

**AN INTEGRATED ATTITUDE-INTENTION MODEL DESCRIBING THE ESSENCE OF
SOUTH AFRICAN CONSUMER ATTITUDES TOWARD UHT MILK ALTERNATIVE
PRODUCTS**

by

ANJOLIZE WASSENAAR

submitted in accordance with the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in the subject

CONSUMER SCIENCE

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF EL KEMPEN

(January 2023)

DECLARATION

DECLARATION

Name: Anjolize Wassenaar

Student number: 43865208

Degree: Doctor of Philosophy in Consumer Science

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I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

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ABSTRACT

While various factors such as health conditions, lifestyle trends and special nutritional requirements create increased consumer interest in the UHT milk alternative category, little is known about the South African market and the meaning consumers ascribe to these products. This remains a hindrance to marketing strategies and the development of products which meet consumer requirements. The industry needs to understand what influences consumer decisions to purchase products in this unique category. The purpose of the study was to gather deeper insights into the essence of South African consumer attitudes toward UHT milk alternatives and their related purchase intentions.

The research utilised a postpositivist, qualitative approach to shape the perspective of the exploratory-descriptive phenomenological study. The study used two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured online interviews, collecting data from 35 participants. A discussion guide was used to initiate discussions and was adapted according to the emergent research design. The trustworthiness of the findings was supported by credibility, transferability, dependability, confirmability and reflexivity. Data was analysed using an inductive-deductive thematic analysis approach. Findings were described, visualising the links between themes and subthemes which collectively shape consumer attitudes and purchase intentions toward UHT milk alternative products within the South African market.

Meaningful links were discovered from the multiple participant perspectives, developing a complex representation of the factors involved in their *purchase intentions*. *Consumer attitudes* specifically focused on the participant's meaning ascribed to the product category, were comprised of the *consumer product beliefs* and their *evaluation of the product*, with all its supporting sub-themes. *Consumer purchase intentions* were often focused on *non-product-related factors*, such as *expected outcomes*, the *social norm* and *control*, which impacted consumers' *purchase intentions*. However, *purchase intentions* were also strongly impacted by the consumer *attitude toward the product* itself. The research found that none of the factors could be used in isolation to describe participant *attitudes* and *purchase intentions*. These *attitudes* and *intentions* must be considered holistically for the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions to be understood, leading to the development of the *Integrated Consumer Attitude-Intention Model*.

FULL SUMMARY

While various factors such as health conditions, lifestyle trends and special nutritional requirements create increased consumer interest in the UHT milk alternative category, little is known about the South African market and the meaning consumers ascribe to these products. This remains a hindrance to marketing strategies and the development of products which meet consumer requirements. The industry needs to understand what influences consumer decisions to purchase products in this unique category. The purpose of the study was to gather deeper insights into the essence of South African consumer attitudes toward UHT milk alternatives and their related purchase intentions.

The research utilised a postpositivist, qualitative approach to shape the perspective of the exploratory-descriptive phenomenological study. The geographical location of the study was within the borders of South Africa, to gather insight from South African consumers shopping in the South African retail market. The original research plan was to gather data through in-person mini-focus groups. Due to the coronavirus disease of 2019 (COVID-19) pandemic restrictions on in-person meetings implemented during the data-gathering phase of the research, data-gathering methods were continued online rather than in person. The study used two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured online interviews, collecting data from 35 participants. Participants for the in-person mini-focus groups were initially recruited from the UNISA Main and Florida campuses via the university's internal email communication network. However, due to limitations placed on in-person meetings during the COVID-19 pandemic and a change to online mini-focus groups and semi-structured interviews, the recruitment strategy was expanded to requests for participation posted on social media (Facebook) for individuals with a potential interest in milk alternatives. Participants in both recruitment strategies were self-selected by choosing to participate or not in the online mini-focus groups and booking a timeslot using the online SignUp Genius platform. Individuals who could not join the timeslots of online mini-focus groups were accommodated with semi-structured online interviews. The number of participants was not pre-determined, instead, participant recruitment and data-gathering concluded once a point of saturation was established from the new insights gathered from the thematic data analysis.

A discussion guide was used to initiate discussions during data-gathering activities. The discussion was guided by the research questions and objectives. The same discussion guide was used for the mini-focus groups and semi-structured interviews. The questions were used as a guideline only to initiate discussions to maintain the emergent design of the study and enough flexibility to explore new concepts which arose during the discussions.

Questions from the discussion guide were occasionally rephrased and follow-up questions were formulated during the discussions to adapt to and expand on new insights as provided by participants, allowing the research to continue in its emergent design.

The research proposal, including the research methodology, was approved by the Ethics Committee of the College of Agriculture and Environmental Science at the University of South Africa for approval before the study commenced and adhered to during the entire research process. The trustworthiness of the findings was supported by credibility, transferability, dependability, confirmability and reflexivity. Data was analysed using an inductive-deductive thematic analysis approach. During the inductive thematic analysis phase, data was analysed to find the emerging codes, subthemes and themes. A deductive thematic analysis phase followed the inductive phase to verify that the data supported the subthemes and themes found during the first phase and that any gaps or duplications of themes were addressed. Once a point of saturation was reached, as determined by the number, or lack of, new insights gained with each participant response, data-gathering activities were concluded.

Findings were described, visualising the links between themes and subthemes which collectively shape consumer attitudes and purchase intentions toward UHT milk alternative products within the South African market. Meaningful links were discovered from the multiple participant perspectives, developing a complex representation of the factors involved in their *purchase intentions*. *Consumer product-related attitudes* specifically focused on the participant's meaning ascribed to the product category, were comprised of the *consumer product beliefs* and their *evaluation of the product*, with all its supporting subthemes. *Non-product-related attitudes*, such as attitudes toward *expected outcomes*, the *social norm* and *control*, were also found to impact consumers' *purchase intentions*. The research found that none of the factors could be used in isolation to describe participant *attitudes* and *purchase intentions*. These *attitudes* and *intentions* must be considered holistically for the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions to be understood, leading to the development of the *Integrated Attitude-Intention Model*. The proposed Integrated Attitude-Intention Model was developed to visually depict the impact of *consumer product beliefs* (cognitive attitude component) and *evaluation of product* (affective attitude component), collectively suggested to be *product-related attitudes*, as well as *expected outcomes*, the *social norm* and *control* (cognitive attitude component), collectively suggested shaping *non-product-related attitudes*, on *consumer purchase intentions*.

The research contributions include practical recommendations to industry to provide insight for product development and marketing strategies, as well as contributions to theory through the proposed model, addressing gaps in the body of literature and contributing to research methodology. Limitations of the study were indicated as applicable to theory, the research design and methodology and in context of the interpretation and application of the research findings. Finally, recommendations for future research were presented to expand on the depth of understanding through further qualitative research, as well as testing and confirming research findings further through quantitative research.

KGUTSUFATSO - SESOTHO ABSTRACT

Le hoja dintlha tse fapaneng tse kang maemo a bophelo bo botle, mekgwa ya bophelo le ditlhoko tse kgethehileng tsa phepo di baka thahasello e eketsehileng ya bareki sehlopheng sa mefuta e meng ya lebese la UHT, ha ho tsejwe hakaalo ka mmara wa Afrika Borwa le moelelo wa bareki ba dihlahiswa tsena. Sena e ntse e le tshitiso ho maano a papatso le ntshetsopele ya dihlahiswa tse fihlelang ditlhoko tsa bareki. Indasteri e hloka ho utlwisisa hore na ke eng e susumetsang diqeto tsa bareki ho reka dihlahiswa tsa mofuta ona o ikgethang. Sepheo sa thuto e ne e le ho bokella dintlha tse tebileng mabapi le moelelo wa maikutlo a bareki ba Afrika Borwa mabapi le mefuta e meng ya lebese la UHT le merero ya bona ya ho reka.

Diphuphutso di sebedisitse mokgwa wa ho totobatsa dintlha tse hlokomelehang tsa boleng ho bopa pono ya thuto e hlahosang seo batho ba fetileng ho sona. Thuto ena e sebedisitse dihlopha tse pedi tsa batho, dihlopha tse robedi tsa inthaneteng tse tsepamisitseng maikutlo ho inthanete le dipuisano tse tebileng tsa inthanete tse leshome le motso o le mong, ho bokelletswe dintlha ho tswa ho bankakarolo ba 35. Tataiso ya dipuisano e ile ya sebediswa ho qala dipuisano mme ya fetolwa ho latela moralo o hlahang wa dipatlisiso. Botshepehi ba diphumano bo ne bo tshehetswa ke ho tshepahala, ho fetiswa, ho tsitsa ha dintho tse fumanweng, ho tiisa, le ho ananela karolo e nkilweng dipatlisisong. Dintlha di ile tsa manollwa ho sebediswa mokgwa wa ho tlisa-ho beha diqeto ka mabaka ho hlalosa mekgwa ya moelelo ka hara dintlha tsa boleng. Diphumano di ile tsa hlalosa, ho bontsha dikamano dipakeng tsa dihlooho le dihloohwana tse amang maikutlo a bareki ka kopanelo le merero ya ho reka mabapi le dihlahiswa tse ding tsa lebese la UHT ka hara mmara wa Afrika Borwa.

Dihokelo tse nang le morero di ile tsa sibollwa ho tswa mekgweng e mengata ya ditjhebo tsa bankakarolo, ho ntshetsapele boemedi bo rarahaneng ba dintlha tse amehang *mererong ya bona ya ho reka. Maikutlo a bareki a ne a tsepamisitse maikutlo haholo moeelong wa bankakarolo o tsamaellanang le sehlopha sa sehlahiswa, a ne a entswe ka ditumelo tsa sehlahiswa sa bareki le tlhahlobo ya bona ya sehlahiswa, le dihloohwana tsohle tse tshehetsang. Maikemisetso a theko ya bareki hangata a ne a tsepamisitswe dinthong tse sa amaneng le sehlahiswa, jwalo ka diphetho tse lebelletsweng, tlwaelo ya setjhaba le taolo, tse ileng tsa ama merero ya ho reka ya bareki.* Leha ho le jwalo, merero ya ho reka e ile ya angwa haholo ke *maikutlo a bareki* mabapi le sehlahiswa ka bosona. Diphuphutso di fumane hore ha ho le ha e le nngwe ya dintlha tse ka sebediswang ka thoko ho hlalosa *maikutlo a bankakarolo le merero ya ho reka. Maikutlo le maikemisetso ana a tlameha ho nahanwa ka botlalo molemong wa maikutlo a bareki ba Afrika Borwa*

mabapi le dihlahiswa tse ding tsa lebese la UHT le maikemisetso a ho reka hore a utlwisiswe, e leng se lebisang ho ntshetsopele ya *Mokgwa o Kopanetsweng wa Boikutlo ba Bareki*.

OKUCASHUNIWE - ZULU ABSTRACT

Nakuba izici ezihlukahlukene njengezimo zempilo, izitayela zokuphila kanye nezidingo ezikhethekile zokudla okunomsoco kudala intshisekelo ekhulayo yomthengi esigabeni esihlukile sobisi lwe-UHT, kuncane okwaziwayo ngemakethe yaseNingizimu Afrika kanye nencazelo abathengi abayibeka ngale mikhiqizo. Lokhu kusalokhu kuyisithiyi kumasu okumaketha kanye nokuthuthukiswa kwemikhiqizo ehlangabezana nezidingo zabathengi. Imboni idinga ukuqonda ukuthi yini enomthelela ezinqumeni zabathengi zokuthenga imikhiqizo kulesi sigaba esiyinqayizivele. Inhloso yocwaningo bekuwukuqoqa imininingwane ejulile mayelana nengqikithi yesimo sengqondo sabathengi baseNingizimu Afrika maqondana nezinye izindlela zobisi lwe-UHT kanye nezinhloso zalo zokuthenga ezihlobene.

Ucwaningo lusebenzise indlela yokuhumusha iqiniso ngokwezibalo, echazayo ukuze ilolonge umbono wocwaningo lokuqala emcabangweni wombono. Lolu cwano lusebenzise amaqembu amabili okugxilwa kuwo kumuntu, amaqembu ayisishiyagalombili agxile ku-inthanethi anabahlanganyeli abambalwa kanye nezingxoxo ezijulile eziyishumi nanye eziku-inthanethi, ukuqoqa imininingwane kubahlanganyeli abangama-35. Umhlahlandlela wokuxoxisana wasetshenziswa ukuqalisa izingxoxo futhi washintshwa ngokuvumelana nomklamo wocwaningo oluvelayo. Ukwethembeka kokutholakele kusekelwe ngokukholeka, ukudluliswa, ukwethembeka, ukuqinisekiswa, kanye nokuvumelana nezimo. Imininingwane yahlaziywa kusetshenziswa indlela yokuhlaziya evumela imininingwane inqume indikimba kanye nesekelwe olwazini olukhona. Okutholakele kwachazwa, kubukwa ngeso lengqondo lokuxhumana phakathi kwezindikimba nezindikimba zesibili ezakha ngokuhlangene izimo zengqondo zabathengi kanye nezinhloso zokuthenga mayelana nemikhiqizo yobisi lwe-UHT ehlukile phakathi kwemakethe yaseNingizimu Afrika.

Izixhumanisi ezibalulekile zitholwe emibonweni yabahlanganyeli abaningi, ukuthuthukisa ukumelwa okuyinkimbinkimbi kwezinto ezibandakanyekayo ezinhlosweni zabo zokuthenga. Izimo zengqondo zabathengi ezigxile ngokukhethekile encazelweni yomhlanganyeli eshiwo esigabeni somkhiqizo, bekuhlanganiswa izinkolelo zomkhiqizo wabathengi kanye nokuhlola kwabo umkhiqizo, nazo zonke izingqikithi zesibili ezisekelayo. Izinhloso zokuthenga kwabathengi zazivame ukugxila ezintweni ezingahlobene nomkhiqizo, njengemiphumela elindelekile, inkambiso yomphakathi nokulawula, okube nomthelela ezinhlosweni zokuthenga zabathengi. Kodwa-ke, izinhloso zokuthenga nazo zathintwa kakhulu yisimo sengqondo somthengi ngomkhiqizo ngokwawo. Ucwaningo luthole ukuthi azikho izici ezingasetshenziswa zodwa ukuchaza izimo zengqondo

zabahlanganyeli kanye nezinhliso zokuthenga. Lezi zimo zengqondo nezinhliso kufanele zibhekwe ngokuphelele ukuze kubhekwe ingqikithi yesimo sengqondo sabathengi baseNingizimu Afrika mayelana nemikhiqizo ehlukile yobisi lwe-UHT kanye nezinhliso zokuthenga ukuze ziqondwe, okuholela ekuthuthukisweni Kwesifanekiso Sesimo Sengqondo Somthengi Esididiyelwe.

KEY TERMS

UHT milk alternatives; plant-based milk alternatives; dairy-based milk alternatives; functional milk; lactose-free milk; soy milk; almond milk; cashew milk; oat milk; rice milk; enriched milk; high-protein milk; dairy blend; South African consumer attitudes; attitude models; purchase intentions; attitude-intention model

DEDICATION

To my family, whom I love dearly.

ACKNOWLEDGEMENTS

I would like to thank the following persons for their assistance and support during the research:

- Prof Elizabeth Kempen, for your continued guidance from an early stage in my research career. You have made a lasting impact with your kind and insightful contributions and advice. Thank you for all the late-night emails and support.
- My parents, for your lifetime of sacrifices to provide us with opportunities in life.
 - To my mother specifically, who would have loved the opportunity to continue her own research but supported ours instead. Thank you for always believing in and supporting the wild ideas we pursue and the example you set of hard work and aiming for excellence.
 - To my father, who left our world too soon while I worked on this research, for your example of consistency, focusing on detail and the numerous times you made the world a better place with a hug or gentle words of encouragement. Your departure made our world come to a halt, but you always encouraged us to continue pursuing life and our dreams.
- Amélia, for planting the seed of wild ideas and adventures. You make me fall each time for the bright idea of a new research project, ... and then the hard work begins. This research would not have been possible without you giving everything of yourself to provide me with consistent, practical support. Thank you for the inspiration and encouragement throughout this research project and for doing life with me every day. It's time to dream up the next adventure.
- Liezel, Herman, Annalize, Minné, Estee and Hanru, for your love and unwavering support throughout my academic journey. Your encouragement and belief in me have meant the world to me - you are a very special part of my life.
- Dr Peter Oberem and Thalita Weitzman for your ongoing support.
- All the participants involved in the research, for taking the time to participate in interviews and mini-focus groups and for their valuable input to enhance the available knowledge on the research topic.

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TERMINOLOGY LIST

This section provides the definitions of terms as applied in the thesis. Due to the generally applied nature of some of these terms, definitions have been provided to clarify the exact application of these terms when referred to in this research.

Almond milk

Almond milk can be defined as a plant-based milk alternative made by mixing pasted or powdered almonds with water (Vanga & Raghavan, 2018).

Cashew milk

Cashew milk is a non-dairy alternative beverage made from cashew nuts and water (Vanga & Raghavan, 2018).

Clean labelling / clean ingredients list

Clean labelling or clean ingredients lists refer to product labelling which aims to be transparent and simple by using ingredient names familiar to the consumer, on products promoted as natural, with minimal processing and no synthetic chemicals, additives, flavourants or colourants forming part of the ingredients list (Do Nascimento, Paes & Augusta, 2018).

Dairy-based milk alternatives

Dairy-based milk alternatives, such as lactose-free, enriched or fortified milk, are usually milk which has been specifically processed for particular nutritional needs resulting from health conditions and are permitted to be marketed as milk if the modifications made to the original product are clearly indicated on the label (FAO & WHO, 1999).

Dairy blend

For this research, a dairy-blend refers to a dairy-based product, presented as a milk alternative in the South African market, consisting of a blend of whey and buttermilk powder, cream, milk and added vitamins or minerals (Clover, 2016).

Enriched milk

Enriched milk is a dairy-based milk alternative that is enriched with additional vitamins, minerals and amino acids (Clover, 2016).

Functional milk

Functional milk alternatives are defined as enriched, fortified or enhanced milk products where additional health benefits beyond essential nutrients are provided when consumed regularly (Hasler, 2002).

Lactose-free milk

Lactose-free milk refers to a dairy-based milk alternative that underwent special procedures or includes additives to remove lactose from the milk (Gulseven & Wohlgenant, 2017).

Milk

Milk is the fluid obtained from the mammary glands of lactating animals such as cows, sheep, goats and buffalo (FAO & WHO, 2018).

Milk alternatives

Liquids used to substitute or complement cow milk used in an individual's diet are known as milk alternatives (Fernando, 2016).

Milk blend

Milk blends contain a mixture of cow milk components in ratios other than standardised milk or vegetable fats for particular nutritional uses as long as it is clearly indicated to be a milk blend on the packaging (Department of Health, 2012).

Niche market

A niche market refers to a small, specialised market interested in a specific product (Oxford University Press, 2023).

Oat milk

Oat milk refers to a non-dairy, plant-based milk alternative made from oats and water (Vanga & Raghavan, 2018; Paterson, 2016).

Plant-based milk alternatives

Plant-based milk alternatives are defined as colloidal suspensions or emulsions of plant material in water, processed and formulated to resemble the sensory properties of cow milk (Mäkinen, Wanhalinna, Zannini & Arendt, 2016). The term 'milk' is used for the purpose of familiarity to participants in the research and does not imply any nutritional, physical or sensory correspondence to cow milk.

Purchase intention

For the purpose of the research, the term *purchase intention* was used with the understanding that the consumer's intention to *purchase* a product would also be linked to their intention to *utilise* the product whether by the individual self, or by a household or family member, such as a child or partner, for whom the product is purchased. Since actual consumer behaviour cannot be predicted but has been found to be preceded by a consumer's intention to behave in a specific manner, the research focused on the consumer's intention to behave in a certain manner (purchase intention) (Grimmer & Miles, 2017; Paul, Modi & Patel, 2016; Montaña & Kasprzyk, 2015; Doane, Pearson & Kelley, 2014). Consequently, a close link was assumed initially and established during data analysis, between product *purchase intention* and product *utilisation intention*, with the understanding that *purchase intention* would indicate some form of *utilisation intention*. However, for clarity and conciseness in the research, the term *purchase intention* was used.

Rice milk

Rice milk is a non-dairy, plant-based milk alternative that is made by mixing milled rice with water (Vanga & Raghavan, 2018).

Soy milk

Soy milk is a plant-based, non-dairy milk alternative that is produced from dried soy beans that are soaked and then ground before being suspended in water (Cocan, Dogaru, Poiană & Negrea, 2015).

UHT milk

The term *UHT milk* or similar terms are used in this research to refer to products that have been ultra-high temperature treated and aseptically packaged to allow for an extended shelf-life at ambient temperatures (Malmgren, Ardö, Langton, Altskär, Bremer, Dejmek & Paulsson, 2017; Bimbo, Bonanno, Liu & Viscecchia, 2016; Clover, 2016; Consumer Reports on Health, 2015).

LIST OF ACRONYMS

CAES	College of Agriculture and Environmental Science
COVID-19	Coronavirus disease of 2019
FAO	Food and Agriculture Organisation of the United Nations
FDA	Food and Drug Administration
FODMAPs	Fermentable oligosaccharides, disaccharides, monosaccharides and polyol
GMO	Genetically Modified Organism
IBS	Irritable Bowel Syndrome
IFHE	International Federation for Home Economics
LDL	Low-density lipoprotein cholesterol
rBST	Recombinant Bovine Somatotropin
RDA	Recommended Daily Allowance
RPSC	Research Permission Sub-Committee of the Senate Research, Innovation, Postgraduate Degrees and Commercialisation Committee
SAAFoST	South African Association for Food Science and Technology
UNISA	University of South Africa
UHT	Ultra-high Temperature Processed or Treated
U.S.	United States
WHO	World Health Organisation

CHAPTER 1

INTRODUCTION

A growing demand for UHT milk alternatives, motivated by milk allergies, lactose intolerance, consumer environmental and animal welfare concerns and lifestyle choices, is a phenomenon not only particular to the South African market. Although increased consumer interest in the product category is noticed nationally and globally, little is known about the South African consumer market and the meaning consumers ascribe to UHT milk alternatives in more specific terms. This remains a hindrance in the development of products which meet consumer requirements and the design of marketing strategies to reach the appropriate consumer market effectively. The need for greater depth of understanding into consumer purchase decisions in this unique category led to the question: What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products? Consequently, the aim of the research was to propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted. This chapter introduces the research firstly by providing a background to the study and defining UHT milk alternatives. Thereafter, the research problem is described by considering the literature available prior to the onset of the research on milk alternatives and the identified gap in knowledge. The justification for the research, research question and the aim and objectives of the research are stated and a concise description of the research design and method and ethical clearance obtained and research outputs are provided. The chapter concludes with an outline of the thesis to guide the reader.

1.1 INTRODUCTION

This introductory chapter presents the background of the research, introducing the key concepts and their importance in context of the phenomenon studied. It provides the definition of UHT milk alternatives and purchase intentions as used in the study and presents the problem statement, including a brief overview of existing knowledge at the beginning of the study and the gap found in available research at the time. Together, the background and problem statement supported the justification for research into South African consumer attitudes and purchase intentions to UHT milk alternative products, leading to the central research question, as supported by sub-questions. The aim and objectives of the study were formulated based on the research question and presented in this chapter. Thereafter, a brief overview is provided of the research design and method, ethical considerations, outputs and contributions. An outline of the thesis is provided to guide the reader through the chapters prior to the conclusion of this introductory chapter.

