

Source: Nestle

- What is your understanding of energy in the diet?
- When considering the above label on food products, which information do you use to determine the energy provided by the food product? Why?
- Does energy content in a food product, determine your intention to purchase the product?
- Do you know which macronutrients provides energy?

SECTION C: Describe the influence of attitude, subjective norms and perceived behavioral control on:

Consumers' opinion of macronutrients

- What is your view/opinion on the quantity of the following when you purchase a food product?
  - carbohydrate,
  - fats and
  - proteins
  - energy
- In what way does your attitude towards the macronutrients/energy, influence the decision to purchase a food product

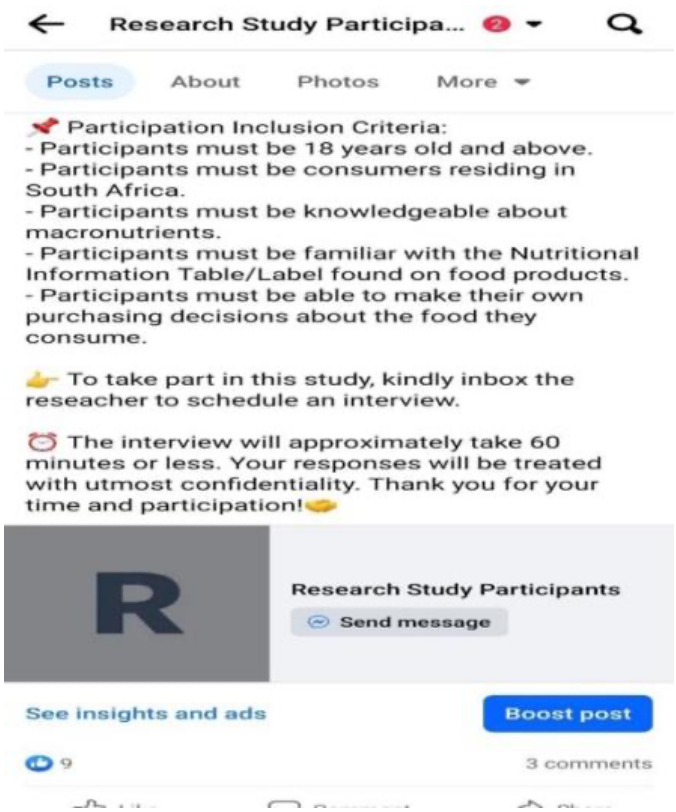
Energy Information

- Do you feel socially pressured to consider the macronutrients/energy contained in food products? If so why?
- If you previously answered yes, from whom does the pressure originate?
- In what way do family, friend, social networks influence the use of macronutrients /energy when making a decision to purchase a food product?
- How important it is to you that your friends and family support your buying decisions of these food products?

Intention to purchase packaged food products

- Is it easy for you to consider or use the macronutrient and energy information in food products?
- What has been your main hindrance in applying the macronutrient and energy information to the product you wish to purchase?
- To what extent have these hindrances stopped you from using macronutrient and energy information to make a decision to purchase a food product ?.
- If you had to share your beliefs about how you look at macronutrients in food products, what would you say are your beliefs that you would like to share?.

APPENDIX E: FACEBOOK INVITATION TO PARTICIPATE


Research Study Participa...
Posts
About
Photos
More
📌 Participation Inclusion Criteria:
- Participants must be 18 years old and above.
- Participants must be consumers residing in South Africa.
- Participants must be knowledgeable about macronutrients.
- Participants must be familiar with the Nutritional Information Table/Label found on food products.
- Participants must be able to make their own purchasing decisions about the food they consume.
👉 To take part in this study, kindly inbox the reseacher to schedule an interview.
⏰ The interview will approximately take 60 minutes or less. Your responses will be treated with utmost confidentiality. Thank you for your time and participation!🤝
R
Research Study Participants
Send message
See insights and ads
Boost post
9
3 comments

APPENDIX F: EDITING CERTIFICATE

Between the lines editing

Leatitia Romero
Professional Copy Editor and Proofreader
(BA HONS)

Cell: 083 236 4536
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www.betweenthelineseditting.co.za

26 January 2024

To whom it may concern:

I hereby confirm that I edited the dissertation titled: "EXPLORING THE INFLUENCE AND USE OF MACRONUTRIENTS AND ENERGY INFORMATION LABELLING ON THE INTENTION TO PURCHASE FOOD PRODUCTS". Any amendments introduced by the author hereafter are not covered by this confirmation. Participants' verbatim quotes were not edited. The author ultimately decided whether to accept or decline any recommendations I made, and it remains the author's responsibility at all times to confirm the accuracy and originality of the completed work. The author is responsible for ensuring the accuracy of the references and its consistency based on the department's style guidelines.

Leatitia Romero

Affiliations

PEG: Professional Editors Group (ROM001) – Accredited Text Editor
SATI: South African Translators' Institute (1003002)
REASA: Research Ethics Committee Association of Southern Africa (104)

APPENDIX G: TURNITIN RECEIPT

turnitin

Digital Receipt

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File size:	2.65M
Page count:	211
Word count:	65,844
Character count:	375,563
Submission date:	16-Feb-2024 09:32PM (UTC+0200)
Submission ID:	2296594318

EXPLORING THE INFLUENCE AND USE OF MACRONUTRIENTS AND ENERGY INFORMATION LABELLING ON THE INTENTION TO PURCHASE FOOD PRODUCTS

by

SITHABILE SHARON NDLOVU

Submitted in accordance with the requirements for the degree of

MASTER OF CONSUMER SCIENCE

In the subject

ENVIRONMENTAL MANAGEMENT

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Prof. E Kempen

FEBRUARY 2024