1.2 BACKGROUND

Although there is an increase in the popularity of various types of milk alternatives (Shoup, 2018b; Watson, 2018d; Underwood, 2017b; Consumer Reports, 2014b), it is still largely unknown why consumers prefer one type of milk alternative above another. The product offering in the UHT milk alternatives category is regularly expanded, with new products often being observed in the South African retail market (BFAP Baseline, 2022; Cornall, 2018b). While the purchase of milk may be habitual and require low involvement from the consumer, the consumer may consider various factors in the purchase of ultra-high temperature processed (UHT) milk alternatives, leading to a more complex decision-making process (Vanga & Raghavan, 2018; Mäkinen *et al.*, 2016). When introducing new products, food manufacturers need to know and understand consumer needs and preferences (Hussain & Rashid, 2016).

South African consumer preferences and attitudes toward the various milk alternatives available in the South African market are largely unknown. How these attitudes and other factors impact South African consumer behaviour toward the product category is equally unknown. Although cow milk is often considered a staple item in the South African consumer diet, it cannot be assumed that consumer expectations and intentions toward milk alternatives are similar to their expectations and intentions of cow milk. Neither can it be assumed that cow milk is still the consumer product of choice if so many new entrants in the milk alternative category are observed in the South African retail market. Milk alternatives form a niche product category which requires it to be understood within its own right without assumptions that consumer attitudes and purchase intentions toward cow milk will apply to UHT milk alternative products.

The continuous expansion of these niche products in the market leads to several consumer-related questions to understand: who uses these products, why these products are used, what are consumer expectations of the product category, what do consumers believe about the products, what do they consider when evaluating these products favourably or unfavourably, are the users of the product category uniform in their expectations of and need for the products, does milk alternatives substitute or complement cow milk in the consumer diet and what drive or limits their purchase intentions thereof. While numerous studies have been conducted to inform literature on these questions linking the consumer to the staple product of cow milk (Gulseven & Wohlgenant, 2017; Gavojdian, Janku, Krasic, Bursac, Voia, Sauer, Albulescu & Padeanu, 2016; Haas, Canavari, Imami, Gjonbalaj, Gjokaj & Zvyagintsev, 2016; Kurajdova & Táborecka-Petrovicova, 2015; Bozoglu, Huang, Florkowski & Topuz, 2014; Brázdová, Klimusová, Vorlová & Fiala, 2014; Yayar, 2012; Wolf, Tonsor & Olynk, 2011; Zhuang, 2010), these questions remain largely unanswered for the UHT milk alternative

product category and the South African consumer. The UHT milk alternative product category and how it relates to the South African consumer is poorly understood. Consequently, South African consumer attitudes toward the product category and their purchase intentions of such products remain undetermined.

Consumer attitudes play an important role in consumer decision-making, particularly in the evaluation of options at the point of purchase (Kimmel, 2013). However, consumer attitudes towards products and their role in purchase intentions are not simplistic, but encompass several elements that determine the consumer attitude toward the product (Betsch & Haberstroh, 2012). A consumer's beliefs about different attributes of a product and whether this is favourably evaluated constitute the consumer's overall attitude toward the product (Clow & Baack, 2021; McDaniel & Gates, 2020; Iacobucci & Churchill, 2018). Once again, attitudes are not simplistic and consumers may ascribe varying importance to individual product attributes; thus, an attribute toward which the consumer holds a favourable attitude may or may not be the most important deciding factor for the consumer whether to purchase the product or not (McDaniel & Gates, 2020). It is however held by literature (as described in Chapter 2), that the more favourable a consumer's overall attitude is toward a product, the more likely the consumer is to select that product at the point of purchase (McDaniel & Gates, 2020; Paul *et al.*, 2016). Thus, consumer attitudes play an important role in their decision-making and purchase intentions (McDaniel & Gates, 2020). Therefore, South African consumer attitudes toward UHT milk alternative products become critical to the understanding of South African consumer decision-making and purchase intentions of the product category.

While consumer attitudes may be favourable toward a product, attitudes alone cannot determine their purchase behaviour (Solomon, 2019; Egan, 2015). Purchase behaviour is usually preceded by the favourable intention to purchase a product, leading to the need to understand consumer purchase intentions and what impacts it if their actual purchase behaviour is to be understood and predicted (Schiffman & Wisenblit, 2019). While consumer purchase intentions are influenced by their attitudes toward a product itself, it can be impacted by other elements such as their personal nutritional, functional, social or hedonic needs and consequently their expectations of how a product would meet their needs, how the consumer and society around them perceive the product and its purchase as well as the consumer's ability and control to act upon their intentions (Schiffman & Wisenblit, 2019; Milner & Rosenstreich, 2013). Consequently, the research was approached from the perspective that consumer attitudes towards products and their purchase intentions needs to be understood holistically, instead of in isolation, to understand their product selection and purchase behaviour.

While the research considered that understanding each element impacting consumer product purchase remains important, the enquiry was based on the assumption that one of these elements alone cannot provide the holistic view required to understand consumer behaviour and decision-making. Isolated studies of consumer attitudes toward UHT milk alternatives and purchase intentions would lead to detached, disarranged findings and a merely partial understanding of elements impacting consumer behaviour. This creates the need for an integrated model, encompassing the different elements impacting consumer attitudes and purchase intentions, to understand the South African consumer and how they relate to the UHT milk alternative product category. Without an integrated model depicting the consumer attitude and purchase intentions toward the UHT milk alternative product category, the industry remains limited by available knowledge in the ability to develop product offerings that comprehensively meet consumer needs and expectations. Thus, the risk remains that products introduced into the market do not, or only partially, meet the South African consumer's requirements, which could lead to limited product acceptance (Hussain & Rashid, 2016).

The lack of a comprehensive model informing the industry on important consumer attitudes toward the product category and elements impacting the consumer's purchase intentions also limits the design of marketing strategies to reach the correct target market effectively. As seen from this brief background to the research, the phenomenon of South African consumer attitudes guiding their purchase intentions of UHT milk alternatives is poorly understood. To address this gap in knowledge, literature on the research topic which was available at the onset of the enquiry is presented below, identifying gaps which existed at the beginning of the research. However, limited literature was found linking the consumer and their attitudes and purchase intentions to UHT milk alternatives. Since industry and academics often rely upon the body of knowledge available from literature as generated by both industry and academics, this lack of available literature further created the need to contribute knowledge to the body of literature on the topic to inform future enquiries. The problem statement and ensuing justification for research emerged from this gap identified in the literature. However, prior to these sections, it is important that a clear definition of UHT milk alternatives, as used in the study, is presented.

1.3 UHT MILK ALTERNATIVES DEFINED

According to the CODEX Alimentarius International Food Standards of the Food and Agricultural Organization of the United Nations (FAO & WHO, 2018), milk is the fluid obtained from the mammary glands of lactating milking animals such as cows, sheep, goats and buffalo (FAO & WHO, 2018). Milk is a highly perishable product; thus, it is heat-treated to kill pathogens and bacteria for increased shelf-life (Clover, 2016; Dhineshkumar, Ramasamy &

Siddharth, 2016; Ishaq, Xia, Rasheed, Ahmad & Abdullah, 2016). Pasteurisation and UHT treatment are two commonly used heat treatments in South Africa (Dairy Standard Agency, 2015). Milk is pasteurised by heating it to 72°C for at least 15 to 30 seconds (Boitz & Mayer, 2017; Van Hekken, Tunick, Ren & Tomasula, 2017; Liem, Bolhuis, Hu & Keast, 2016), resulting in a product that has a shelf-life of about two weeks when refrigerated below 4.4°C (Boitz & Mayer, 2017; Liem *et al.*, 2016; Sethi, Tyagi & Anurag, 2016). The ultra-high-temperature (UHT) process destroys even more bacteria than pasteurisation and sterile cartons allow milk to be stored for nine months to a year at ambient temperatures (Malmgren *et al.*, 2017; Bimbo *et al.*, 2016; Clover, 2016; Consumer Reports on Health, 2015). During UHT treatment, milk is heated between 135°C and 152°C, for two to four seconds (Malmgren *et al.*, 2017; Dairy Standard Agency, 2015). The UHT process destroys pathogens, making the product commercially sterile, where after it is aseptically packaged to prevent recontamination (Boitz & Mayer, 2017; Malmgren *et al.*, 2017; Van Hekken *et al.*, 2017; Bimbo *et al.*, 2016; Liem *et al.*, 2016; Sethi *et al.*, 2016; Dairy Standard Agency, 2015; FAO & WHO, 2009). Once opened, UHT milk can last at least seven days in the refrigerator, unlike pasteurised milk which lasts approximately four days (Brodziak, Król, Litwińczuk, Zaborska & Czernecki, 2017). Since consumers demand microbiologically safe foods with an extended shelf-life, consumption of ultra-high temperature (UHT) milk is increasing (Lu, Pickova, Vázquez-Gutiérrez & Langton, 2018; Bimbo *et al.*, 2016; Dhineshkumar *et al.*, 2016). While the exact nutritional composition of milk can vary based on its fat content (varying from fat-free to full cream), UHT milk is considered to be a good source of protein (8 grams protein per serving), calcium (31% of the recommended daily allowance [RDA]), vitamin D, folate and B vitamins (Vanga & Raghavan, 2018; Consumer Reports, 2014b; Rediscover Dairy, 2013). However, since cow milk is a potential allergen, normal UHT cow milk is not suitable for all consumers (Consumer Reports, 2014b), creating a potential market for milk alternatives (Eagle, 2016).

Milk alternatives are categorised as dairy- or plant-based products. Dairy-based milk alternatives, such as lactose-free, enriched or fortified milk, are usually specifically processed for particular nutritional needs resulting from health conditions and are permitted to be marketed as milk if the modifications made to the original product are clearly indicated on the label (FAO & WHO, 1999). South Africa also allows the sale of milk blends, containing a mixture of cow milk components in ratios other than standardised milk or vegetable fats, for particular nutritional uses as long as it is clearly indicated to be a milk blend on the packaging (Department of Health, 2012). Various plant-based beverages serving as alternatives to milk are commercially available. They are categorised into cereal-based (oat and rice milk), legume-based (soy milk), seed-based (hemp milk) and nut-based (almond, cashew and

coconut milk) milk alternatives (Sethi *et al.*, 2016). Plant-based milk alternatives are defined as colloidal suspensions or emulsions of plant material in water, processed and formulated to resemble the sensory properties of cow milk (Mäkinen *et al.*, 2016). Commercially available plant-based milk alternatives are UHT treated for food safety and extended shelf-stability (Kumari & Singh, 2018).

Internationally, debates have originated between the dairy industry and plant-based milk alternative industry over the use of dairy terms such as 'milk' (Vanga & Raghavan, 2018). Traditionally and legally in many countries the term 'milk' may only be used to describe and market the mammary secretions of mammals such as cows, sheep and camels without any additions to or subtractions from it (Vanga & Raghavan, 2018; Sethi *et al.*, 2016; FAO & WHO, 1999). According to the dairy industry, the use of dairy terms in the description of plant-based beverages misleads consumers regarding the identity and nutritional equivalency of such products (Packaged Facts, 2018; Watson, 2018b; Watson, 2017b). In European countries, the use of the terms 'milk' or 'variation on milk' for plant-based beverages is prohibited, however, the term 'alternative to milk' may be used on product packaging and in marketing strategies (Van Couter, Mahy & d'Ath, 2016).

For the purpose of this research, terms such as *milk*, *normal milk* and *dairy milk* are used to refer to milk derived from cows without any addition or subtraction and include the various options of fat content commercially available such as *full cream*, *low-fat* and *skimmed* or *fat-free* milk. Terms such as *lactose-free*, *enriched*, *fortified*, *blended* and *functional milk* are used to refer to *dairy-based milk alternatives* derived from cow milk that has been modified for specific dietary purposes and differs from standardised cow milk. Composite terms such as *plant-based milk alternatives*, *soy milk*, *almond milk*, *cashew milk*, *coconut milk*, *oat milk* and *rice milk* refer to milk alternative beverages in their pure or blended form derived from plant sources. For this research, these terms do not imply nutritional equivalency to cow milk and are used due to consumers' familiarity with them. The term *UHT milk* or similar terms are used to refer to products that have been UHT-treated and aseptically packaged. The next section continues from the background presented above to present the emerging research problem based on the challenges identified in the background section.

1.4 PROBLEM STATEMENT

While various factors such as health conditions, lifestyle trends and special nutritional requirements among consumers (discussed more extensively in Chapter 2) are creating increased consumer interest in the UHT milk alternative category, little is known about the South African consumer market and the meaning consumers ascribe to such products (Sethi *et al.*, 2016). This remains a hindrance to the UHT milk alternative industry in the development

of products which meet consumer requirements and the design of marketing strategies to reach their consumer market effectively. The industry needs to understand which elements influence consumer decisions to purchase products in this unique category. As presented in the background section (see Section 1.2), South African consumer attitudes toward the UHT milk alternative product category, encompassing what they believe about the products and how they evaluate the products, need to be understood in greater depth to comprehend their purchase behaviour. However, these attitudes alone cannot inform the industry on consumer purchase intentions and elements, such as consumer expectations of products, society's perception of the product category and the consumers' ability and control of product selection for purchase, which needs to be understood as well. To shape comprehensive and meaningful conclusions about the South African consumer and UHT milk alternatives, the elements impacting consumer attitudes and their purchase intentions of UHT milk alternatives and the potential link between attitudes and intentions need to be understood, integrated and depicted into a model. However, as seen from the following section, this knowledge was unavailable from literature at the onset of the study, leading to a need for further research to inform both the industry and the body of knowledge available to academics on the topic.

1.4.1 Prior Knowledge

The peer-reviewed publications presented in Table 1.1 were available prior to the commencement of the research, linking consumers with milk and milk alternatives. From literature, the following links could be detected: consumer demographics and health as related to product preferences; consumer perceptions, ecological certifications and origin labelling; consumer perceptions and willingness to pay for food safety; consumer willingness to pay for value-added product claims; consumer perceptions, preferences, attitudes and purchase intentions as related to product attributes and personal values; consumer and product sensory acceptability; and consumer attitudes and purchase behaviour. A summary of each publication, including key concepts relevant to this research, is provided in the table. Thereafter a brief discussion is presented in Table 1.1 on the studies.

Table 1.1: Peer-Reviewed Publications of Prior Knowledge

Prior Knowledge	
Consumer demographics and health related to product preferences	
Publication 1	' <i>Consumer Preferences for Milk and Yogurt Products in Canada</i> ' by Allen (2012).
Relevant Key Concepts	Canadian consumer; health and demographics related to consumer preferences; cow milk and yoghurt; attribute-based approach

Summary	Allen (2012) conducted a study on Canadian consumer preferences for milk and yoghurt products. The study focused on how demographic and health characteristics influenced consumer preferences for product attributes. It was found that consumers of milk and yoghurt were not necessarily the same individuals and possessed different demographic profiles.
Publication 2	' <i>Food Preference for Milk and Dairy Products</i> ' by Brázdová <i>et al.</i> (2014).
Relevant Key Concepts	Moravian (Czech) consumer; preferences according to age and gender; cow milk and yoghurt
Summary	In 2014, Brázdová <i>et al.</i> (2014) published findings of consumer preferences for milk and dairy products as influenced by age and gender in the Moravia region of the Czech Republic. The elderly group portrayed a lower preference for milk than other groups. Low-fat yoghurt was preferred more by women than by men. Clear differences in preferences were found in different generation groups.
Consumer perceptions, ecological certifications and origin labelling	
Publication 3	' <i>Milking the Consumers' Conscience: Consumers' Perception of Ecologically and Locally Produced Milk</i> ' by Svensson and Ångerfors (2010).
Relevant Key Concepts	Swedish consumer; perceptions; ecological and origin labelling; attitude-toward-object model
Summary	Svensson and Ångerfors (2010) investigated Swedish consumer perceptions of ecologically and locally produced milk. They found that consumers had favourable perceptions of brands labelled with higher responsibility standards. Consumers were interested in ecologically and locally produced milk, but in 2010 had very little knowledge of the concepts.
Publication 4	' <i>Odrednice Stava I Namjere Kupnje Ekološkog Mlijeka</i> ' by Faletar, Cerjak and Kovačić (2016).
Relevant Key Concepts	Croatian consumer; attitudes and intentions; organic cow milk; theory of planned behaviour
Summary	Faletar <i>et al.</i> (2016) studied the variables influencing consumer attitudes and intentions to purchase organic milk in Croatia. The gender, dietary lifestyle of consumers and trust in local and European Union eco-labels had favourable effects on consumer attitudes toward organic milk. Subjective and objective knowledge of organic products influenced intentions to purchase organic milk favourably.
Publication 5	' <i>Labelling Strategies to Overcome the Problem of Niche Markets for Sustainable Milk Products: The Example of Pasture-Raised Milk</i> ' by Kühl, Gassler and Spiller (2017).
Relevant Key Concepts	German consumer; labelling strategies and willingness to pay; pasture-based and conventional cow milk blends

Summary	Kühl <i>et al.</i> (2017) explored the potential of alternative cause-related labelling strategies and willingness to pay among German consumers. The aim was to identify potential labels to use with milk blends in which a certain percentage comes from pasture-based dairies, but when farmers do not have the infrastructure to separate pasture-based milk from conventional milk. Pasture-based blend labels did achieve higher premiums than conventional milk, but lower premiums than 100% pasture-based milk.
Publication 6	' <i>Three Essays on Organic Milk Marketing and Consumer Purchase Behavior</i> ' by Zhuang (2010).
Relevant Key Concepts	American (US) consumer; purchase behaviour; organic, non-organic, private label and nationally branded cow milk; demographic-based decision-making approach
Summary	Zhuang (2010) focused on the purchase behaviour of American consumers when presented with choices between organic and non-organic and private label or national brand milk. It was found that consumers' level of education favourably influenced the purchase of organic milk, while increased household size and price unfavourably influenced its purchase. Higher education favourably influenced the choice of private-label organic milk products over nationally branded organic milk products. Increased household size and lower incomes influenced the choice of private-label non-organic milk products unfavourably.
Consumer perceptions and willingness to pay for food safety	
Publication 7	' <i>Consumers' Purchase Intention towards Safety Labeled Dairy Products in the Black Sea Region of Turkey</i> ' by Bozoglu <i>et al.</i> (2014).
Relevant Key Concepts	Turkish consumer; purchase intentions related to food safety; raw and pasteurised cow milk; attitude-toward-attribute and attitude toward behaviour approaches
Summary	Bozoglu <i>et al.</i> (2014) studied Turkish consumers' intention to purchase dairy products with safety labels. At that time, approximately half of the raw milk in Turkey was sold on open markets without appropriate food safety standards, increasing the risk to consumers to consume unsafe milk. The study found that the majority of participants often purchased unsafe milk and were unaware of food safety standards.
Publication 8	' <i>Sustainable Agriculture in Vermont: Economics of Climate Change Best Management Practices and the Complexity of Consumer Perceptions of Raw Milk</i> ' by Helling (2015).
Relevant Key Concepts	American consumer; perceptions of safety; raw cow milk; risk perception approach
Summary	Helling (2015) studied consumer perceptions of raw milk safety in the state of Vermont, United States (U.S.). Despite public health warnings, consumers in the area were increasingly found to consume raw milk. The study found that perceived health benefits, taste and the presence of children in the household influence consumer perceptions of raw milk safety.

Publication 9	<i>'Study on Consumers' willingness to Pay for Milk Safety in Big Cities and Its Influencing Factors - Evidence from Beijing, Tianjin and Shijiazhuang'</i> by Li (2011).
Relevant Key Concepts	Chinese consumer; willingness to pay for food safety; cow milk; attitude-toward-attribute approach
Summary	In 2011, Li (2011) studied Chinese consumers' willingness to pay for milk safety in urban areas. After repeated outbreaks of food safety incidents, consumers portrayed low levels of confidence in milk safety. Consumer income levels, health, food expenditure, presence of children in the home and involvement in food safety jobs influenced consumer willingness to pay for food safety in fluid milk.
Publication 10	<i>'Understanding US Consumer Demand for Milk Production Attributes'</i> by Wolf <i>et al.</i> (2011).
Relevant Key Concepts	American (US) consumer; willingness to pay for food safety; cow milk; random utility theory
Summary	Wolf <i>et al.</i> (2011) examined the value of food safety milk attributes among American consumers. Consumers were willing to pay premiums for milk produced without Recombinant Bovine Somatotropin (rBST), on family farms and with safety enhancements. They were also willing to pay premiums to verify these claims by the United States (U.S.) Department of Agriculture.
Consumer willingness to pay for value-added product claims	
Publication 11	<i>'Hedonic Analysis of the Price of UHT-Treated Milk in Italy'</i> by Bimbo <i>et al.</i> (2016).
Relevant Key Concepts	Italian consumer; willingness to pay premiums for value-added enhancements; UHT cow milk; hedonic price model
Summary	In a price analysis of UHT milk products in Italy, Bimbo <i>et al.</i> (2016) found that health-enhancing features, such as added fibre and vitamins, or presenting organic or lactose-free UHT milk on the market led to the highest premiums consumers were willing to pay. While among products for children, products aimed at infants and packaged in glass led to the highest premiums. Added minerals did not lead to consumer willingness to pay premiums for the product.
Consumer perceptions, preferences, attitudes and purchase intentions related to product attributes and personal values	
Publication 12	<i>'Milk and Dairy Products Consumers Behavior and Preferences in Vojvodina-Republic of Serbia'</i> by Gavojdian <i>et al.</i> (2016).
Relevant Key Concepts	Serbian consumer; behaviour and preferences; cow milk and dairy products

Summary	In a study among Serbian consumers, Gavojdian <i>et al.</i> (2016) evaluated consumer behaviour and preferences related to milk and dairy products. Popular dairy products purchased included pasteurised milk, yoghurt, sour cream, butter and cheese. UHT milk, refrigerated milk, raw milk and frozen milk were the least popular products for purchase and consumption. Freshness, expiry date, taste, price, quality and nutritional value were considered important selection criteria during product purchases.
Publication 13	<i>'Literature Review on Factors Influencing Milk Purchase Behaviour'</i> by Kurajdova and Tábořecka-Petrovicova (2015).
Relevant Key Concepts	Slovakian consumer; factors influencing purchase behaviour; cow milk; literature review based on consumer behaviour
Summary	Kurajdova and Tábořecka-Petrovicova (2015) produced a literature review on factors influencing milk purchase behaviour among Slovakian consumers. While milk is a frequently purchased product in Slovakia, production and sales have declined. The aim of the review was to determine the factors which influence milk purchases and to provide guidelines for further research.
Publication 14	<i>'Consumer Characteristics Influencing Milk Consumption Preference, The Turkey Case'</i> by Yayar (2012).
Relevant Key Concepts	Turkish consumer; consumer purchase preferences; packaged and unpackaged cow milk; socioeconomic- and demographic-based decision-making approach
Summary	In a Turkish study, Yayar (2012) investigated consumer preferences between packaged and unpackaged milk. It was found that 31% of Turkish consumers purchased only unpackaged milk, 33% purchased both packaged and unpackaged milk and 36% purchased only packaged milk. Consumers' level of education, household size, the presence of children and income influenced the decision to purchase packaged milk.
Publication 15	<i>'Influence of Product Attributes on Milk Consumer's Choice in Lithuania'</i> by Pilelienė and Liesionis (2014).
Relevant Key Concepts	Lithuanian consumer; attributes impacting product selection; cow milk; attitude toward-attribute approach
Summary	In 2014, Pilelienė and Liesionis (2014) studied the attributes of milk which influence consumer choices in Lithuania. They found that Lithuanian consumers became increasingly health concerned. However, price, naturalness and country of origin, with a preference for Lithuanian milk, were considered the most important product attributes when selecting milk products.
Publication 16	<i>'Drivers of Choice for Fluid Milk Versus Plant-Based Alternatives: What Are Consumer Perceptions of Fluid Milk?'</i> by McCarthy, Parker, Ameerally, Drake and Drake (2017).
Relevant Key Concepts	American (US) consumer; product attributes and personal values related to purchase behaviour; dairy and plant-based milk alternative products; attitude-toward-attribute approach and means-end-chain theory

Summary	McCarthy <i>et al.</i> (2017) aimed to determine the extrinsic product attributes and personal consumer values which drive the purchase of dairy and plant-based alternative milk among American consumers. Fat content, package size and label claims were found to be the most important attributes when purchasing dairy milk, while sugar content, plant source and packaging size were considered the most important product attributes in plant-based alternatives and lactose-free claims were important in both categories. Important personal values to all consumer groups were to maintain a balanced diet and healthy lifestyle.
Consumer and product sensory acceptability	
Publication 17	' <i>Determining the Most Influential Sensory Attributes of Nuttiness in Soy milk: A Trial with Korean Consumers Using Model Soy milk Systems</i> ' by Hwang and Hong (2015).
Relevant Key Concepts	Korean consumer; sensory perception of nuttiness; soy milk; descriptive sensory profiling approach
Summary	In 2015, Hwang and Hong (2015) determined the most influential sensory drivers of nuttiness in soy milk as identified by Korean consumers. It was found that increased salt, sucrose and peanut flavouring, as well as a higher solids content, increased panellist and consumer perceptions of nuttiness. Consumers associated the terms <i>rich</i> , <i>natural</i> and <i>tasty</i> with nuttiness.
Publication 18	' <i>Sensory Evaluation Ratings of Non-Dairy Milk Substitutes in a Cold Chocolate Dessert</i> ' by To (2012).
Relevant Key Concepts	New York (U.S.) consumer; sensory ratings and product acceptability; cold desserts using cow milk vs coconut, soy and almond milk substitutes; food choice model, theory of planned behaviour and theory of reasoned action
Summary	To (2012) studied the sensory ratings in cold-chocolate desserts when whole dairy milk was substituted with non-dairy alternatives in the recipe. No significant differences were found in the ratings for appearance and texture between whole dairy milk and coconut, soy and almond milk substitutes. However, non-dairy desserts scored lower on flavour, aftertaste, acceptability and willingness to purchase than whole milk, suggesting that the non-dairy alternatives were not considered suitable substitutes for whole dairy milk.
Publication 19	' <i>Assessment of Consumers' Perceptions, Preferences, Behaviors and Values with Fluid Milk Packaging, Code Date and New Product Concepts</i> ' by Paterson (2016).
Relevant Key Concepts	American (U.S.) consumer; impact of sensory experience and packaging date on perception and behaviour; fresh cow milk; attribute-value perception approach

Summary	Paterson (2016) investigated the decline in the consumption of dairy milk among American consumers. The study considered the influence of sensory experiences, combined with packaging dates on consumer perceptions, purchasing behaviour and preferences for fresh milk. Consumers portrayed a preference for flavoured milk or blends of dairy and milk alternatives over plain dairy milk.
Consumer attitudes and purchase behaviour	
Publication 20	<i>'Does the Consumers' Buying Behavior Differ for Vegetarian and Non-Vegetarian Food Products? Evidences from an Emerging Market'</i> by Kumar and Kapoor (2015).
Relevant Key Concepts	Indian consumer; purchase behaviour; vegetarian vs non-vegetarian food products; attitude-toward-product-attribute and attitude-toward-market-attribute approaches
Summary	Kumar and Kapoor (2015) compared the buying behaviour of Indian consumers during the purchase of vegetarian and non-vegetarian food products. They found that consumers purchase higher quantities of food when purchasing vegetarian products than those who purchase non-vegetarian products. Age and income influenced consumer purchase behaviour of vegetarian products but showed no meaningful effect on the purchase of non-vegetarian products. Product attributes played a meaningful role in the purchase of both categories with a very low preference for branded and packaged products observed in both categories.
Publication 21	<i>'An Investigation into Variables, Other Than Price, Influencing the Consumption of Milk in the Greater Durban Area'</i> by Geils (1981).
Relevant Key Concepts	South African consumer; producer opinions of consumer attitudes and behaviour; cow milk and milk substitutes
Summary	Geils (1981) evaluated which variables, other than price, influenced the consumption of milk among consumers in Durban, South Africa. Focus groups were conducted to determine consumer attitudes and behaviour toward milk and milk substitutes and criteria considered during purchases. Dairy company executives were interviewed to determine their opinions on factors influencing consumer choices. At that time the lack of clear marketing strategies for milk was considered a major limitation in milk sales.
Publication 22	<i>'Expectancy-Value Theory Contributes to Understanding Consumer Attitudes Towards Cow's Milk Alternatives and Variants'</i> by Kempen, Kasambala, Christie, Symington, Jooste and Van Eeden (2016).
Relevant Key Concepts	South African consumer; attitudes toward milk alternatives and variants; expectancy-value theory; dairy yoghurt, maas, goat, soy and camel milk; expectancy-value theory

<p>Summary</p>	<p>More recently, Kempen <i>et al.</i> (2016) published findings of a study aimed at understanding South African consumer attitudes toward milk alternatives and variants. Due to increased popularity and demand observed for milk alternatives and variants in the South African market, they studied consumer attitudes, beliefs and perceptions of dairy yoghurt and <i>maas</i>, as well as goat, soy and camel milk. Direct experience or familiarity, conditional willingness to try the product, other causal factors as well as ingrained indirect experiences from childhood and associations influenced consumer acceptance or rejection of these products. Consumer expectations of the product played a major role in their acceptance of milk alternatives and variants.</p>
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Several broad categories emerged from the published peer-reviewed literature prior to the commencement of the research (presented in Table 1.1). The first two publications listed (Brázdová *et al.*, 2014; Allen, 2012) link consumer demographics and health to their product preferences; publications 3 to 6 (Kühl *et al.*, 2017; Faletar *et al.*, 2016; Svensson & Ångerfors, 2010) connect consumer perceptions to ecological product certifications and origin labelling; consumer perceptions and their willingness to pay for food safety are found in publications 7 to 10 (Helling, 2015; Bozoglu *et al.*, 2014; Li, 2011; Wolf *et al.*, 2011) while consumer willingness to pay for value-added product claims is observed in publication 11 (Bimbo *et al.*, 2016). Consumer perceptions, preferences, attitudes and purchase intentions were related to specific product attributes and personal values in publications 12 to 16 (McCarthy *et al.*, 2017; Gavojdian *et al.*, 2016; Kurajdova & Táborecka-Petrovicova, 2015; Pilelienė & Liesionis, 2014; Yayar, 2012), while publications 17 to 19 indicated product sensory acceptability to consumers (Paterson, 2016; Hwang & Hong, 2015; To, 2012). Consumer attitudes and purchase behaviour were linked in publications 20 to 22 (Kempen *et al.*, 2016; Kumar & Kapoor, 2015; Geils, 1981). A wide spectrum of approaches and theories were found to underly these studies, ranging from frequently used *attitude toward product attribute approaches* and the *theories* related to *planned behaviour* or *reasoned action*, to *socio-economic and demographic decision-making*, *risk perception*, *descriptive sensory profiling* and *attribute-value perception approaches*, *food choice* and *hedonic price models* and *random utility*, *means-end-chain* and *expectancy value theories*. While all these approaches, models and theory add value to the knowledge base available on the research topic globally, the mere variety of approaches utilised globally on related topics led the researcher to anticipate that multiple elements potentially impact consumer decision-making in the milk alternative product category. Only a few of the studies were specifically related to UHT milk alternative products, with the majority being related to cow milk. Most publications described above were based on international studies, only two publications (Kempen *et al.*, 2016; Geils, 1981) were found to link the South African consumer to milk and milk alternatives prior to the commencement of the study. Consequently, there was a large gap in knowledge specifically linking the consumer to UHT

milk and milk alternative products in South Africa prior to the research. Only Publication 22 of the South African publications (Kempen *et al.*, 2016) was available and considered current at the commencement of the study. These publications shaped the initial assessment of gaps found in literature on South African consumer attitudes and purchase intentions toward UHT milk alternatives presented in the next section. Several new, related publications were found from similar studies conducted during the time of research, contributing to the topic. These publications are presented in Chapter 2 with the literature to provide greater insight into the research phenomenon.

1.4.2 Gap in Research

As observed from the publications above, specific knowledge of South African consumers' attitudes toward UHT milk alternatives and purchase intentions thereof are limited. The majority of publications found prior to the onset of the research were based on international consumer research and very few were based specifically on UHT milk alternative products. Many of the studies were found to link consumer attitudes to cow milk or dairy products (Kühl *et al.*, 2017; Bimbo *et al.*, 2016; Faletar *et al.*, 2016; Gavojdian *et al.*, 2016; Paterson, 2016; Helling, 2015; Kurajdova & Táborecka-Petrovicova, 2015; Bozoglu *et al.*, 2014; Brázdová *et al.*, 2014; Pilelienė & Liesionis, 2014; Allen, 2012; Yayar, 2012; Li, 2011; Wolf *et al.*, 2011; Svensson & Ångerfors, 2010; Zhuang, 2010), few focused specifically on UHT milk alternative products (McCarthy *et al.*, 2017; Kempen *et al.*, 2016; Hwang & Hong, 2015; Kumar & Kapoor, 2015; To, 2012; Geils, 1981). While these publications provide valuable knowledge on the topic in general, it cannot be presumed that the meaning that South African consumers ascribe to UHT milk alternatives and its use is similar to the findings of their international counterparts or the attitudes and purchase intentions ascribed to cow milk. The above-mentioned studies took place in diverse contexts, which would most likely differ from the socio-cultural, economic and physical context within which South African consumers make purchase decisions. Among the two South African consumer attitude publications specifically related to milk and milk alternatives (Kempen *et al.*, 2016; Geils, 1981), attitudes identified by Geils (1981) among Durban consumers cannot be presumed to describe current consumer attitudes accurately, four decades later. While the research of Kempen *et al.* (2016) provides valuable information on current consumer attitudes, knowledge on the topic needs to be expanded to include UHT milk alternatives commonly available in the South African market.

As mentioned in the background section, the industry needs a greater depth of understanding of consumer attitudes, comprised of their beliefs and evaluation of UHT milk alternative products, as well as consumer expectations of these niche products, society's view of the products and the consumer's ability and control of product purchases. Apart from the expectations-value theory in Kempen *et al.* (2016), none of the studies proposed a model or

framework, within which South African consumer attitudes and their purchase intentions toward UHT milk alternative products can be interpreted or understood. While several of the studies linked attitudes toward a product itself to the consumer (McCarthy *et al.*, 2017; Kempen *et al.*, 2016; Hwang & Hong, 2015), the studies did not provide a holistic understanding of how attitudes toward the product category related to other, non-product elements and how this impacts consumer purchase intentions. Further, the potential concern that none of the approaches, models or theories utilised in the above-mentioned studies alone could sufficiently describe the essence of consumer decision-making in the milk alternative category indicated the need for a holistic research approach, which would be flexible and open to multiple aspects, theories and approaches to interpret consumer attitudes and purchase decisions of UHT milk alternatives within the South African context.

Since both the consumer's attitudes toward the product itself and toward behavioural intentions have been linked favourably to product purchase and usage (McDaniel & Gates, 2020; Paul *et al.*, 2016), it became necessary to understand both these aspects in South African consumer attitudes toward UHT milk alternatives and how they fit in together to form the individual's overall attitude toward the product and its purchase. An integrated approach to the research topic, encompassing all the relevant elements impacting consumer attitudes and purchase intentions was consequently found to be unavailable in literature. The need for a model, depicting these elements and their inter-relations became more pronounced if the industry was to gain a comprehensive understanding of South African consumers and their attitudes and purchase intentions of UHT milk alternatives to inform new product development, market positioning and effective promotion. Most existing consumer behaviour models (discussed in Chapter 3) deal with consumer attitudes toward the product and attitudes toward purchase intentions separately, thus keeping each of these elements within their confined space. Applying any of the existing models to the enquiry would consequently only provide a partial description of the link between the South African consumer and UHT milk alternatives available in the South African market. However, since both influence the consumer's purchase decision, an integrated approach to these concepts is required to arrive at a more comprehensive model within which the phenomenon of consumer attitudes and interventions toward UHT milk alternatives can be interpreted. This requirement necessitates the development of an integrated attitude-intention model within which the essence of consumers' overall attitude toward UHT milk alternatives, including attitudes toward the product itself and its purchase, can be understood. Based on these needs, the next section provides the justification for the research which emerged from the background and problem statement.

1.5 JUSTIFICATION FOR RESEARCH

Companies introduce milk alternatives as product line extensions, giving consumers another product to consider or select (Hanslin & Rindell, 2014). However, it is uncertain whether consumers purchase the above-mentioned products because it fully meets their expectations, because these are the only options available, or for other reasons not currently known. Therefore, it becomes necessary to establish and describe South African consumers' attitudes toward UHT milk alternative products available in the retail market to gain a better understanding of their preferences when selecting milk alternatives as the introduction of new products to consumers remains a feasibility risk (Hussain & Rashid, 2016). If the specific consumer attitudes toward UHT milk alternative products (comprised of beliefs and evaluation of the products) and consumer purchase intentions (as influenced by their expectations of the products in relation to their personal needs, the perception of society around them about the products and their ability and control to select and purchase their product preferences) are understood, producers can incorporate this knowledge during product development and marketing. This will support producers to develop milk alternative products that meet consumer needs while at the same time giving producers a competitive edge to position and promote their products efficiently in the South African market. Therefore it is important to understand the beliefs and expectations that influence attitude formation, which affects the consumers' decision about a product (Kurajdova & Táborecka-Petrovicova, 2015).

However, as mentioned earlier, the study of these elements contributing to South African consumer purchase intentions of UHT milk alternatives cannot be studied in isolation if a meaningful, holistic perspective is to be described, necessitating the need for developing an integrated attitude intention model. The development of a model within which the essence of these attitudes can be understood in this study will provide both producers and academics with a framework to utilise during further research, product development or introduction of milk alternatives on the South African market. Without the research and proposed holistic model to describe consumer attitudes and purchase intentions, the gap in the body of available literature remains, with limited information available to inform academics and industry on the topic. In such a scenario, the industry stands to risk launching UHT milk alternative products into the South African market, which does not meet local consumer needs, expectations and favourable evaluation criteria, leading to poor product acceptance. However, research into the phenomenon and the development of a model to describe the links between elements impacting consumer purchase intentions will contribute to a greater depth of knowledge in terms of consumer attitudes toward products and consumer purchase intentions. This knowledge would contribute to the industry by informing the development of relevant new products, market positioning and promotion strategies thereof and to academics by expanding

the body of knowledge available not only on the South African consumer and UHT milk alternatives, but also for future research on consumer and purchase intentions of other products based on the methodology, findings and interpretation of this study. It will also support the UHT milk alternative industry to identify misconceptions about the product category in the consumer perception, which can be rectified through consumer education, providing consumers with credible information. Consumer education, in turn, will support consumers in making better-informed choices related to their personal needs during product selection. The study will be able to make a positive contribution to industry and the theoretical body of literature through the development of a research plan which would break down the phenomenon into its relevant elements to gain a detailed description thereof. In addition, recombining these elements at a higher level will assist in understanding the concepts forming the essence of South African consumer attitudes and purchase intentions towards UHT milk alternatives in the form of an integrated attitude-intention model. This justification for research led to the identification of the central research question in the next section.

1.6 RESEARCH QUESTION

The research problem revealed the following research question.

Central research question: What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?

This central research question uncovered four sub-questions:

- Sub-question 1:** What do consumers believe about UHT milk alternative products in their own frame of reference?
- Sub-question 2:** How do consumers evaluate UHT milk alternatives within their own context?
- Sub-question 3:** Which factors impact consumer purchase intentions of UHT milk alternatives?
- Sub-question 4:** How can the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions be holistically described and interpreted?

1.7 RESEARCH AIM AND OBJECTIVES

The research problem in combination with the research questions presented above led to the formulation of the following aim and objectives guiding the enquiry. The aim of the research was *to propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted*. The following

objectives were set to initiate the enquiry process (as guided by the *tri-component attitude model*) to identify general attitudes held toward the product category in order to arrive at an appropriate model within which these attitudes can be understood:

- Objective 1:** To gain a greater depth of understanding of consumers' beliefs related to UHT milk alternative products (*cognitive component of attitudes*).
- Objective 2:** To describe the meaning consumers ascribe to their product evaluation criteria of UHT milk alternatives (*affective component of attitudes*).
- Objective 3:** To establish the factors that initiate consumers' purchase intentions of UHT milk alternatives (*conative component of attitudes*).
- Objective 4:** To propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted.

1.8 RESEARCH DESIGN AND METHODOLOGY

A postpositivist, qualitative approach was used in this phenomenological study on the attitudes and purchase intentions of South African participants toward UHT milk alternatives. The study was of exploratory-descriptive nature. The postpositivist paradigm used to shape the perspective of the research enquiry perceives humans and their reality as shaped by their lived experiences to be a central part of the research and that reality needs to be understood from the experience of the individual living it by searching inductively for the common patterns, underlying meanings, beliefs and experiences to interpret the subjective knowledge of participants (McGregor, 2018). The emerging nature of the qualitative research approach allowed the research to be developed throughout the process, allowing flexibility to arrive at an in-depth complex, unanticipated interpretation of the research problem based on the meaning created by participants (Creswell & Poth, 2017). Since the primary purpose of the research was to explore and describe meanings from the participant's reality and context to inform the interpretive model required by the central research question, an exploratory-descriptive research design was used. The nature of the research question, more particularly the need to gain a deeper understanding of the lived experiences and realities which multiple participants have in common to determine consumer attitudes and intentions toward UHT milk alternatives, led to a phenomenological strategy of enquiry (Creswell & Poth, 2017).

The geographical location of the study was within the borders of South Africa, to gather insight from South African consumers shopping in the South African retail market. Data was gathered through mini-focus groups, online mini-focus groups and semi-structured interviews. Two in-person mini-focus groups were conducted with five participants in total. Due to the coronavirus

disease of 2019 (COVID-19) pandemic restrictions on in-person meetings implemented during the data-gathering phase of the research, data-gathering methods were continued online rather than in person. Eight online mini-focus groups were conducted with a total number of 19 participants. Eleven semi-structured online interviews were conducted. The population of this study consisted of South African consumers over the age of 18 years, who were familiar with milk and milk alternatives and may or may not use these products due to personal reasons, who were willing and able to participate in the data-gathering sessions and who could be reached through the recruitment strategies of the research. Purposeful, convenience sampling was used by sending the participation request to employees on the University of South Africa's (UNISA) Florida and Muckleneuk campuses and by posting requests for participation on Facebook groups with an interest in food allergies, vegetarian or vegan lifestyles, weight control diets and a healthy, fit lifestyle. Permission to contact UNISA staff for participation was granted by the Research Permission Subcommittee (RPSC) and later amended for online participation. Participants were self-selected by choosing to participate in the online mini-focus groups and booking a timeslot. Individuals who could not join the timeslots of online mini-focus groups were accommodated with semi-structured online interviews. The same discussion guide was implemented for both mini-focus groups and semi-structured interviews. The discussion guide was informed by generic concepts identified from existing attitude models but was only used as a guideline to initiate the discussions. The emergent design of qualitative studies allowed for more questions to be asked based on participants' discussions to expand the conversation and to uncover a greater depth of information beyond the initial concepts of the theoretical models.

Whilst the discussion guide utilised concepts from literature to initiate conversations, as guided by the operationalisation of the study, thematic data analysis was conducted utilising a combined inductive and deductive strategy to gain a greater depth of understanding of the essence of the research topic. Thematic data analysis was conducted by systematically organising and preparing data prior to immersive reading to detect meaningful statements. Meaningful statements were coded, whereafter codes were categorised into subthemes based on shared meanings found among the codes. From the subthemes, themes were generated to arrive at the essence of the research phenomenon. The themes and subthemes were then revised deductively to verify that each theme was sufficiently supported by the data and to identify gaps where further data were required. Once a point of saturation was reached, as determined by the number, or lack of, new insights gained with each participant response, data-gathering activities were concluded with 35 participants. The trustworthiness of the findings was supported through credibility, transferability, dependability, confirmability and reflexivity, including an epoché bracketing the researcher's perspective and background from

the research findings. The research findings were presented according to each research objective and utilised to arrive at an integrated consumer attitude-intention model within which the essence of South African consumer attitudes and purchase intentions toward UHT milk alternatives can be interpreted.

1.9 ETHICS

The research adhered to ethical requirements stipulated by UNISA (2013) in its *Policy on Research Ethics* during the entire research process. The research proposal, including the research methodology, was approved by the Ethics Committee of the College of Agriculture and Environmental Science (CAES) at UNISA for approval before the study commenced. The CAES Ethics Approval is attached in Appendix B (Reference Number: 2019/CAES/034) while a more detailed description of the adherence to ethical research practices is presented in Chapter 4 of the research methodology. Data-gathering activities only commenced once the required ethical clearance was obtained.

1.10 RESEARCH CONTRIBUTION

All research activities, including the literature review, research design, data gathering activities, data analysis activities, documenting of findings and presentation of the thesis and any following articles or presentations of the findings, have been conducted by the main researcher, Anjolize Wassenaar. The research was conducted under the guidance of Prof E. L. Kempen, the research supervisor in the Department of Life and Consumer Sciences within CAES at the University of South Africa. The researcher used the services of three transcriptionists who signed confidentiality agreements to protect all participant and research information they had access to (Appendix E) during the research to transcribe interviews and mini-focus groups and to capture research notes. The research presented is original and where concepts or information were used from other sources, credit was given to the original sources through the Harvard referencing method according to the style of the Department of Life and Consumer Sciences at the University of South Africa. The thesis was submitted through Turnitin as verification (Appendix H) of the similarity to any existing published information. The research will contribute to information available to industry and theory through the intended presentations and publications as set out below:

1.10.1 Conference Presentations

The research has not been presented at a conference to date, but it has been proposed to present the findings at the following two congresses:

- South African Association for Food Science and Technology (SAAFoST) Congress 2023 – poster presentation on the link between South African consumer purchase intentions of UHT milk alternatives and the perceived product sensory properties.

- International Federation for Home Economics (IFHE) World Congress 2024 – oral/poster presentation presenting South African attitudes and intentions toward UHT milk alternatives within the context of the congress theme to be confirmed.

1.10.2 Publications

Similarly, the research findings have not been published to date, but the following publications are planned:

- publication of the full thesis in the UNISA Institutional Repository;
- an article in a peer-reviewed journal presenting the proposed Integrated Attitude-Intention Model within which South African consumer attitudes toward UHT milk alternatives and their purchase intentions can be interpreted;
- an article in a peer-reviewed journal on the expected outcomes of UHT milk alternative consumption among South African consumers;
- an article in a peer-reviewed journal on the evaluation of UHT milk alternative products by South African consumers;
- an article in a peer-reviewed journal on the importance of intrinsic product properties in South African consumer evaluations of UHT milk alternatives; and
- an article in a peer-reviewed journal on the link between perceived behavioural control and South African consumer UHT milk alternative purchase intentions.

1.11 OUTLINE OF THE THESIS

The thesis is presented in nine chapters according to the following structure:

Chapter 1: Introduces the research firstly by providing a background to the study and defining UHT milk alternatives. Thereafter, the research problem is described by considering literature available prior to the onset of the research on milk alternatives and the identified gap in knowledge. The justification for the research, research question and the aim and objectives of the research are stated and a concise description of the research design and method and ethical clearance obtained and research outputs are provided.

Chapter 2: Presents literature to inform the study on the consumer demand for UHT milk alternatives and describes the types and properties of the various UHT milk alternatives available in the South African market. It highlights global consumer trends perceived to influence the demand for UHT milk alternatives, as well as specific medical, lifestyle and nutritional requirements which were linked to the use of UHT milk alternatives. It ends with a brief description of the current state of and challenges to producers of UHT milk and milk alternatives.

Chapter 3: Presents the theoretical perspective of consumer attitudes. It explains consumer decision-making in context of consumer attitudes and describes and critiques various existing consumer decision-making and attitude models. This formed the theoretical perspective shaping existing knowledge and providing a lens through which the enquiry was initiated and by which the researcher was guided as to which elements were important to examine at the onset of the research. The emergent design of the phenomenological study utilised this theoretical perspective initially but progressed through stages attempting to make sense of the experiences and meanings participants described to arrive at a more holistic interpretation of the phenomenon studied. Finally, this chapter presents the conceptual framework of the study as anticipated from the theoretical perspective.

Chapter 4: Describes the research methodology of the study. It describes the postpositivist paradigm and qualitative approach used for this exploratory-descriptive phenomenological study. It includes an account of the geographic location of the study, the data-gathering methods, participant sampling, recruitment strategies, instrument utilised and the operationalisation of the study. The manner in which trustworthiness of findings was supported, as well as the thematic data analysis implemented is presented. The chapter concludes by describing the methods underlying the interpretation and presentation of the findings and the ethical considerations adhered to during the research.

Chapter 5: Provides the participant demographics of the research sample. Thereafter, the findings related to the first research sub-question on what consumers believe about UHT milk alternative products in their own frame of reference are presented.

Chapter 6: Presents the findings related to the second research sub-question on how consumers evaluate UHT milk alternatives within their own context. Findings related to consumer product beliefs and their evaluation of products are collectively interpreted to establish consumer attitudes toward the UHT milk alternative product category.

Chapter 7: Presents the research findings on non-product-related factors influencing participants' purchase intentions of UHT milk alternatives in support of the third research sub-question and objective.

Chapter 8: Includes a discussion of the research findings, linking participant intentions specifically to the five themes of the findings, in conjunction with findings from literature.

Chapter 9: This chapter concludes the research with a brief descriptive summary how the aim of the study was achieved. The essential, invariant structure of the phenomenon under study provides an interpretation of the research findings in context of the research objectives and how these findings unite to shape the essence of consumer purchase intentions toward

the product category in support of the fourth research sub-question. The chapter presents the proposed integrated attitude-intention model within which the effect of consumer attitudes on their purchase intentions toward UHT milk alternatives can be holistically interpreted in support of the central research question. Finally, the contributions and limitations of the study are stated and recommendations for further research are presented.

1.12 CONCLUSION

As found in the background and problem statement provided in this chapter, the phenomenon of South African consumer attitudes guiding their purchase intentions of UHT milk alternatives is poorly understood. To inform new product development, market positioning and marketing strategies, producers and marketers need to understand consumer attitudes toward the product category. More importantly, how these attitudes relate to consumer intentions to purchase UHT milk alternatives needs to be understood, necessitating an integrated model within which consumer beliefs and evaluation of the product category as well as their purchase intentions can be interpreted. However, the body of literature is limited on the South African consumer and UHT milk alternatives and existing consumer behaviour models in literature do not fully integrate the needed concepts. To address this gap in knowledge, this exploratory-descriptive study used a postpositivist, phenomenological, qualitative approach to gather deeper insights into South African consumers' attitudes toward UHT milk alternatives in the South African market with the ultimate goal of proposing a model within which the essence of consumer attitudes toward purchase intentions can be understood. The brief descriptions presented on the research design, methodology and ethics serve as an overview of the study and are expanded upon to provide detailed descriptions in Chapter 4. The planned research outputs and outline of the thesis guide the reader with an overview of the research presentation. The next chapter provides literature on UHT milk alternatives and is followed by the chapter presenting the theoretical perspective which guided the study. Thereafter, the research methodology, findings, discussion, interpretation, recommendations and conclusion are presented in the remaining chapters.

CHAPTER 2

LITERATURE BACKGROUND ON UHT MILK ALTERNATIVES

Presents literature to inform the study on the consumer demand for UHT milk alternatives and describes the types and properties of the various UHT milk alternatives available in the South African market. It highlights global consumer trends perceived to influence the demand for UHT milk alternatives, as well as specific medical, lifestyle and nutritional requirements which were linked to the use of UHT milk alternatives. It ends with a brief description of the current state of and challenges to producers of UHT milk and milk alternatives.

2.1 INTRODUCTION

The purpose of the literature provided was not to restrict the current study to previous findings or frames of reference but rather to inform the current study of existing knowledge from which research questions arose requiring interpretation. Since limited literature is available specifically on South African consumer attitudes and purchase intentions related to UHT milk alternatives, this chapter begins with a brief description of the factors that influence the demand for milk alternative products. This description is followed by a discussion of the types and properties of UHT milk alternative products available to South African consumers. While the researcher aimed to use peer-reviewed sources during the study, very limited current peer-reviewed publications are available on the UHT milk alternative market. The researcher occasionally used industry publications and websites of regular, reputable reporting agencies and organisations to obtain current information on the market trends and product development. Some information, particularly product-specific information, or information available to the consumer, had to be sourced from the websites or reports of producers, online shops, popular media and related industry role-players or organisations. Every effort was made to source reliable information whilst reflecting the state of the industry and the information available on it.

2.2 CONSUMER DEMAND FOR MILK ALTERNATIVES

Various factors have been identified from the literature influencing the demand for milk and milk alternative products. As mentioned in sections 1.4.1 and 1.4.2, the majority of available literature is based on global studies, since literature based on local research on the consumer demand for milk alternatives was found to be limited. It remains to be determined how applicable findings from international studies are to the South African context. Generally held beliefs, identified from several studies, indicate that many consumers associate milk alternatives with plant-based products developed specifically for the use by individuals with cow milk allergies or vegetarian and vegan lifestyles, thus firmly establishing this perception

in the consumer mind (Besir, Awad, Mortas & Yazici, 2022; Cardello, Llobell, Giacalone, Roigard & Jaeger, 2022; Wadyka, 2022; Reyes-Jurado, Soto-Reyes, Dávila-Rodríguez, Lorenzo-Leal, Jiménez-Munguía, Mani-López & López-Malo, 2021). However, more may be involved in the consumer demand for UHT milk alternatives than just cow milk allergies and plant-based lifestyle choices. As mentioned above, the purchase of milk may be habitual and require little involvement from the consumer. However, the purchase of UHT milk alternatives may be based on a more complex decision-making process due to the various factors leading to the demand for alternatives. While global consumer trends influence consumer choices in general, medical reasons, lifestyle choices and special nutritional requirements are associated specifically with consumers' choice of milk products (Vanga & Raghavan, 2018; Mäkinen *et al.*, 2016). Some consumers are allergic or sensitive to milk, while others may be lactose-intolerant, rendering them potential milk alternative consumers for medical reasons (Kumari & Singh, 2018; Mäkinen *et al.*, 2016). Apart from the perception that milk alternatives are meant for consumers with milk allergies or plant-based lifestyles, multiple studies linked the consumer belief that plant-based and lactose-free dairy-based milk alternatives are suitable for consumers experiencing lactose intolerance to a demand for these products (Cardello *et al.*, 2022; Vallath, Shanmugam & Rawson, 2022; Gorman, Knowles, Falkeisen, Barker, Moss & McSweeney, 2021; Reyes-Jurado *et al.*, 2021; Rizzo, Harwood & Drake, 2020; Silva, Silva & Ribeiro, 2020; Kempen *et al.*, 2016). Based on lifestyle choices to follow a vegetarian or vegan diet, some consumers consider milk alternatives to limit or avoid animal products (Kumari & Singh, 2018; Vanga & Raghavan, 2018). Mintel (2018) found that purchase decision approaches differ between US dairy consumers and plant-based milk alternative consumers, with plant-based milk alternative consumers considering more factors such as flavour, vitamin, mineral and protein content and natural ingredients during their purchase decision than dairy consumers (Mintel, 2018). The importance of these product attributes to South African consumers is currently unknown. Other consumers, such as athletes or consumers at risk of nutritional deficiencies, have special nutritional requirements that purposefully developed milk alternatives can potentially offer through higher levels of protein, vitamins, minerals or other nutrients added to some milk alternatives (Kirk, Mitchell, Jackson, Amirabdollahian, Alizadehkhayyat & Clifford, 2017; Aboufazi, Baba & Misran, 2016; Liem *et al.*, 2016; Parviainen, Elorinne, Väisänen & Rimpelä, 2016). It was found that consumer expectations from product consumption and the evaluation of whether the product would meet these expectations, or another specific defined need, often drive consumer acceptance and demand for a product (Cooke, Dahdah, Norman & French, 2016; Kempen *et al.*, 2016; Doane *et al.*, 2014; Mishra, Akman & Mishra, 2014). Consequently, the above-mentioned factors, as well as currently still unknown factors, potentially drive consumer demand for UHT milk alternative products in the South African market.

2.2.1 ALLERGIES, INTOLERANCE AND SENSITIVITY

Certain health conditions are specifically linked to the consumption of dairy milk, creating a demand for suitable milk alternatives (Sethi *et al.*, 2016). The most common conditions are milk allergies, lactose intolerance and non-lactose-related sensitivity to dairy milk. These conditions are often self-diagnosed by consumers, resulting in confusion between conditions, inaccurate diagnoses, or unwarranted exclusion of dairy from the diet creating nutritional deficiencies (Skypala & McKenzie, 2018; Mäkinen *et al.*, 2016; Stukus & Mikhail, 2016; Maslin, 2015; Boyce, Assa'ad, Burks, Jones, Sampson, Wood, Plaut, Cooper, Fenton, Arshad, Bahna, Beck, Byrd-Bredbenner, Camargo, Eichenfield, Furuta, Hanifin, Jones, Kraft, Levy, Lieberman, Luccioli, McCall, Schneider, Simon, Simons, Teach, Yawn & Schwaninger, 2010).

In a recent study, Baio, Dos Santos and Madrona (2016) found that 60% of their participants were unaware of the difference between milk allergy and milk intolerance (Baio *et al.*, 2016). The correct diagnosis between milk allergies and lactose intolerance is essential, since misdiagnosis could lead to the unnecessary elimination of a valuable nutritional source and inappropriate interventions, while accidental consumption of milk could have life-threatening consequences for allergic individuals (Heine, AlRefaee, Bachina, De Leon, Geng, Gong, Madrazo, Ngamphaiboon, Ong & Rogacion, 2017; Stukus & Mikhail, 2016).

2.2.1.1 Milk Allergy

Milk allergy refers to a medical condition where the body's immune system reacts after exposure to milk proteins, releasing antibodies and histamine in the bloodstream and resulting in an inflammatory response (Nestlé, 2018; A2 Milk Company, 2017; Mäkinen *et al.*, 2016). Allergic reactions can occur within minutes to a few hours, after exposure to an allergen and will occur every time the individual is exposed to the allergen (A2 Milk Company, 2017; Baio *et al.*, 2016; Begen, Barnett, Payne, Roy, Gowland & Lucas, 2016; Stukus & Mikhail, 2016). Symptoms may include hives, itching, abdominal cramps, vomiting, diarrhoea, swelling of the tongue and throat and in severe cases, difficulty breathing and anaphylactic shock, which could be life-threatening (Nestlé, 2018; Soon, 2018; Maslin, 2015). While milk allergy is common among children, they often outgrow it by the age of four years (Vanga & Raghavan, 2018; Čelakovská, Ettlerová, Ettler, Vaněčková & Bukač, 2015; Cobe, 2015; Maslin, 2015). Unlike in children, food allergies among adults usually endure (Boyce *et al.*, 2010). All cow milk should be excluded for individuals suffering from milk allergy, making plant-based milk such as soy, almond, rice and coconut milk more appropriate milk alternatives to consume (Nestlé, 2018; Baio *et al.*, 2016; Zevnik, 2014). However, since their nutritional composition varies greatly and some individuals allergic to milk may also be allergic to soy, care should be taken that the type of milk alternative selected is appropriate (Maslin, 2015; Vandenplas, De

Greef & Hauser, 2014). Since the prevalence of food allergies seems to increase globally, the demand for plant-based milk may increase (Soon, 2018).

2.2.1.2 Lactose Intolerance

Many consumers confuse food allergies and intolerance, but it is two very different conditions (A2 Milk Company, 2017). With allergies, the body's immune system responds negatively to exposure to an allergen, involving multiple organs, while in food intolerances, the gastrointestinal tract responds negatively to exposure to the allergen and other organs are generally not affected (Nestlé, 2018; Stukus & Mikhail, 2016; Maslin, 2015). Lactose intolerance is widely associated with the use of dairy milk (Vanga & Raghavan, 2018).

Lactose intolerance occurs when insufficient lactase, the enzyme responsible for breaking down lactose before it can be absorbed in the bloodstream, is produced in the small intestine (Nestlé, 2018; Strzałkowska, Jasińska & Józwiak, 2018; Zevnik, 2014). Without sufficient lactase, lactose is passed into the large intestine undigested and is unabsorbable across the gut wall (Nestlé, 2018; Heine *et al.*, 2017; Baio *et al.*, 2016). The improperly digested lactose ferments within the large intestine resulting in symptoms such as abdominal pain, bloating, diarrhoea and flatulence (Nestlé, 2018; A2 Milk Company, 2017; Gulseven & Wohlgenant, 2017; Hansen, Brustad & Johnsen, 2015). Unlike the symptoms in milk allergy, lactose intolerance symptoms can occur several hours after consumption of milk and it may not occur every time the individual consumes milk, since the symptoms vary based on the quantity and type of product consumed (Nestlé, 2018; A2 Milk Company, 2017; Stukus & Mikhail, 2016). Lactose-intolerant individuals may be able to tolerate up to a glass of milk before symptoms occur and may be able to tolerate other dairy products such as yoghurt and cheese in which lactose is present but limited (Thoming, Raben, Tholstrup, Astrup, Soedamah-Muthu, Givens & Astrup, 2016).

Complete elimination of dairy is not necessary as in the case of dairy allergies, but lactose-intolerant individuals need to reduce their lactose intake to accommodate the lower levels of lactase in their digestive system (Heine *et al.*, 2017; Zevnik, 2014). Studies have found that enzymatic protein-hydrolysed, lactose-free milk may reduce the intensity and frequency of symptoms for individuals with lactose intolerance (Turpeinen, Kautiainen, Tikkanen, Sibakov, Tossavainen & Myllyluoma, 2016). Due to the high prevalence of lactose intolerance in populations, the demand for milk alternatives, both lactose-free cow milk and plant-based alternatives, has increased (Tate & Lyle, 2018; Gulseven & Wohlgenant, 2017; Sethi *et al.*, 2016). It was found by Rizzo *et al.* (2020) that many consumers are first exposed to milk alternatives when lactose-free milk alternatives are purchased for one household member, impacting the household purchase behaviour and familiarity with UHT milk alternatives.

2.2.1.3 Milk Sensitivity

Some individuals may experience sensitivity to milk, even if they do not test positively for milk allergy or lactose intolerance (Harvard Health Letter, 2015; Pal, Woodford, Kukuljan & Ho, 2015). Milk sensitivity, its causes and prevalence are still not completely understood (Whitaker, 2013). However, it is known that conditions such as irritable bowel syndrome (IBS) result in a generally sensitive gastrointestinal tract, in which lactose may trigger symptoms (Bellini & Rossi, 2018). In cases of IBS, consumers are advised to consume a diet low in fermentable oligosaccharides, disaccharides, monosaccharides and polyol (FODMAPs), also excluding lactose and soy (Turco, Salvatore, Miele, Romano, Marseglia & Staiano, 2018). FODMAPs are osmotic (forcing more water into the colon) and sustain microbiota in the intestine (causing them to ferment and release carbon dioxide, methane and hydrogen), resulting in bloating, abdominal pain, irregular bowel habits and flatulence in hypersensitive individuals (Bellini & Rossi, 2018). While exclusion diets are suggested, they are hard to sustain, consequently, finding alternatives to familiar products such as milk, may greatly assist consumers (Mäkinen *et al.*, 2016; Whitaker, 2013). Other research has shown that it is not necessarily the lactose in milk and lactase deficiency that causes symptoms but that individuals may be sensitive to milk proteins, especially A1 β -casein in milk (He, Sun, Jiang & Yang, 2017; Kirk *et al.*, 2017; Jianqin, Leiming, Lu, Yelland, Ni & Clarke, 2016; Turpeinen *et al.*, 2016; Pal *et al.*, 2015). In some cases, the precise causes of milk sensitivity among consumers are unknown, but these sensitivities cause consumers to search for milk alternatives (Harvard Health Letter, 2015). This creates a need for alternative milk products that meet the health requirements of consumers while also serving as a nutritionally adequate source of nutrients and meeting consumer hedonic expectations.

2.2.2 PLANT-BASED DIETS

A global trend has been observed among consumers to increase plant-based foods in their diet as part of a flexitarian approach where they want to eat more fruit and vegetables (Del Buono, 2018; Watson, 2018c; Watson, 2017c). However, animal protein is still the primary global source of protein and no meaningful increase of vegans or vegetarians has been observed in the population (Virginia Dare, n.d.; Askew, 2018a; Watson, 2017c). Flexitarians choose the plant-based approach because of the perceived health, weight loss, environmental sustainability and animal welfare benefits associated with such a diet, however, they occasionally consume meat (Watson, 2018c; Watson, 2017c).

Consumers following plant-based diets are usually divided into two categories, vegetarians and vegans, based on the number of animal products they allow in their diets (Comax Flavors, 2017). Vegetarians follow a diet based on fruit, vegetables, pulses and grains and exclude meat, while the inclusion of animal-derived products such as eggs and dairy varies according

to individual preferences (Comax Flavors, 2017). Vegans follow a strictly plant-based diet and exclude all animal-derived products, including dairy and eggs from their diets (Comax Flavors, 2017). While vegans completely avoid animal-derived products, some vegetarians include dairy in their diet because of its nutritional value (McCarthy *et al.*, 2017). Consumer motivation to follow vegetarian or vegan diets often includes health concerns over animal-based products, ethical considerations such as animal welfare in production systems and environmental concerns (Court, 2018b; Parviainen *et al.*, 2016; Barley, 2013). One of the main challenges to vegetarians and vegans is to ensure that their diet is nutritionally adequate in iron, protein, calcium and vitamins D and B₁₂, thus increasing the importance of the nutritional composition of replacement products such as milk alternatives (Parviainen *et al.*, 2016). Consumers following vegan lifestyles carefully check product ingredients to ensure that all ingredients are vegan-friendly and not derived from animals, which would be considered unsuitable for consumption (Besir *et al.*, 2022; Vallath *et al.*, 2022; Wadyka, 2022). Due to vegetarians' and vegans' desire to follow a plant-based diet, plant-based UHT milk alternative products may appeal to them as potentially suitable to fit their lifestyle.

2.2.3 SPECIAL NUTRITIONAL REQUIREMENT DIETS

There is a general trend towards a healthy lifestyle as consumers recognise the link between healthy eating and reducing the risk of certain diseases (Vecchio, Van Loo & Annunziata, 2016). Consumers want certain ingredients in their food that are associated with functional health benefits (Cornall, 2018a). Consumers are more actively managing their health by increasingly choosing products that fulfil their individual health needs and nutritional requirements (Askew, 2018b; Cornall, 2018a; Jacobsen, 2017; Vecchio *et al.*, 2016). Instead of only avoiding ingredients, consumers try to add ingredients that are beneficial to human health (Crawford, 2018). Food manufacturers direct their marketing efforts to include the health benefits and potential to reduce the risk of diseases (Vecchio *et al.*, 2016). Several studies indicated the consumer perception that plant-based milk alternatives possessed certain health benefits (Moss, Barker, Falkeisen, Gorman, Knowles & McSweeney, 2022; Vallath *et al.*, 2022; Reyes-Jurado *et al.*, 2021; Markham, Auld, Bunning & Thilmany, 2014), with nut-based milk alternatives particularly being considered to contain healthy fats (Warren, 2019). The inclusion of healthy products in the consumer diet was often linked to a strong desire for clean, natural, healthy eating, leading to product selection or avoidance in support of this desire. As found by several studies, a desire to avoid hormones and antibiotics associated with animal-derived products, led to a consumer demand for plant-based milk alternatives, except for soy milk (Besir *et al.*, 2022; Cardello *et al.*, 2022; Markham *et al.*, 2014). Consumer concern is expressed in the case of soy milk, often leading to its avoidance, because soy naturally contains oestrogen (Kempen *et al.*, 2016).

Some consumers have special nutritional requirements due to their lifestyle or health condition in which milk alternatives, especially functional, fortified or enriched products, can play an important role (Ettman, 2016). An important group within this consumer category are athletes, whose nutrition has a meaningful influence on their performance (Sudsard, Kijboonchoo, Chavasit, Chaunchaiyakul, Nio & Lee, 2014). While food and beverages taken before and during strenuous exercise play an important role in their performance, attaining the appropriate nutrition after exercise to prevent muscle breakdown and to aid in recovery between successive sessions is equally important to competitive athletes (Sudsard *et al.*, 2014). Dairy milk has been described as one of the most effective muscle recovery drinks available to athletes between bouts of strenuous exercise or after endurance activities, with athletes who consume milk recovering faster than those relying on commercial sports drinks (Ettman, 2016; Sudsard *et al.*, 2014). The nutritional composition of dairy milk, including its high protein content, makes it an ideal ergogenic aid to athletes to assist in muscle building and recovery (Parviainen *et al.*, 2016; Sudsard *et al.*, 2014). Consequently, functional dairy milk products focusing on the high-protein needs of athletes are increasingly introduced (Woolworths, 2018; First Choice Dairy, 2015).

While cow milk and functional milk alternatives such as high-protein milk may serve a valuable role in athletes' nutrition, dairy and lactose-intolerant athletes cannot obtain these benefits from regular dairy milk (Kirk *et al.*, 2017; Sudsard *et al.*, 2014). Sudsard *et al.* (2014) found that lactose-free dairy milk could serve as an appropriate alternative to regular milk, providing similar recovery benefits, endurance and metabolic efficiency among lactose-intolerant Asian cyclists than those expected from regular milk. Since protein is essential to athletes, vegetarian and vegan athletes need to find nutritionally suitable milk alternatives if they choose to forego dairy milk (Love, 2014).

Consumers with special nutritional dietary requirements include individuals with nutritional deficiencies or health conditions impacting on their immunity and growth (Le Port, Bernard, Hidrobo, Birba, Rawat & Ruel, 2017; Jacobsen, 2014). Functional products are developed to provide additional health benefits to the consumer to overcome these health conditions or deficiencies (Aboufazli *et al.*, 2016). To these consumers, functional products such as enriched or fortified milk could provide valuable health benefits (Beverage Industry, 2016; Jacobsen, 2014). While many of the enriched and fortified milk alternatives are dairy-based, or cow milk with added nutrients, vitamins or minerals, global studies also indicated the consumer belief that plant-based milk alternatives could support immune health (Besir *et al.*, 2022; Moss *et al.*, 2022), indicating that other perceived properties of milk alternatives may also drive the demand for consumption.

2.3 TYPES OF UHT MILK ALTERNATIVES IN THE SOUTH AFRICAN MARKET

A variety of UHT milk alternatives are available in the South African market and each product varies according to the formulation of its producer. UHT milk alternatives widely available to South African consumers were included in the study. However, the list is not considered to be exhaustive of all available options in the South African market. These generally available UHT milk alternatives included in the study are described in more detail below.

Normal UHT cow milk is widely available in South Africa in full cream, low-fat and fat-free, or skimmed varieties and often forms the standard of reference against which consumers compare milk alternative products (Pick n Pay, 2022b; Clover SA, 2018; Parmalat, 2018; Spar, 2018; Woolworths, 2018; Dewfresh, 2017; First Choice Dairy, 2015). Many brands and formulations of UHT soy milk are available with properties ranging from sweetened or unsweetened, original, strawberry, chocolate or vanilla flavoured, light, low-fat, organic, genetically modified organism-free (GMO-free) and enriched with vitamins A, B₂, B₆, B₁₂ and calcium (Pick n Pay, 2022b; Alpro, 2018; Clover SA, 2018; Spar, 2018; Woolworths, 2018; Dewfresh, 2017). UHT almond milk is available in a similar variety presenting the South African consumer with options such as sweetened or unsweetened, original, chocolate or vanilla flavoured, organic, fortified with calcium and vitamins, blended with rice and sunflower oil, or specially formulated for the use in hot beverages (Alpro, 2018; Blue Diamond Growers, 2018; Dis-Chem, 2018; Spar, 2018; Woolworths, 2018). The availability of other UHT nut-based milk in the South African market is more limited but includes options such as organic cashew milk, organic unsweetened hazelnut milk blended with rice and sunflower oil and organic, sugar-free tiger nut milk blended with rice (Wellness Warehouse, 2018). UHT rice milk is more readily available and presents the consumer with a choice between properties such as sweetened or unsweetened, organic, GMO-free, whole grain and brown rice and is usually blended with sunflower oil (Dis-Chem, 2018; Spar, 2018; Woolworths, 2018). UHT coconut milk is usually unsweetened and can be organic or blended with rice milk (Alpro, 2018; Wellness Warehouse, 2018; Woolworths, 2018). UHT Oat milk is available with properties varying between GMO-free, gluten-free, organic, unsweetened, wholegrain or blended with sunflower oil (Dis-Chem, 2018; Wellness Warehouse, 2018). Plant-based blends such as organic, sugar-free almond and coconut milk alternative blends enriched with calcium are also available (Wellness Warehouse, 2018). During the time frame of the research, a UHT palm oil-based liquid coffee creamer, available in vanilla or hazelnut flavour, was launched in the market. Very few participants were familiar with the product as a milk alternative. Since it has also been discontinued from the market prior to the conclusion of the research, the product did not form part of the findings.

Dairy-based UHT milk alternatives include various cow milk products with altered properties to meet specific needs. UHT lactose-free milk is available in full cream, low-fat and enriched with calcium and vitamin D options (Clover SA, 2018; Parmalat Functional Milk, 2018). Currently, one UHT medium fat dairy blend is available on the South African market, consisting of full cream milk, cream and whey powder and enriched with vitamins A, B₁, B₆, B₅, B₁₂ and Folic Acid (Clover SA, 2018). A few functional dairy-based UHT milk alternatives are also available. Functional products are presented to consumers with claims to have additional health benefits to the original product (Aboulfazli *et al.*, 2016); however, research on some claims and their real value to the consumer is still limited. Low-fat vanilla-flavoured UHT milk blend, enriched with calcium, vitamins, iron and zinc, claiming to aid physical development and boost immunity is available for children over the age of three years (Parmalat Functional Milk, 2018). A similar medium-fat growth-enhancing UHT milk enriched with vitamins, minerals and fish oil is available for toddlers between one and three years (Pick n Pay, 2022b). Three newer entrants in the UHT functional milk alternatives category include: a full cream, enriched milk containing nine amino acids, eleven vitamins and three minerals; a high protein, chocolate flavoured medium fat sports recovery milk with 16.5 grams protein per serving; and a coffee or cranberry flavoured energy milk fortified with vitamin A and B vitamins for immune support with added taurine, ginseng, guarana and caffeine claiming to boost energy and alertness as well as for cognitive and mood enhancement (Clover SA, 2018; First Choice Dairy, 2015).

2.4 PROPERTIES OF UHT MILK ALTERNATIVES

The properties of UHT milk alternatives vary greatly between the types of products and according to different formulations and processes used by manufacturers. Some of the most common products available in UHT format on the South African market are described in more detail below.

2.4.1 Functional, Enriched and Fortified Milk

As consumers become more aware of the influence of diet on healthy living, the tendency to consume functional foods is increasing rapidly (Aboulfazli *et al.*, 2016). For manufacturers, this presents an opportunity to differentiate their products from normal UHT milk, escape price competition and gain higher price margins through value-added versions of staple products (Bimbo *et al.*, 2016). Functional milk alternatives can be defined as enriched, fortified or enhanced milk products where additional health benefits beyond essential nutrients are provided when consumed regularly (Hasler, 2002).

Fortification of food is defined as the addition of minerals, vitamins or other essential nutrients beyond the normal quantities found in the product to prevent a deficiency of certain nutrients in the population by improving the nutritional quality of food (University of Chicago Celiac

Disease Center, 2018; Allen, de Benoist, Dary, Hurrell, Horton, Lewis, Parvanta, Rahmani, Ruel & Thompson, 2006). Enrichment is similar to fortification but specifically refers to the addition of micronutrients to replace nutrients which were lost during processing to improve the nutritional value of a product (University of Chicago Celiac Disease Center, 2018; Allen *et al.*, 2006). Some products are required by law to be fortified, while others are based on the decision of the manufacturer due to the favourable price premiums associated with fortified products (Nan, Verrill & Iles, 2017; Bimbo *et al.*, 2016). Functional, enriched and fortified milk alternatives are becoming increasingly available in South Africa as producers aim to increase their price margins through the introduction of value-added dairy milk alternatives (Kempen & Christie, 2022), such as high protein sports recovery milk alternatives and enriched growth and well-being support milk alternatives (Bimbo *et al.*, 2016; Clover, 2016).

2.4.2 Soy Milk

Until recently, soy milk has been the best-known plant-based milk alternative available commercially to consumers (Zevnik, 2013). However, as other plant-based milk products are booming, soy milk is losing its market share (Economist, 2018). In its most basic form, soy milk consists of the milky fluid extracted from ground, heat-treated soybeans soaked in water (FAO & WHO, 2018; Harvard Health Letter, 2015; Tufts University, 2013). However, to improve its hedonic and nutritional properties to suit consumer preferences, the commercial production process of soy milk involves more processing (Agriculture and Consumer Protection, n.d.).

Soy milk is often formulated to have a similar protein and calorie content and fortified to provide similar vitamins and minerals to cow milk (Cocan *et al.*, 2015; Schnabolk, 2015; Consumer Reports, 2014b; Tufts University, 2013; Zevnik, 2013). Depending on the formulation and whether it is flavoured or sweetened, commercial soy milk typically contains 3.5% protein and 2% fat, with a highly variable carbohydrate and calorie content (Cocan *et al.*, 2015; Harvard Health Letter, 2015). Its high protein content in relation to other plant-based milk alternatives makes it a valuable alternative to replace milk and animal protein in vegetarian and vegan diets (Fontanetta, 2016; Stewart, 2015; Tufts University, 2013). Due to its low digestible calcium and other vitamins, soy milk is usually enriched with calcium carbonate and fortified with B vitamins (Cocan *et al.*, 2015; Consumer Reports, 2014b). Soy milk is higher in fibre and lower in saturated fat and cholesterol than dairy milk, contributing to its healthy image (Gulseven & Wohlgenant, 2017; Cocan *et al.*, 2015; Schnabolk, 2015), while it is also suitable for lactose-intolerant individuals (Gulseven & Wohlgenant, 2017; Cocan *et al.*, 2015; Zevnik, 2013).

The nutritional value of soy milk is surrounded by conflicting opinions, with limited and conflicting research results to prove or disprove health claims. It has been claimed previously that soy protein could contribute to heart health by lowering low-density lipoprotein (LDL cholesterol); however, the Food and Drug Administration (FDA) has recently indicated its intention to revoke health claims suggesting a link between soy protein consumption and reduced risk of heart disease due to inconsistent research results and insufficient evidence to support these claims (Agriculture and Consumer Protection, n.d.; Watson, 2017a; Tufts University, 2013). While studies provided inconsistent results on the effect of soy products on the prevention of disease, research conducted with human participants could not prove any harm from the consumption of soy products either, leaving consumers confused regarding the health benefits of soy products (Tufts University, 2013).

Negative nutritional attributes of soy milk include its high levels of phytic acid which can bind with minerals, such as iron, zinc, calcium and magnesium leaving them unabsorbable (Tufts University, 2013). It may also inhibit the absorption of hypoactive thyroid prescription drugs (Tufts University, 2013). While less common than milk allergies, soy allergies do occur, often making it unsuitable for individuals allergic to dairy milk (Sethi *et al.*, 2016; Kvidahl, 2015; Iwanitkit, 2013; Zevnik, 2013). Some brands may contain carrageenan potentially linked to inflammation and digestion concerns among consumers (Bible, 2016). While it is considered safe for use in food, it is surrounded by controversy whether it may have carcinogenic properties and may aggravate intestinal issues in consumers (Harvard Health Letter, 2015). One of the main concerns related to soy milk is the perception that most soybeans grown are GMO, increasing the importance of GMO-free and organic labelling to consumers (Underwood, 2017b; Fontanetta, 2016; Kvidahl, 2015; Consumer Reports, 2014b).

Soy milk is used in various ways by consumers. It can be used in its plain form to replace milk, in beverages, with cereals or in recipes (Servaas, 2013). Its high protein content makes it a popular non-dairy replacement for milk as a recovery drink among active individuals (Underwood, 2017a) and it is suggested as a thickener in soups and sauces during cooking (Moyer, 2015). In literature, soy milk has been described by consumers as having a fruity, oat or beany flavour (Agriculture and Consumer Protection, n.d.; Lawrence, Lopetcharat & Drake, 2016; Lipton, 2016). Cooked grain, nutty, starchy and bran are only a few of the sensory terms used to describe soy milk and its acceptability is improved by the addition of flavourants (Lawrence *et al.*, 2016).

2.4.3 Almond Milk

As consumers try to eliminate dairy from their diets, the demand for plant-based milk alternatives is increasing, with almond milk being one of the most preferred milk alternatives

(Economist, 2018; Cernivec, 2014). Almond milk is the leading plant-based milk alternative in the United States, surpassing soy milk sales (McCarthy *et al.*, 2017; Kvidahl, 2015). Depending on the brand's formulation, almond milk's nutritional content per cup ranges from 30-60 calories, 2-3 grams total fat, with no saturated fat, 1 gram protein, 1–8 grams carbohydrates, 7 grams sugars, 1 gram protein and 450 milligrams calcium (Lipton, 2016; Harvard Health Letter, 2015; Moyer, 2015; Consumer Reports, 2014b). Although almonds are rich in protein, most of it is lost during processing (Underwood, 2017b). Compared to the 9 grams of protein in a glass of normal milk, almond milk contains only 1 gram of protein (Lipton, 2016; Harvard Health Letter, 2015; Stewart, 2015; Cernivec, 2014). Almond milk is usually fortified with calcium, vitamins A and D (Bible, 2016; Harvard Health Letter, 2015; Consumer Reports, 2014b) and sometimes with protein and fibre (Cernivec, 2014). Almond milk is low in calories with less than half the calorie load of milk per cup (Underwood, 2017a; Sethi *et al.*, 2016; Harvard Health Letter, 2015; Kvidahl, 2015; Moyer, 2015; Schnabolk, 2015; Stewart, 2015; Cernivec, 2014; Consumer Reports, 2014b). It is also low in fat and contains mostly heart-healthy mono-and polyunsaturated fats (Underwood, 2017a; Sethi *et al.*, 2016; Harvard Health Letter, 2015; Moyer, 2015; Cernivec, 2014; Tufts University, 2013; Zevnik, 2013). It is exceptionally high in vitamin E, which must be supplied through the diet as it cannot be synthesised by the body (Lipton, 2016; Sethi *et al.*, 2016; Moyer, 2015; Consumer Reports, 2014b). Sweetened almond milk can have a high sugar content (20 grams of sugar) with over 100 calories per serving compared to unsweetened formulations with 30 calories per serving (Underwood, 2017a; Fetters, 2016; Kvidahl, 2015; Consumer Reports, 2014a; Consumer Reports on Health, 2014). Almond milk is contra-indicated for individuals with nut allergies and its high cost further limits its use as a beverage (Sethi *et al.*, 2016; Zevnik, 2013). Carrageenan is often used as a thickener in almond milk (Fontanetta, 2016; Harvard Health Letter, 2015). While almond milk became a popular alternative to soy milk, almonds have a heavy water footprint, requiring five litres of water to produce one almond, leading to an unfavourable environmental image and decreased popularity among informed consumers (Economist, 2018; Fontanetta, 2016; Cobe, 2015).

2.4.4 Cashew Milk

Cashew milk is relatively new in the South African market and is promoted as a lactose-, gluten- and soy-free product which is low in calories (25 calories per serving) and contains no saturated fats (Underwood, 2017a; Fontanetta, 2016; Harvard Health Letter, 2015). As a low-calorie product, it is popular in diets but cannot serve as a nutritional replacement for dairy milk in a normal diet (Underwood, 2017b). Cashew milk contains healthy monounsaturated fat and vitamin E, but like other nut-based milk, unless it is fortified, it is very low in protein (less than 1 gram protein per cup) and calcium (Fontanetta, 2016; Harvard Health Letter, 2015;

McIndoo, 2015). In literature, some consumers described cashew milk as creamy and sweet while others described it as bland and its thicker consistency as off-putting (Underwood, 2017a; Fontanetta, 2016; Taylor, 2015). Similar to soy and almond milk, carrageenan is also often used as a thickener in commercial cashew milk (Harvard Health Letter, 2015).

2.4.5 Oat Milk

Oat milk is considered to be a good plant-based milk alternative with good health properties for individuals with nut allergies (Economist, 2018; Turner, 2015). It does not contain saturated fat or cholesterol and has a higher fibre content (3.6 grams per serving) than other milk alternatives (Bible, 2016; McIndoo, 2015; Tufts University, 2013). However, oat milk contains approximately double the amount of carbohydrates (24 grams per serving) and sugar (19 grams per serving) of other milk alternatives, which can have a negative influence on blood sugar and increase inflammation (Sethi *et al.*, 2016; Harvard Health Letter, 2015; McIndoo, 2015; Tufts University, 2013). It is often fortified with vitamins and minerals to improve its nutritional value, however, the high levels of phytic acid in oat milk may limit the absorption of these nutrients (Sethi *et al.*, 2016; Schnabolk, 2015). Oat milk does not make a nutritionally comparable alternative to dairy milk; however, it contains more protein and iron than other grain-based milk alternatives such as rice milk (Goldman, 2014). Commercially available oat milk in South Africa is usually UHT-treated and aseptically packed (Sethi *et al.*, 2016). Oat milk has been described as having a sweet, grassy taste and is naturally sweet without added sugar (Bible, 2016; Goldman, 2014). In comparison to other plant-based milk alternatives such as almond milk, oat milk has a modest environmental impact (Economist, 2018).

2.4.6 Rice Milk

As a lactose-, nut-, soy- and gluten-free product, rice milk is considered to be the least allergenic milk alternative available commercially in South Africa (Moyer, 2015; Schnabolk, 2015; Stewart, 2015; Cernivec, 2014). Rice milk is rich in B vitamins and contains no cholesterol; however, it is very low in protein (1 gram per serving) and high in carbohydrates (23 grams per serving) (Harvard Health Letter, 2015; Cernivec, 2014; Lalić, Denić, Sunarić, Kocić, Trutić, Mitić & Jovanović, 2014; Zevnik, 2013). Like other grain-based milk products, rice milk is usually fortified with calcium, iron, vitamin D and vitamin B₁₂ (Stewart, 2015; Consumer Reports, 2014b; Shannon & Rodriguez, 2014). Criticism against rice milk includes its low nutritional value, unless it is fortified, as well as the arsenic detected in rice products including rice milk (Bible, 2016; Stewart, 2015; Consumer Reports, 2014b; Shannon & Rodriguez, 2014). It is recommended that rice milk should not be consumed often and only in limited amounts by adults (Consumer Reports, 2014b). Consumers describe rice milk as sweet and good for use in baking and with cereal, but too thin for use in hot beverages (Lipton, 2016; Zevnik, 2013). However, some consumers described it as tasteless (Kempen *et al.*, 2016).

2.4.7 Coconut Milk

Although the demand for coconut milk is increasing, it is not as popular as almond milk, since the flavour is not considered appealing as a beverage (Cernivec, 2014). It is a natural oil-in-water emulsion which requires thermal, centrifugal, pH, chilling and thawing treatments to destabilise the emulsion before coconut milk can be produced (Saikhwan, Thongchan, Jumwan, Thungsiabyuan, Sakdanuphap, Boonsom, Kraitong & Danwanichakul, 2015; Naik, Venu, Prakash & Raghavarao, 2014). Coconut milk has a high fat and sugar content, resulting in a rich flavour (Edem & Elijah, 2016; Fetters, 2016; Sethi *et al.*, 2016) but a low protein content (Lipton, 2016; Consumer Reports, 2014b; Zevnik, 2013). Most of the calories of regular coconut milk are from fat, with 51 grams of saturated fat and 552 calories per cup (Fetters, 2016; Tufts University, 2013). Thus, coconut milk is diluted with water to reduce calories and fat to about 70 calories and 4 grams of saturated fat per cup in dairy-style coconut milk (Tufts University, 2013). Coconut milk used for beverages is watered down to have a similar consistency and fat content to regular milk and should not be confused with the fattier coconut cream and coconut milk used for cooking (Consumer Reports, 2014b). Coconut milk is produced by soaking equal parts of coconut flesh in water, while coconut cream is produced by soaking four parts of coconut flesh in one part of water (Goldman, 2017). Both coconut milk and coconut cream must be heated at ultra-high temperatures of 121°C for 20 minutes to be preserved (FAO & WHO, 2018; Saikhwan *et al.*, 2015).

Some studies claim that coconut milk contains medium-chain fatty acids, which are less harmful than long-chain fatty acids, but other studies concluded that the saturated fat in coconut milk increases LDL cholesterol and is not recommended for people suffering from cardiovascular disease or hypertension (Underwood, 2017a; Ganguly & Satarupa, 2014; Ekanayaka, Ekanayaka, Perera & De Silva, 2013; Tufts University, 2013). Coconut milk is naturally high in electrolytes and minerals such as iron, calcium, potassium, magnesium and zinc (Fontanetta, 2016; Sethi *et al.*, 2016; Zevnik, 2013). It is rich in vitamins C and E and antioxidants and is often fortified with calcium and vitamin D (Sethi *et al.*, 2016; Consumer Reports, 2014b). Coconut milk is also associated with other health benefits like aiding digestion, nourishing the skin, fighting ageing and having anti-microbial, anti-carcinogenic, anti-viral and anti-bacterial properties (Sethi *et al.*, 2016). Consumers rarely have allergic reactions to coconut milk and it is gluten-, dairy- and GMO-free (Sethi *et al.*, 2016; Beverage Industry, 2015b). Coconut milk is sweet with varying intensities of coconut flavour among different brands (Lipton, 2016; Consumer Reports, 2014b). Although it can be used as a beverage or in coffee or tea, it is more often used in cooking to add flavour to curries, soups and traditional Asian dishes and as a base in dairy-free ice cream and desserts (Goldman,

2017; Patil, Benjakul, Prodpran, Senphan & Cheetangdee, 2017; Adimando, 2016; Lipton, 2016; Saikhwan *et al.*, 2015; Morocco, 2014).

2.4.8 Lactose-Free Milk

The market for lactose-free milk is increasing due to the growing number of lactose-intolerant individuals who prefer lactose-free dairy milk to soy milk or other non-dairy alternatives (Nielsen, Jansson, Le, Jensen, Eggers, Rauh, Sundekilde, Sørensen, Andersen, Bertram & Larsen, 2017; Bimbo *et al.*, 2016). The dairy industry adds the enzyme lactase via the lining of the aseptic packaging to normal milk to break down lactose, creating a more digestible lactose-free milk (Bible, 2016; Silva e Alves, Antunes, Trento, Zacarchenco, Ormenese & Spadoti, 2016; Harvard Health Letter, 2015; Li, Lopetcharat, Qiu & Drake, 2015). Consequently, lactose-free milk is nutritionally equivalent but more digestible than normal milk (Silva e Alves *et al.*, 2016; Li *et al.*, 2015). Lactose-free milk has a sweeter taste, caramel flavour and higher viscosity than regular milk (Nielsen *et al.*, 2017; Bible, 2016). However, it has a shorter shelf life than normal UHT milk due to changes in sensory properties during storage (Nielsen *et al.*, 2017). While lactose-free milk is considered to be the most preferred milk alternative among lactose-intolerant individuals, it is not suitable for individuals with milk allergies (Harvard Health Letter, 2015). Lactose-free milk is increasingly available in South Africa, with two producers recently expanding their value-added product ranges to include lactose-free milk (Pick n Pay, 2022b; Clover, 2016).

2.5 STATE OF SOUTH AFRICAN MILK AND MILK ALTERNATIVE INDUSTRIES IN GLOBAL CONTEXT

The global dairy industry has an expected production growth rate of 1.8% annually over the next decade, with improved yield being expected from Sub-Saharan Africa due to increasingly optimised milk production systems (BFAP Baseline, 2022). South Africa makes a very small contribution to total global milk production, with only 7% of the country's dairy products traded internationally (BFAP Baseline, 2022). However, dairy production contributes 8% of South African agro-processing sales and remains a critical contributor to food security within the South African agricultural industry (BFAP Baseline, 2022). The gross income from South African milk production was R18 672 million during the 2020 financial year, with a 12.6% growth in income from 2019 (Directorate of Statistics and Economic Analysis, 2017). However, the price cycles for dairy are notoriously volatile due to its sensitivity to erratic climatic conditions, the global supply and demand of milk, the fluctuation of feed grain prices and other input costs, with an increase of 13.2% observed in the price of milk between 2019 and 2020 (BFAP Baseline, 2017; Janovsky, 2017).

Currently, South African consumers also experience ongoing economic pressure due to pressure on household disposable incomes in the aftermath of the COVID-19 pandemic (BFAP Baseline, 2022), exacerbating the effects previously experienced at the onset of the study such as low employment and income growth, higher interest rates and reduced credit extension (Kemp & Ellis, 2016). The consumer price index for dairy and eggs increased by 5.9% in the 2020 financial year (Directorate of Statistics and Economic Analysis, 2017) and the latest statistics made available in 2020 indicated milk comprised between 3% and 5% of South African household food expenditure (BFAP Baseline, 2020). These low consumer confidence levels continue to limit consumer spending and subdue growth in demand for consumer products (Kemp & Ellis, 2016). However, consumer expenditure patterns shift away from luxury items toward essentials such as food, mitigating the effect of economic pressure to some extent on the demand for food staples such as milk (Kemp & Ellis, 2016).

Globally, approximately 876 million tonnes of milk was produced annually by 2018, with an increased demand for milk expected due to population growth, growing prosperity in developing regions and increased investment in new product development (Cornall, 2018b). It was found that as household incomes rise, consumer dietary patterns shift from starch-based to animal-protein-based diets, resulting in an increased demand for dairy products (Bekele, Beuving & Ruben, 2017; Coetzee, 2016; Sumberg, Jatoe, Kleih & Flynn, 2016). Consequently, growing demand for livestock products, including milk, was expected due to rising incomes in populations of developing countries at the onset of the study (Haas *et al.*, 2016; Sumberg *et al.*, 2016). Similar dietary shifts were observed with increased urbanisation, with urban consumers consuming diets higher in dairy than rural consumers (BFAP Baseline, 2017; Casini, Contini, Marone & Romano, 2013). At the onset of the study, the growing middle class, increased urbanisation and the development of chain stores in townships have been identified as factors leading to a yearly increase in the South African demand for milk with South African milk consumption increasing from 2 677 million litres in 2010 to 2 957 million litres in 2017 (Janovsky, 2017). The continued urbanisation patterns are still observed in South Africa, although current statistics linking it to an increase in dairy consumption are unavailable (BFAP Baseline, 2022). However, due to the economic challenges exacerbated by the COVID-19 pandemic in recent years, the upward socio-economic class mobility has slowed down in South Africa and it remains to be seen whether its previous growth in income levels will resume (BFAP Baseline, 2022). A shift in South African consumer purchase patterns was observed due to the pandemic lockdown restrictions, where households increasingly substituted fresh milk for UHT milk, due to its longer shelf-life (BFAP Baseline, 2022), another trend which remains to be seen if it will continue.

The growing interest in milk alternatives is motivated by milk allergies, increased awareness of lactose intolerance, environmental, animal welfare and ethical concerns among consumers, a desire to follow healthy lifestyles and lifestyle choices to increase plant-based products in the diet (Court, 2018b; Court, 2018a; Searby, 2018; Shoup, 2018a; Tate & Lyle, 2018; Vanga & Raghavan, 2018; Food Review, 2017; Jeske, Zannini & Arendt, 2017; Eagle, 2016; Fernando, 2016; Miller, 2014). In South Africa, products marketed as dairy-free have seen a 21% growth in sales during 2016 (Food Review, 2017). Present growth figures in this product category, as impacted by the current global economic environment, are unknown. However, the higher demand for plant-based, dairy-free alternatives is not believed to be driven by an increase in vegans in the population, but rather by an increase in flexitarians who wish to increase plant-based foods in their diets without eliminating animal-derived products from their diets (Searby, 2018). While the plant-based milk alternative trend has negatively influenced sales for dairy in developed countries such as Canada and the United States and increased sales of plant-based milk by 61% between 2014 and 2017, it is still unknown whether a similar trend where dairy is losing market share to plant-based milk alternatives is occurring in South Africa (Siegener, 2018; Watson, 2018a; Fernando, 2016). However, this trend, combined with low margins received for milk, has caused concern among producers (Anderson & Clawson, 2016; Bimbo *et al.*, 2016).

One strategy applied both globally and locally to remain competitive while covering operational costs is for dairy producers to diversify into niche market products such as dairy-based milk alternatives (Bellamy & van Battum, 2017; Janovsky, 2017). Producers aim to increase the diversity of their products by developing value-added, higher price margins and branded products, moving away from bulk, low price margins and commoditised milk production (Bimbo *et al.*, 2016; Clover, 2016). This strategy allows producers to take advantage of the changing trends by focusing on properties desired by consumers through products such as lactose-free, enriched, functional infant, immune, growth and health enhancing, or high protein and sports recovery milk alternatives while achieving higher margins (Packaged Facts, 2018; Bimbo *et al.*, 2016; Dudlicek, 2016; Beverage Industry, 2015a). The market share of these niche market products is still low, but demand for such products is proliferating (Gulseven & Wohlgenant, 2017). By focusing more on value strategies instead of volume strategies, dairy producers attain higher margins for their products and are able to compete more directly with plant-based milk alternatives (USA Today, 2018; Bellamy & van Battum, 2017).

Another strategy, which exposes dairy companies to less risk from plant-based milk alternative competition and dairy price fluctuations while simultaneously taking advantage of the opportunities presented by plant-based milk alternatives, is to diversify into non-dairy products (Bellamy & van Battum, 2017; Clover, 2016; Eagle, 2016). Various global and local dairy

producers have either invested in the acquisition of plant-based milk alternative companies or added plant-based milk alternatives to their portfolio (Culliney, 2018; Searby, 2018; Siegner, 2018; USA Today, 2018; Clover, 2016). Plant-based milk alternative production is increasingly moving from small companies to some of the world's largest food manufacturers through mergers and acquisitions (Tate & Lyle, 2018). Producers investing in both dairy and plant-based milk alternatives are believed to be positioned the best to remain competitive while dealing with changing consumer demands (Siegner, 2018).

While data specifically relating to plant-based milk alternative sales in South Africa is unavailable, global sales of non-dairy milk alternatives reached US\$ 15.6 billion in 2017 (Culliney, 2018; Riley, 2017). In the United States (US), non-dairy milk alternative sales increased by 61% between 2012 and 2017 (Mintel, 2018). Although soy milk traditionally dominated the plant-based milk alternative category, almond milk has surpassed its sales in the United States (Mintel, 2018; Beverage Industry, 2017). Although soy milk is still the leading plant-based milk alternative globally, it is losing market share and popularity with the introduction of market entrants such as almond, coconut, cashew, rice, hemp and oat milk and newer plant-based milk blends (Kumari & Singh, 2018; Watson, 2018d; Beverage Industry, 2017; Riley, 2017; Buono, 2016; Fernando, 2016; Mäkinen *et al.*, 2016; Consumer Reports, 2014a).

Sales figures for shelf-stable UHT plant-based milk alternatives are unavailable, but according to a US survey conducted by Mintel (2018), the total sale of plant-based UHT milk alternatives increased by 4.7% in 2017 (Watson, 2018d). The most preferred plant-based milk alternatives among American consumers are almond, soy and coconut milk (Court, 2018b; Mintel, 2018). UHT coconut milk is not currently as widely available on the South African market; therefore, it is expected that this trend may differ in South Africa. Despite the growing popularity of other plant-based milk alternatives, among the most commonly consumed plant-based milk alternatives, soy milk has been found to be nutritionally the most comparable alternative to cow milk (Shoup, 2018b).

2.6 CHALLENGES TO PRODUCERS AND MARKETERS IN THE MILK ALTERNATIVES CATEGORY

During the production of plant-based milk alternatives, the biggest challenge is often to produce a shelf-stable product that is acceptable to consumers (Ludvigsen & Baez, 2018). UHT processing of plant-based milk alternatives can increase their shelf-life, allowing products to remain safe at ambient temperatures from six months to a year (Malmgren *et al.*, 2017). However, the application of heat and long-term storage can negatively influence the stability, colour, flavour and quality of the product, forcing producers to make careful selections in the

formulation and selection of raw materials, emulsifiers, stabilisers and flavourings to create an acceptable product (Ludvigsen & Baez, 2018; Malmgren *et al.*, 2017). Various insoluble particles in plant-based milk products, such as fibre, starch granules, protein and fat globules, create sediment in the product, resulting in a chalky mouthfeel, fat separation, flocculation and an unstable product with limited shelf-life (Ludvigsen & Baez, 2018; Jeske *et al.*, 2017; Mäkinen *et al.*, 2016; Sethi *et al.*, 2016). To overcome these challenges, producers often try to reduce the size of insoluble particles and include stabilisers and emulsifiers in the product formulation (Ludvigsen & Baez, 2018; Mäkinen *et al.*, 2016; Sethi *et al.*, 2016). While the sensory properties of the product as presented in its original form are important, consumers also indicate the need for milk alternatives which are suitable for use in various forms, such as in baking and cooking, with cereals, for drinking per glass, or in hot beverages (Consumer Reports, 2022; Moss *et al.*, 2022; Rizzo *et al.*, 2020; Kempen *et al.*, 2016). Since the taste, texture and appearance of milk alternatives can alter, depending on the final form of use (Moss *et al.*, 2022; Gorman *et al.*, 2021), producers face the challenge of developing products which will be acceptable for its intended purpose. Presenting products with acceptable sensory properties is crucial for consumer acceptance, since various studies found that products with unfavourable sensory properties are often consciously avoided by consumers (Moss *et al.*, 2022; Ohlau & Risius, 2022; Rizzo *et al.*, 2020; Haas *et al.*, 2016). While these processes and additives are included to improve the sensory acceptability of milk alternatives to consumers, it was also found to be a serious concern for consumers who perceive UHT milk alternatives to be unnatural and synthetic due to high levels of processing and unfamiliar additives and added sugar (Moss *et al.*, 2022; Reyes-Jurado *et al.*, 2021; Rizzo *et al.*, 2020; Warren, 2019; Markham *et al.*, 2014).

The second major challenge in producing plant-based milk alternatives relates to the nutritional content of the product (Sethi *et al.*, 2016). Plant-based milk alternatives are not nutritionally equivalent to dairy milk (Sethi *et al.*, 2016). Consequently, plant-based milk alternatives are often fortified with essential nutrients found in dairy milk, such as calcium, protein and vitamin D (Tate & Lyle, 2018; Sethi *et al.*, 2016). While it is possible to fortify plant-based milk, ingredients and processes must be carefully selected, since fortificants could influence the taste and stability of the final product (Mäkinen *et al.*, 2016). These nutrients should also be bioavailable in order to be effective (Mäkinen *et al.*, 2016). Another challenge related to the nutritional content of plant-based milk alternatives is the loss of nutrients during the production and UHT processing of the product (Agarwal & Bosco, 2014). Production processes that minimise the loss of nutrients should be selected and products are often enriched to replace such lost nutrients (Agarwal & Bosco, 2014). While products can be enriched to replace lost nutrients, Kempen and Christie (2022) found that not all South African

consumers were equally impressed by the term 'enriched' on product packaging, with some consumers believing enriched products possess health benefits beyond the original product it is compared to and others indicating scepticism regarding the nutritional need for real value presented by enriched UHT milk products.

According to Mäkinen *et al.* (2016), one of the biggest challenges when marketing plant-based milk alternatives is overcoming the stigma of unappealing products presented in the past. While the sensory characteristics of plant-based milk alternatives have been greatly enhanced by continuously improving technology, production processes and research, many consumers still associate plant-based milk alternatives with a beany flavour and a chalky mouthfeel (Sethi *et al.*, 2016). This presents a major challenge to producers since taste is considered to be the most important criteria during food purchases (Mäkinen *et al.*, 2016). Apart from the individual's own perception of the product appeal, the influence of significant others and the potential stigma they ascribe to UHT milk alternatives could also influence the consumer's purchase behaviour (Boaitey & Minegishi, 2020; Paul *et al.*, 2016). However, the challenge for marketers remains that general South African consumer attitudes toward the acceptability of milk alternatives are still largely unknown.

Other challenges, or perceived barriers, to consumer purchases of milk alternatives, is the cost (Kempen & Christie, 2022; Moss *et al.*, 2022; Rizzo *et al.*, 2020; Haas *et al.*, 2016; Kempen *et al.*, 2016; Utami, 2014); and convenience of availability (Markham *et al.*, 2014; Utami, 2014) of milk alternatives, with some consumers indicating that milk alternatives are perceived as expensive, luxury products which are not widely available. According to literature, the availability of milk alternatives also extends to the availability of suitable pack sizes at an affordable price, with a preference observed for half-gallon size packs among American consumers, necessitating the need for marketers and producers to understand the consumer market needs related to product packaging (Moss *et al.*, 2022; Ohlau & Risius, 2022; Rizzo *et al.*, 2020; Yang & Dharmasena, 2020; Haas *et al.*, 2016; Utami, 2014). Apart from packaging size, consumers were also found to link product claims and the origin of a product, as indicated on the packaging, to the perceived safety of the product, with a preference for locally produced products where the consumer feels familiar with the validity of claims and safety of production processes (Kempen & Christie, 2022; Rizzo *et al.*, 2020; Haas *et al.*, 2016; Markham *et al.*, 2014). Consumer familiarity has similarly been a challenge to marketers, with unfamiliarity being considered a key barrier to product consumption (Cardello *et al.*, 2022; Moss *et al.*, 2022). The impact of these factors on the South African consumption of UHT milk alternatives remains unknown, presenting the challenge to marketers to present the correct product mix to the South African market.

2.7 CONCLUSION

The UHT milk alternatives available to the South African consumer include functional, enriched and fortified milk, soy milk, almond milk, cashew milk, oat milk, rice milk, coconut milk and lactose-free milk. The properties of each of the above-mentioned milk alternatives were highlighted. Milk allergies, lactose intolerance, milk sensitivity, plant-based diets and special nutritional requirements of consumers are perceived to influence the increased demand observed for UHT milk alternatives. While both the dairy and plant-based industries utilise the milk alternative product category to diversify their income opportunities, the major challenges faced by producers of milk alternatives include the development of a shelf-stable product, which lives up to the sensory expectations of consumers while overcoming past unfavourable perceptions of milk alternative products. The next chapter presents literature explaining consumer attitudes shaping the theoretical perspective providing a lens through which the enquiry was initiated.

CHAPTER 3

THEORETICAL PERSPECTIVE AND CONCEPTUAL FRAMEWORK

Presents the theoretical perspective of consumer attitudes. It explains consumer decision-making in context of consumer attitudes and describes and critiques various existing consumer decision-making and attitude models. This formed the theoretical perspective shaping existing knowledge and providing a lens through which the enquiry was initiated and by which the researcher was guided as to which elements were important to examine at the onset of the research. The emergent design of the phenomenological study utilised this theoretical perspective initially but progressed through stages attempting to make sense of the experiences and meanings participants described to arrive at a more holistic interpretation of the phenomenon studied. Finally, this chapter presents the conceptual framework of the study as anticipated from the theoretical perspective.

3.1 INTRODUCTION

As concluded from the previous chapters, various UHT milk alternative products are available to South African consumers. However, limited literature on South African consumer decision-making related to this product category is available. Consequently, producers have limited information on which to base product innovation and marketing strategies. The role of South African consumer attitudes in decision-making and factors which drive their purchase intentions of UHT milk alternatives need to be understood more clearly. From the global literature identified in the problem statement (section 1.4.1), it was clear that a wide spectrum of approaches and theories could be used to study consumer decision-making as related to UHT milk alternatives in the South African context. The variety of approaches made it clear that a study on the topic would need to be flexible to include multiple aspects impacting consumer behaviour and not limit itself to an individual theory, model or approach from the onset. From the global literature and literature on consumer behaviour and decision-making (as discussed in more detail below) it became clear that theoretical approaches focussing on consumer attitudes toward product attributes, their evaluation of product attributes, as well as non-product related elements impacting the planned behavioural intentions of the consumer was predominantly used. Consequently, a broad theoretical approach allowing the researcher to explore attitudes related to milk alternative product attributes, as well as other non-product related attitudes impacting consumer behaviour was considered necessary for the study. Within such a broad approach it was anticipated that elements linked to approaches from literature, such as sensory product attributes, price, utility and consumer expectations could be accommodated in a holistic study if it featured in the data. Understanding the research within context of the various attitude and behavioural models available created a theoretical

perspective through which the research could initially be guided in search of an integrated model to reach the research objectives. However, the emergent design of the phenomenological study only utilised this theoretical perspective initially to guide the researchers' understanding of important elements. Thereafter, the research progressed through stages attempting to make sense of the experiences and meanings participants described to arrive at a more holistic interpretation of the phenomenon studied.

3.2 THEORETICAL PERSPECTIVE

Attitudes are defined as learned predispositions to show consistently favourable or unfavourable behaviours toward objects (Schiffman & Wisenblit, 2019; Egan, 2015). Since attitudes play an important role in an individual's psychological field during the decision-making process (Schiffman & Wisenblit, 2019), it becomes important to understand attitudes within the context of consumer decision-making.

3.2.1 Characteristics of Attitudes

According to Iacobucci and Churchill (2018), attitudes are the preferences, inclinations, views, or feelings that individuals hold toward a product or behaviour. Various consumer behaviours, like consistent purchases, recommendations to others, beliefs, top rankings, evaluation and intentions are linked to their attitudes (Schiffman & Wisenblit, 2019). Attitudes are learnt and can be based on the individual's direct experience with a product or through exposure to other information sources without personal experience of the product; it is therefore subjective, but still considered to be a valid attitude held by the individual, influencing the person's decisions (Schiffman & Wisenblit, 2019). Attitudes have direction (favourable or unfavourable) and intensity (strength with which it is held), however, an individual may also hold a favourable overall attitude toward an object, while having an unfavourable attitude toward an aspect of the object, making the measurement of attitudes rather complex (Solomon, 2019). Attitudes with high intensity are firmly held by the individual; once an attitude is formed it normally endures and over time becomes increasingly resistant to change (Iacobucci & Churchill, 2018; Egan, 2015; Clow & James, 2014).

One element of attitudes crucial to researchers and marketers is the ability to motivate individuals toward or deter them away from specific behaviours, thus linking attitudes to behavioural intentions (Schiffman & Wisenblit, 2019; Iacobucci & Churchill, 2018; Egan, 2015). Consumers are more likely to purchase products for which they hold favourable attitudes and to avoid the purchase of products for which their attitudes are unfavourable (Clow & Baack, 2021; McDaniel & Gates, 2020; Iacobucci & Churchill, 2018). Attitudes based on direct experience were found to be more consistent and accurate in predicting consumer behaviour than attitudes not based on actual product usage (McDaniel & Gates, 2020).

However, adding complexity to this link between attitudes and behaviour, Fazio and Williams (1986) found that an individual may hold ambivalent attitudes toward a product, where both positive and negative attitudes are held toward attributes of the same product. Chaiken and Trope (1999) added to this concept by indicating that individuals may hold dual attitudes, comprised of implicit / automatic and explicit attitudes toward a product, further building on the concept that linkages exist between consumer attitudes and behaviour. While implicit / automatic attitudes occur without conscious awareness of the attitude but are nevertheless represented mentally in the individual's mind and often result in spontaneous behaviour (Greenwald & Banaji, 1995; Bargh, 1990), explicit attitudes are deliberately formed and often result in thought-through behaviour (Chaiken & Trope, 1999). Since both implicit and explicit attitudes are linked to behaviour (Chaiken & Trope, 1999; Greenwald & Banaji, 1995; Bargh, 1990), the study of consumer attitudes becomes important if purchase behaviour intentions are to be understood. Purchase behaviour can however not be entirely predicted by attitudes since factors such as availability, cost and utility can prevent the purchase of a product even when a favourable attitude is held toward the product (Solomon, 2019; Egan, 2015). While attitudes and behaviour may not match perfectly, the assumption that the product toward which attitudes are most favourable will most likely sell the best drives researchers and marketers to study consumer attitudes toward products and their intent to purchase it, upon which the design of a marketing mix for the product can be based (McDaniel & Gates, 2020). In order to understand attitudes, however, the role of consumer attitudes in consumer decision-making needs to be understood first.

3.2.2 The Role of Attitudes in Consumer Decision-Making

Individuals have to go through the decision-making process, which will be impacted by a combination of factors when purchasing products (Solomon, 2019). When a decision requires more involvement from the consumer than mere habitual purchases, understanding the decision-making process becomes important to understand what drives the consumer's ultimate decision. Several consumer decision-making models, described as the 'grand/classical models' of consumer decision-making, were developed in the 1960s and 1970s and adapted over time, including the Howard-Sheth Model (Howard & Sheth, 1969), the Nicosia Model (Nicosia, 1966) and the Engel-Blackwell-Miniard Model (Blackwell, Miniard & Engel, 2001; Erasmus, Boshoff & Rousseau, 2001).

3.2.2.1 Classical Consumer Decision-making Models

The Howard-Sheth Model suggested different levels of decision-making based on the consumer's existing knowledge of a product or brand with a complex, extensive range of variables expected to influence consumer decision-making (Jisana, 2014; Howard & Sheth, 1969). The model held that significance, social and symbolic stimuli determined the input into

the perceptual and learning constructs or psychological variables, determining how the consumer interpreted the stimuli, resulting in the outputs of attention, comprehension, attitudes and intentions (Howard & Sheth, 1969). While the model was considered comprehensive and insightful at the time, it is often questioned whether the consumer in reality goes through such an extensive decision-making process prior to product selection and whether all variables were relevant to each product and scenario of consumer decision-making (Erasmus *et al.*, 2001). For this research, the inputs depicted by the Howard-Sheth model were considered unlikely to all be relevant to consumers' UHT milk alternative purchases. However, the model depicts that multiple variables feed into the consumer attitude, which feeds into the consumer's intention and indicates that consumer intentions precede purchases (Abdallat & Emmam, 2012; Howard & Sheth, 1969), which were considered valuable insights into the study.

The Nicosia Model of decision-making held that the consumer moves through stages of preferences, attitudes and motivations during the decision-making process, indicating that the company's marketing strategy, information and product attributes, together with the consumer's personality, preferences, experience and social group shape the consumer attitude (Abdallat & Emmam, 2012). The consumer attitude informs the search for information and evaluation of products, leading to the consumer's motivation impacting the purchase decision (Viksne, Salkovska, Gaitniece & Puke, 2016; Jisana, 2014). The model further indicates that a purchase decision leads to consumption and feedback for future decisions (Viksne *et al.*, 2016; Jisana, 2014; Abdallat & Emmam, 2012). While the Nicosia Model was considered useful to the study to consider the role of feedback from previous consumption in future decisions and in the variables indicated for consideration, the preference-attitude-motivation structure was considered too simplistic to inform a study on consumer purchase intentions of UHT milk alternatives since motivations, as with attitudes, can be positive, but not necessarily lead to the intent to purchase a product (Panwar, Anand, Ali & Singal, 2019; Abdallat & Emmam, 2012).

The Engel-Blackwell-Miniard Model, initially developed in 1968, but amended over time presents similar elements as the Howard-Sheth model (Blackwell *et al.*, 2001; Howard & Sheth, 1969). The Engel-Blackwell-Miniard Model presents a seven-phase decision-making process, including need recognition, information search, evaluation of alternatives, purchase, consumption, post-consumption evaluation and divestment (Blackwell *et al.*, 2001), which similar to the Howard-Sheth Model, can be considered extensive, but also highly complex (Abdallat & Emmam, 2012) to interpret consumer decision-making in the purchase of UHT milk alternatives. While the model holds a complex number of variables (Abdallat & Emmam, 2012) linked to the seven steps of decision-making, it does not indicate the link between

consumer attitudes and intentions in the process (Viksne *et al.*, 2016). However, the research problem of this research anticipated that both consumer attitudes and intentions would be influential in the consumer purchase behaviour of UHT milk alternatives.

3.2.2.2 *Schiffman-Wisenblit Model*

In this study, the Schiffman and Wisenblit (2019) model of consumer decision-making (Figure 3.1) is relied upon to provide a theoretical background within which consumer decisions, particularly attitudes toward UHT milk alternatives and their purchase, can be understood. This contemporary model, as described below, was found to include elements of the three classical models mentioned above, but organised in a more simplistic, logical manner to describe consumer decision-making, while still leaving room for extensive exploration into the research topic.

Criticism of the classical consumer decision models includes the positivist approach and the assumption that all decisions are rationalised by the consumer while in reality some decisions may be made in a short period of time, with limited knowledge leaving the consumer with little time or inclination to employ an extensive decision-making process (Panwar *et al.*, 2019; Abdallat & Emmam, 2012; Erasmus *et al.*, 2001; Bozinoff, 1982). While the consumer can be considered rational and capable of distinguishing between the benefits and disadvantages of available products, criticism of the models indicated that the decision should be interpreted not only in terms of what the product can do for the consumer, but also in terms of what the product means to the consumer (Erasmus *et al.*, 2001). This aspect was included in the Schiffman-Wisenblit Model, which includes psychological influences on the consumer decision, of which attitudes form part (Schiffman & Wisenblit, 2019). The second criticism raised regarding the classical models, which can also be ascribed to the Schiffman-Wisenblit model, is concern about the overemphasis of a high quantity of complex detail and the assumption of sequential steps in the process resulting from the positivist approach of the models, forcing certain elements into the process and generalising the process involving all decisions, which may not be relevant, fully inclusive, or carry equal weight but may be product- or situation-specific (Viksne *et al.*, 2016; Erasmus *et al.*, 2001). The criticism held that consumer decision-making was too product- and situation-specific for a general model to fully understand the phenomenon within different contexts and for different products, necessitating a more subjective approach to arrive at the essence of consumer decision-making (Erasmus *et al.*, 2001; Loudon & Della Bitta, 1993). This necessitates the need to develop models specifically aimed at the relevant product and consumer situation. The third point of criticism includes the assumption that consumers always engage in a complex decision-making process, while in reality the consumer often faces limited availability of information, leading to different ways of making choices or even abstaining from making choices, which may differ

within different situations and different products and does not reflect in the available models (Panwar *et al.*, 2019; Abdallat & Emmam, 2012; Erasmus *et al.*, 2001).

Since the contemporary Schiffman-Wisenblit model aimed to minimise the effect of the criticisms above, particularly by including the meaning held by the consumer of the product and the presentation of a simpler process, it was found to be one of the most useful models (as described below) to inform the initial inquiry process into a consumer attitude study as linked to the decision to purchase UHT milk alternatives. However, the Schiffman-Wisenblit model cannot be removed entirely from the criticism mentioned above, particularly the inability to generalise decision-making models in different situations and for different products (Panwar *et al.*, 2019; Viksne *et al.*, 2016). Therefore, the research aimed to consider this model, but to develop a model specifically aimed at understanding the phenomenon of South African consumer attitudes as linked to their purchase intentions of UHT milk alternatives. The research used a post-positivist, phenomenological, qualitative approach to uncover the required subjective input rather than applying a pre-developed, rigid consumer decision-making model. The Schiffman-Wisenblit model informing the study is presented in more detail below. The model divides decision-making into the input, process and output stages, with attitudes forming part of the psychological influences during the process stage (Schiffman & Wisenblit, 2019). According to Betsch and Haberstroh (2012), attitudes play a central role in the evaluation of alternatives during the process stage.

During the input stage of decision-making, three external information sources influence the consumer's decision to purchase and which product to purchase: the marketing mix (including the product itself), social-cultural influences and communication sources (Schiffman & Wisenblit, 2019; Milner & Rosenstreich, 2013). Communication sources and sociocultural influences strongly impact consumer perception of the product (Schiffman & Wisenblit, 2019). However, the product itself is considered crucial in the process. The more favourable the consumer's attitudes are toward the product, the higher the incidence of product usage (McDaniel & Gates, 2020). Therefore, the value ascribed by consumers to the products themselves within the UHT milk alternative category and their attributes should not be underestimated in the decision-making process.

While the model provides valuable insight into the inputs of external influences into consumer decision-making, its current relevance can be questioned. With increased consumer access and use of social media, several studies have found that classical marketing approaches and communications sources are increasingly replaced or complemented by marketing strategies and sources of information which consumers encounter or actively search from peers on social

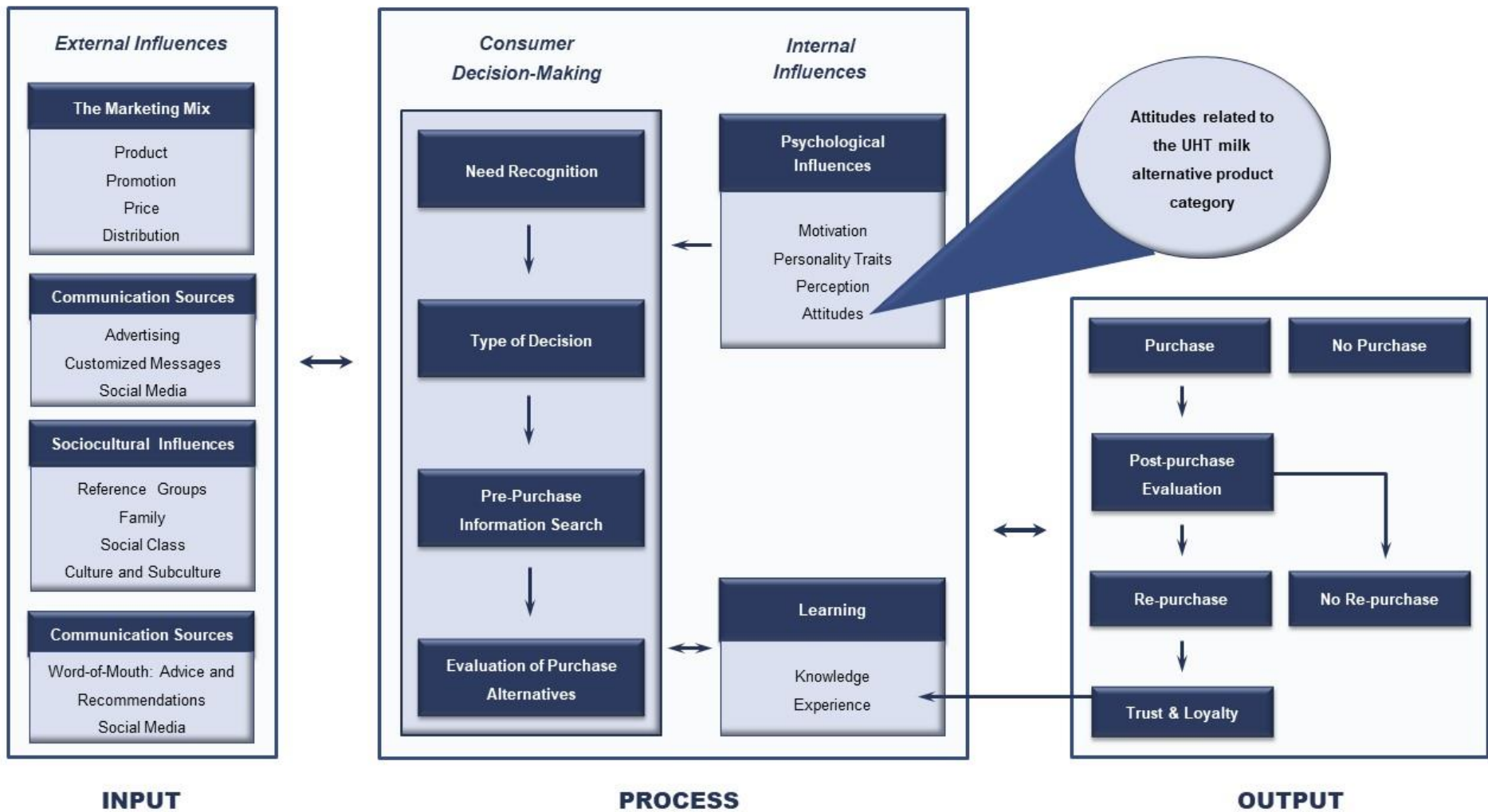


Figure 3.1: Consumer Decision-Making Process adapted from Schiffman and Wisenblit (2019)

media to inform product purchases (Mason, Narcum & Mason, 2021; Ioană & Stoica, 2020; Voramontri & Klieb, 2019; Patino, Pitta & Quinones, 2012). The marketing mix as well as the communication sources and sociocultural influences which the consumer relies on for recommendations and pre-purchase information gathering as depicted in the model may no longer be comprehensive due to the increased impact of social media, requiring the need to evaluate and amend the model over time as new insights emerge.

During the process stage, the actual decision is made during a process which includes need recognition, identification of the type of decision, a pre-purchase search and an evaluation of alternatives (Schiffman & Wisenblit, 2019). Once consumers recognise a need, they search for the product that is perceived to be most suitable to meet their needs (Milner & Rosenstreich, 2013). If consumers can identify more than one suitable product, they need to evaluate which alternative they perceive to meet their needs best (Aaker, Kumar, Leone & Day, 2013). In this basic form, it is assumed that the decision-making process remains comprised of these elements, although a strict sequential order and equal time spent on all the steps may not always occur in reality.

The process comprising need recognition, type of decision, pre-purchase search and evaluation of alternatives and the ultimate decision is strongly influenced by the individual's psychological field, consisting of the individual's motivation, personality traits, perception and attitudes (Schiffman & Wisenblit, 2019). Learning also influences this process and is comprised of the individual's knowledge about the product based on internal influences such as past experiences, or information from external sources such as marketing efforts and sociocultural influences (Schiffman & Wisenblit, 2019; Aaker *et al.*, 2013). Elements in the psychological field are intangible and can, therefore, not be measured directly, however, these elements determine the individual's interpretation of the internal and external inputs and their influence on a decision can be inferred from their consequences (Aaker *et al.*, 2013). This is where attitudes play an important role in consumer decision-making. Consumers form an attitude regarding a product after carefully considering its features, the expectations of how it could meet personal needs, past experiences and information from external sources and these attitudes influence the ultimate decision of the consumer strongly (Kimmel, 2013). This forms the core of this study to arrive at the attitudes held by South African consumers as part of their internal influence on their purchase intentions of UHT milk alternatives. Once a decision is made, the knowledge and experience gained from the level of satisfaction with the outcome, as well as from the evaluation of alternatives, will be reinstated in the person's learning field for future decisions (Schiffman & Wisenblit, 2019; Kimmel, 2013; Milner & Rosenstreich, 2013).

After purchasing a product, consumers evaluate their decision and decide whether they are satisfied with the product during the output stage (Schiffman & Wisenblit, 2019). The level of satisfaction is fed into the cycle of the decision-making process again for future decisions, this time as stronger attitudes, since it is based on experience (Milner & Rosenstreich, 2013). Since it has a meaningful influence on repeat purchase intentions, consumer satisfaction becomes essential (Kimmel, 2013). By considering the context within which attitudes function, one can arrive at a greater depth of understanding of their role in consumer decisions related to the UHT milk alternatives category in the South African market. Thus, this decision-making model served to inform the enquiry at the onset to ensure it can be studied in context of existing theory. However, consumer decision-making models only provided the context for the involvement of consumer attitudes in purchase intentions, thus arriving at the attitude models presented below.

3.2.3 Attitude Models

Various models were developed to provide different perspectives on attitudes and their effect on consumer decision-making behaviour and purchase intentions. Some of the most widely used attitude models in consumer behaviour include the *tri-component model*, the *attitude-toward-the-object model* and the *theory of planned behaviour* (also known as the *behavioural intentions model*) (Schiffman & Wisenblit, 2019; Solomon, 2019; Montaña & Kasprzyk, 2015; Fishbein, 1963; Rosenberg, 1960). Each of these models contributes to the understanding of consumer behaviour and the role of attitudes in decision-making. The models are briefly described below. These models were used to guide the initial enquiry process by providing a lens through which consumer decision-making can be interpreted. Elements from the models were included in the discussion guide to initiate conversations on South African consumer attitudes toward UHT milk alternatives and the purchase thereof.

3.2.3.1 Tri-component Model

According to the tri-component model (Figure 3.2), three psychological components are ascribed to attitudes, the *cognitive*, *affective* and *conative components* (Schiffman & Wisenblit, 2019; Aaker *et al.*, 2013; Rosenberg, 1960).

The *cognitive component* consists of the individual's salient beliefs of a product and its perceived importance to the individual; beliefs regarding the product include the individual's knowledge and perceptions of the product and its different attributes (Clow & James, 2014; Kimmel, 2013). Since the cognitive component is based on the individual's beliefs relating to a product, it does not have to be based on experience and can be subjective by nature (Solomon, 2019). The *attitude-toward-the-object model*, described below, provides more detail on salient beliefs and how these salient beliefs shape attitudes regarding a product and

its attributes. An adapted version of this model proved valuable in previous exploratory research on South African consumer attitudes toward game meat to create a greater depth of understanding of consumer attitudes toward a product where literature on the topic was deficient (Wassenaar, 2016). Due to the limited information available on the topic, any research on consumer attitudes toward UHT milk alternatives needs to include an enquiry into consumers' beliefs on products and their attributes in the UHT milk alternatives category before their overall attitude toward products or purchase intentions can be holistically understood.

Tri-Component Attitude Model

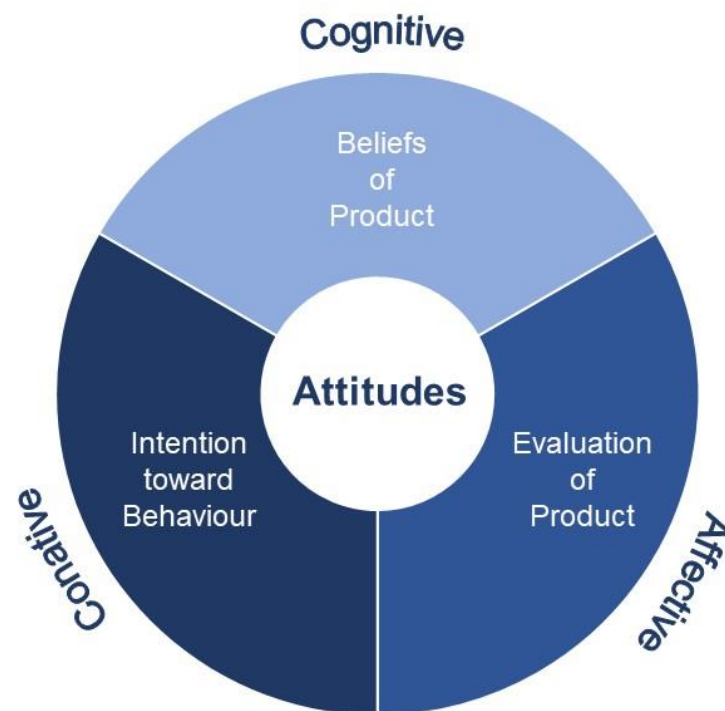


Figure 3.2: Tri-Component Attitude Model adapted from Schiffman and Wisenblit (2019) and Aaker *et al.* (2013)

The *affective component* is comprised of the individual's favourable or unfavourable evaluation of the product and its attributes (Solomon, 2019; Kimmel, 2013). To understand consumer attitudes toward and their expectations of UHT milk alternatives, it is necessary to explore the consumer's favourable or unfavourable evaluation of the product category as a whole, of individual products and of attributes of the products. The evaluation of products and their contribution to consumer attitudes are also included in the *attitude-toward-the-object*

model and discussed in greater detail below. For this research, it becomes necessary to describe the meaning, whether favourable or unfavourable, which consumers ascribe to their own product evaluation criteria of UHT milk alternatives.

Finally, the *conative component* refers to the individual's intended behaviour toward the product, specifically, the individual's intent to purchase or use the product in the future (Solomon, 2019; Kimmel, 2013). The *theory of planned behaviour* provides more detailed information on how consumer attitudes are linked to behavioural intentions and are described in more detail below. Since the research intends to understand consumer attitudes toward the introduction of UHT milk alternatives in the South African market, it is necessary to understand their attitudes toward the purchase of UHT milk alternatives. If consumers view UHT milk alternatives favourably and have favourable attitudes towards their purchase, producers can conduct further research on expanding their product offerings on the South African market. However, if consumers do not have a favourable attitude toward the purchase of UHT milk alternatives, producers need to understand which factors are potentially hindering purchase intentions, in order to adapt their product offering to the needs of the South African consumer. Thus, the enquiry into the phenomenon also needed to establish the factors that initiate or limit consumers' purchase intentions of UHT milk alternatives.

While the tri-component model is relatively simple, each component can be studied in great depth and complexity if it is to be applied to consumers' attitudes toward a product or product category. Its broad scope provides researchers with a good overall understanding of the topic, while its flexibility enables the researcher to expand research into individual components in greater depth. Two attitude models, the *attitude-toward-the-object-model* and the *theory of planned behaviour* are linked to the three components of the *tri-component model* and provide a better understanding of each component constituting overall attitude.

3.2.3.2 *Attitude-toward-the-Object-Model*

The attitude-toward-the-object model (Fishbein, 1963) deals directly with the *cognitive* and *affective components* of the tri-component model through a multi-attribute approach. According to Fishbein's model, an individual's attitude toward a product can be more complex than just a general evaluation whether the product is favoured; instead, different attributes of the product can be regarded as favourable or unfavourable, comprising the overall attitude toward the product (Solomon, 2019). The different attributes of a product may also vary in relative importance to each other and between different individuals (Clow & Baack, 2021; Yosini, 2011). Therefore, researchers need to identify which attributes are important to consumers in their decision-making and how consumers evaluate the product attributes in order to understand their overall attitude toward a product.

This model brings about a more specific understanding of the particulars of a product itself through the attributes of the product that are being considered (Schiffman & Wisenblit, 2019; Fishbein, 1963).

Attitude-toward-the-Object Model

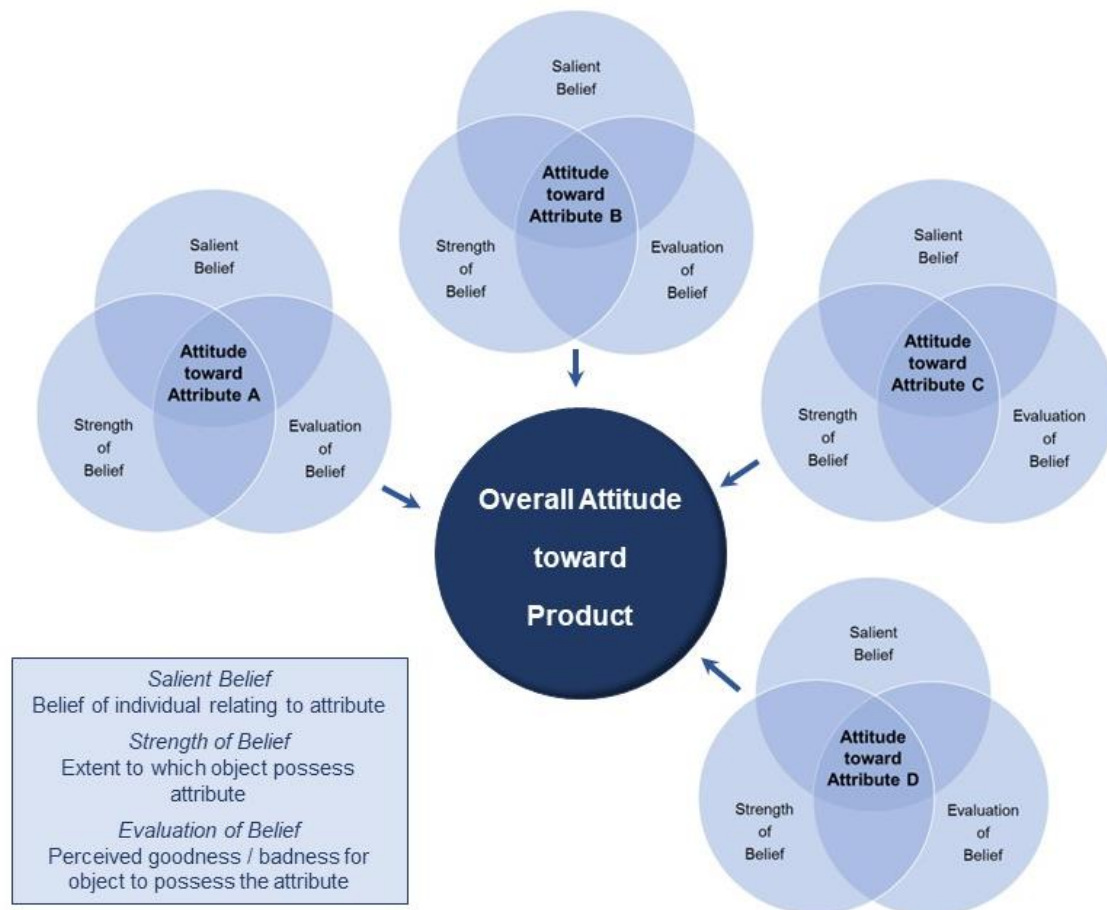


Figure 3.3: Attitude-toward-the-Object Model adapted from Yosini (2011) and Mollah, Kim and Choudhury (2015)

The attitude-toward-the-object model (Figure 3.3) maintains that attitudes are predicted by a combination of three major elements: salient beliefs held by the individual (*cognitive component*), how strongly these beliefs are held by the individual and the evaluation of these beliefs (*affective component*) according to the individual (Solomon, 2019; Fishbein, 1963). Salient beliefs are the beliefs held by the individual regarding an object and the attributes considered important to the individual; it refers to the beliefs activated in an individual's memory when focusing on the object (Solomon, 2019; Mollah *et al.*, 2015). The second element, the strength with, or the extent to, which the belief is held by an individual can vary in intensity according to the individual (Solomon, 2019; Mollah *et al.*, 2015). The third element believed to contribute to the individual's attitude, evaluates the individual's belief of the

goodness or badness of the object to possess the attribute and the favourable or unfavourable evaluation of the product (Solomon, 2019; Mollah *et al.*, 2015; Kimmel, 2013). According to this model, individuals hold favourable or unfavourable attitudes toward the different attributes of the object and the overall evaluation of a product is determined by adequate or insufficient levels of attributes considered favourably (Schiffman & Wisenblit, 2019; Ahamed, Islam & Qaom, 2015; Mollah *et al.*, 2015; Fishbein, 1963). The model also maintains that the more favourable attitudes are towards a product, the higher the likelihood of product usage (Schiffman & Wisenblit, 2019; Solomon, 2019). By using the attitude-of-the-object model as a frame of reference, the cognitive and affective components of the tri-component model and their influence on behavioural intention can be better understood.

3.2.3.3 *Theory of Planned Behaviour*

The *theory of planned behaviour*, as developed by Ajzen (1991), aims to create a frame of reference within which the link between an individual's attitudes and behaviour, such as purchase intentions, can be understood (Montaño & Kasprzyk, 2015). More specifically, it aims to predict an individual's voluntary behaviour, based on the individual's intentions (Paul *et al.*, 2016; Ajzen, 1991). The theory of planned behaviour (Figure 3.4) also acknowledges the role of perceived behavioural control in behavioural intentions (Jones, 2017; Hackman & Knowlden, 2014; Ajzen, 1991).

The model maintains that actual behaviour is preceded and most strongly influenced by the intention to perform that behaviour (Paul *et al.*, 2016; Doane *et al.*, 2014; Ajzen, 1991), implying that individuals consider the implications of their behaviour before taking action (Jones, 2017). This behavioural intention (*conative component*) stems from the outcome expected by the individual when performing the specific behaviour and is determined by the individual's attitudes toward the behaviour and the pressure of the subjective norm (Doane *et al.*, 2014; Knabe, 2012). The theory of planned behaviour also attempts to include the individual's level of control over circumstances to determine behaviour intentions (Doane *et al.*, 2014; Hackman & Knowlden, 2014; Ajzen, 1991). This is where the meaningful difference between the attitude-toward-the-object model and the theory of planned behaviour lies, with the first model focusing on *attitudes toward the object* and the second model focusing on the *attitudes toward specific behaviour* (Montaño & Kasprzyk, 2015).

The individual's attitude toward the behaviour stems from the person's belief regarding the expected outcome of the behaviour, whether the expected outcome is desirable or not and how important that outcome is to the individual (Cooke *et al.*, 2016; Doane *et al.*, 2014; Mishra *et al.*, 2014; Knabe, 2012; Ajzen, 1991). Attitudes toward the behaviour have been identified as a meaningful influence on behavioural intentions, with more favourable attitudes linked to

Theory of Planned Behaviour

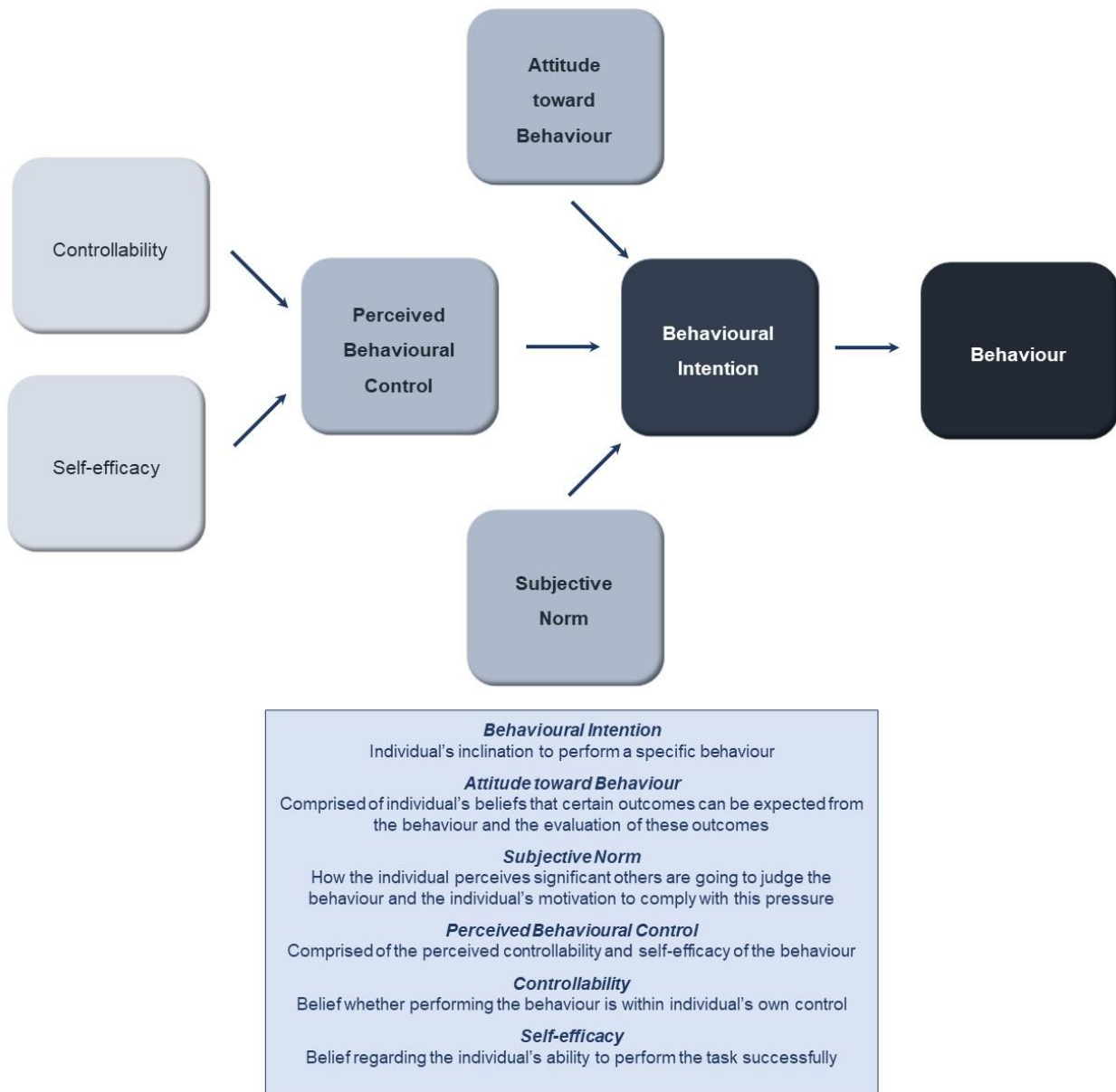


Figure 3.4: Theory of Planned Behaviour adapted from Montaño and Kasprzyk (2015) and Knabe (2012)

increased intention to behave in a particular manner (Paul *et al.*, 2016). The subjective norm refers to whether the individual perceives that significant others in the individual's life are going to approve or disapprove of the behaviour and to what extent the individual is motivated to comply with the pressure of these social expectations (Cooke *et al.*, 2016; Hackman & Knowlden, 2014; Mishra *et al.*, 2014). A favourable link between the subjective norm and behavioural intentions has been noted, with an increased intention to perform a behaviour if significant others endorse the behaviour (Paul *et al.*, 2016; Ajzen, 1991).

The need to include perceived behavioural control was recognised since favourable attitudes and the subjective norm alone do not always predict an individual's behaviour; circumstantial limitations may prevent an individual from performing certain behaviours (Montaño & Kasprzyk, 2015; Hackman & Knowlden, 2014). According to the theory of planned behaviour, perceived behavioural control is comprised of self-efficacy and controllability and evaluates the individual's confidence whether it is within the individual's control to perform the behaviour successfully (Cooke *et al.*, 2016; Montaño & Kasprzyk, 2015; Ajzen, 1991). Self-efficacy indicates the perceived belief regarding one's ability to perform the task successfully or the difficulty thereof (Paul *et al.*, 2016), while controllability indicates whether one believes the behaviour is within one's control or limited by external factors outside one's control (Knabe, 2012). It is suggested that the more accurately the perceived control reflects actual control over the behaviour, the more accurately the model predicts behaviour (Cooke *et al.*, 2016). The stronger the behavioural intentions are held by an individual, the higher the likelihood of predicting actual behaviour (Montaño & Kasprzyk, 2015).

Since it is believed that the behavioural intention (*conative component*) directly precedes actual behaviour, it becomes important to identify the factors which influence behavioural intentions (Paul *et al.*, 2016; Montaño & Kasprzyk, 2015). The theory of planned behaviour is considered a valuable tool to understand consumer behaviour since it acknowledges that individuals' attitudes, the subjective norm and perceived behavioural control influence behavioural intentions and in turn consumer behaviour (Jones, 2017; Hackman & Knowlden, 2014; Ajzen, 1991). For the purpose of the research, the term *purchase intention* was used, with the understanding that the consumer's intention to *purchase* a product would also be linked to the consumer's intention to *utilise* the product, whether by the individual self, or by a household or family member, such as a child or partner, for whom the product is purchased. Consequently, a close link was initially assumed and established during data analysis, between product *purchase intention* and product *utilisation intention*, with the understanding that *purchase intention* would indicate some form of *utilisation intention*. However, the term *purchase intention* was used for clarity and conciseness in the research. Both the *attitude-toward-the-object model* and the *theory of planned behaviour* assist in understanding consumer attitudes under the broader *tri-component model*. The manner in which it guided the frame of reference to shape the enquiry into the research objectives is discussed below.

3.3 CONCEPTUAL FRAMEWORK

For this study, the *tri-component model* (Schiffman & Wisenblit, 2019; Aaker *et al.*, 2013) was considered the most suitable model to explore the development of a model on consumer attitudes toward UHT milk alternatives and their purchase intentions. It covers the three important elements identified in the research objectives (Schiffman & Wisenblit, 2019; Aaker

et al., 2013) and provides flexibility to expand the phenomenological, qualitative research in greater depth in each area as the need arose or new insights were uncovered. Each of these components was further studied in greater depth utilising the *attitude-toward-the-object model* (Schiffman & Wisenblit, 2019) and the *theory of planned behaviour* (Montaño & Kasprzyk, 2015). Elements of the models and theoretical perspectives were used as initial guidelines for themes to be explored during the data-gathering process. The final model based on the research results is presented in Chapter 9. However, Figure 3.5 provides the conceptual framework on how the models were initially anticipated to be integrated to arrive at a more complete understanding of consumer attitudes toward UHT milk alternatives and purchase intentions thereof. The details of each model will not be discussed again, as each model has been described in the theoretical framework above.

The anticipated integrated attitude model suggests that the individual's salient beliefs and evaluation of an object form the overall attitude toward the product based on the attitude-toward-the-object model which relies on these two elements to shape consumer attitudes toward a product (Solomon, 2019). While the overall attitude toward the object cannot predict behaviour, it does have a favourable influence on the individual's behaviour (Schiffman & Wisenblit, 2019; Solomon, 2019). It is suggested that the individual's salient beliefs (individual's belief of product attributes) and evaluation (goodness or badness for an object to possess certain attributes) of the product itself in the *attitude-toward-the-object model* correspond with the cognitive (beliefs of product) and affective (evaluation of product) components of the *tri-component model* (Kimmel, 2013), allowing each component to be studied in a structured way. To arrive at a more complete understanding of the individual's overall attitude, the *tri-component model* also requires the conative (intention toward behaviour) component to be studied (Kimmel, 2013). It is suggested that the behavioural intention (individual's inclination to perform the behaviour), comprised of the individual's attitude toward the behaviour (beliefs that certain outcomes can result from the behaviour) and perceived behavioural control (perceived controllability and self-efficacy of the behaviour), of the *theory of planned behaviour* (Jones, 2017; Doane *et al.*, 2014; Hackman & Knowlden, 2014; Knabe, 2012) corresponds with the conative component of the *tri-component model* (Kimmel, 2013) and allows it to be studied in greater depth.

Anticipated Integrated Attitude Model

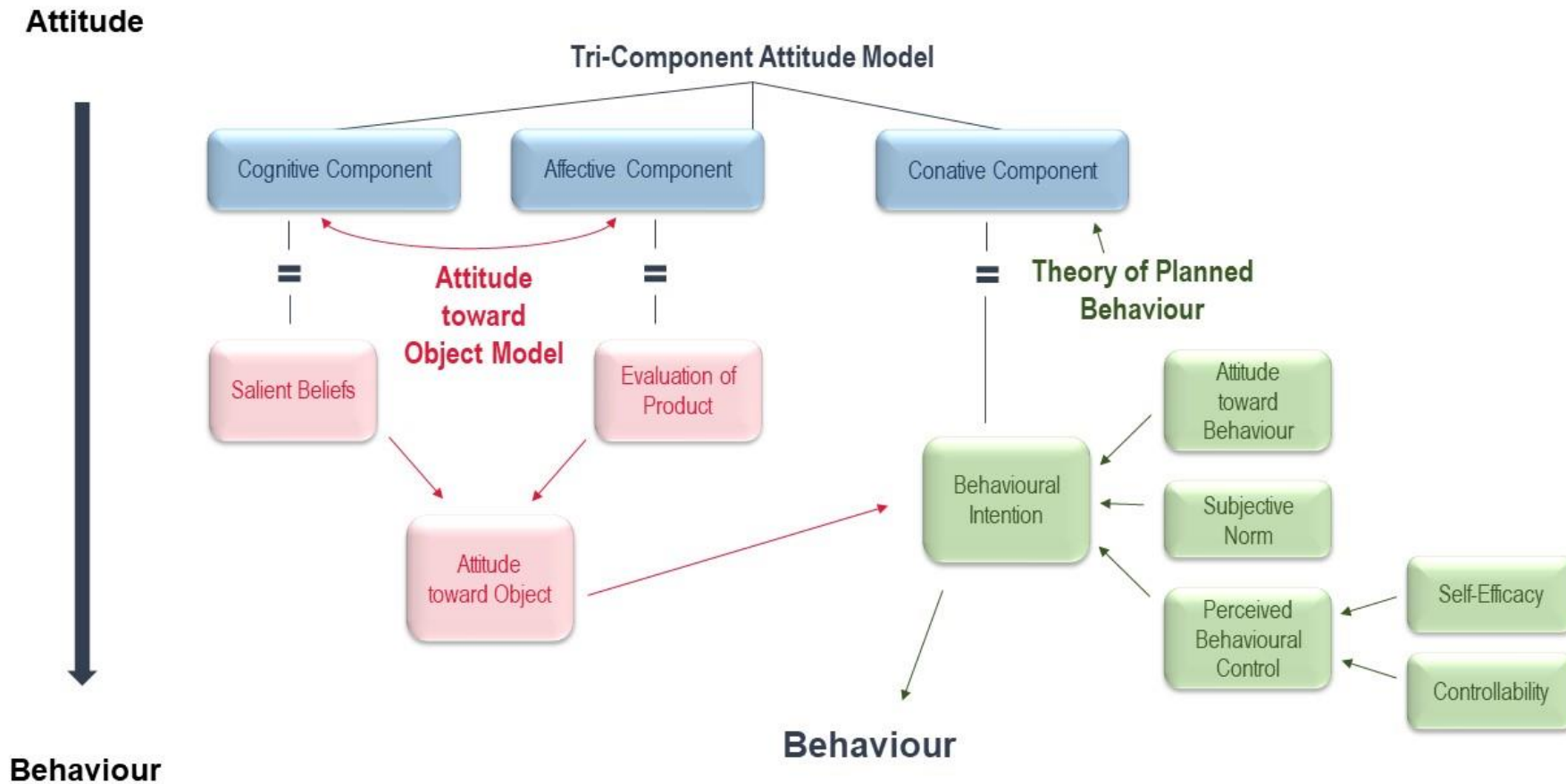


Figure 3.5a: Anticipated Integrated Attitude Model

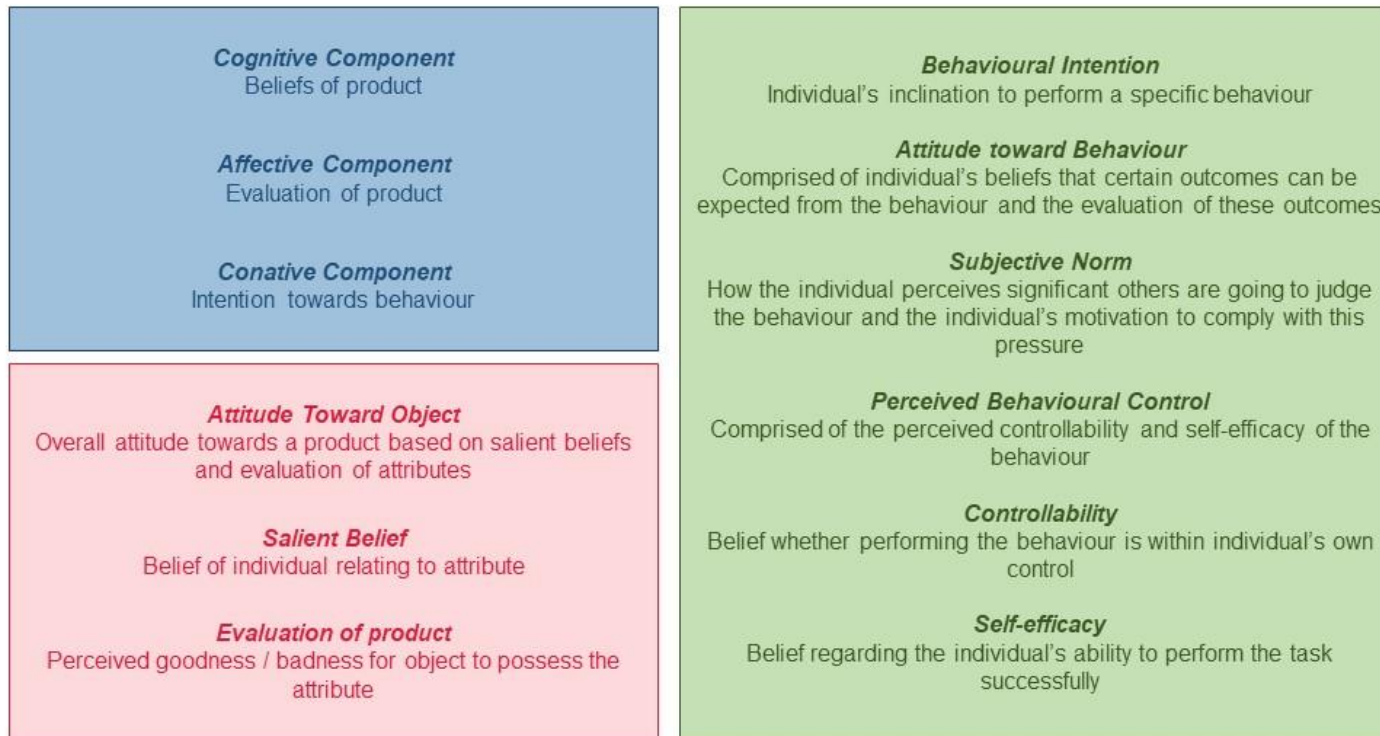


Figure 3.5b: Key to Anticipated Integrated Attitude Model

Since both the individual's attitudes toward the product and toward the behavioural intention have been linked favourably with consumer behaviour (McDaniel & Gates, 2020; Paul *et al.*, 2016), it was anticipated that an integrated approach to the attitude models would arrive at a more complete understanding of the consumer's ultimate behaviour towards the purchase of a product. This initially anticipated model provides a guideline to the researcher at the onset of the study to ensure that all known concepts are included. However, the final model developed from the findings of the study is presented in Chapter 9.

3.4 CONCLUSION

As seen from the literature presented in the previous chapter, the UHT milk alternatives category is a growing market segment. However, despite the availability of milk alternatives in the South African market, very little research has been conducted on South African consumer attitudes and acceptability of milk alternatives. While international research is available, it cannot be assumed that trends, attitudes and preferences among consumers are universal. Consumer beliefs relating to UHT milk alternative products and their attributes, the evaluation of whether these products are considered favourably or unfavourably by the consumer and their intended behaviour toward these products within a South African context, the combination of which constitutes consumer attitudes, is not fully understood. Understanding South African consumer attitudes related to milk alternative products in the South African market would allow the industry to satisfy consumer needs, expectations and demands better. As presented in this chapter, the theoretical perspective provided by the tri-component attitude model, the attitude-toward-the-object model and the theory of planned behaviour are provided as a useful orientating lens through which consumer attitudes within decision-making can be interpreted. These theoretical models served as background to inform the conceptual framework of the enquiry, guiding the study. The central research question (Chapter 1) relied on this theoretical framework to holistically describe and interpret the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions. The next chapter presents the research methodology, including the conceptual framework of the study, whereafter the findings are presented in the following chapters.

CHAPTER 4

RESEARCH METHODOLOGY

Describes the research methodology of the study. It describes the postpositivist paradigm and qualitative approach used for this exploratory-descriptive phenomenological study. It includes an account of the geographic location of the study, the data-gathering methods, participant sampling, recruitment strategies, instrument utilised and the operationalisation of the study. The manner in which trustworthiness of findings was supported, as well as the thematic data analysis implemented, is presented. The chapter concludes by describing the methods underlying the interpretation and presentation of the findings and the ethical considerations adhered to during the research.

4.1 INTRODUCTION

The previous chapter provided a theoretical perspective to shape the research enquiry at the onset as well as the conceptual framework applied. This chapter presents the methodology applied during the research process. Since literature on South African consumers' interest in the UHT milk alternative product category is limited, an exploratory-descriptive, qualitative approach was necessary to gather insight into the research problem. The research approach needed to be guided enough to gather quality data, but flexible enough to adapt as new insights were uncovered. The research was shaped within a postpositivist paradigm, using a qualitative approach for the phenomenological study. The research followed an exploratory-descriptive design to study the meanings South African consumers ascribed to UHT milk alternatives and purchase intentions. The data-gathering methods, sampling and recruitment strategies, instrument and the trustworthiness are presented, followed by a detailed description of the thematic data analysis process and ethical considerations adhered to during the research. The following chapters will present the research findings.

4.2 POSTPOSITIVIST PARADIGM

The research was conducted within the postpositivist paradigm based on the ontological assumption that reality is multiple and can be observed through many views, thus searching for an outcome where the different participant perspectives are embraced and presented (Creswell & Poth, 2017). The interpretive framework was found in the postpositivist paradigm as described by McGregor (2018), to be based on the assumption that multiple ways can be used to arrive at knowledge. According to McGregor (2018), the postpositivist paradigm perceives humans as a central part of the research and that reality needs to be understood from the experience of the individual living it. The paradigm further uses inductive reasoning to search for common patterns, underlying meanings, beliefs and experiences to interpret

subjective knowledge of participants as shaped by their natural settings (McGregor, 2018). This paradigm provided a useful framework to study consumer attitudes toward UHT alternatives and their purchase intentions by recognising that multiple realities can be perceived by different participants and that humans should shape the enquiry rather than strict methodologies. The flexibility and inductive nature of the paradigm allowed the enquiry to develop and expand as new knowledge was uncovered and to create meaning of shared patterns and their underlying meanings within the participant's mind.

4.3 QUALITATIVE RESEARCH APPROACH

The research approach serves as a framework to guide how the research problem is approached during the inquiry process (Shannon-Baker, 2015). Qualitative research is considered one of the best methods to gain an in-depth understanding of a phenomenon (McDaniel & Gates, 2020; Schiffman & Wisenblit, 2019). Key assumptions of qualitative research which underly the approach for this research include: (1) the assumption that research is best conducted in natural settings; (2) that social phenomena need to be understood from the perspective of those living it; (3) that meanings derived from data is context specific; (4) that phenomena are expressed in words and too complex to reduce to numbers; (5) that researchers can be the key data collection instruments; (6) that theory can emerge from data; (7) that reality can be studied through interaction; (8) that conclusions can be drawn using inductive logic and (9) that findings can be presented through narrative rather than statistically (McGregor, 2018). These assumptions shaped the research approach, allowing the researcher to gather data from participants related to their own contextual experiences and to pursue meaning from the data inductively to ultimately present this data through thick descriptions of their lived realities, rather than reducing findings to statistical numbers. The qualitative approach is applied when the main goal of the research is not to quantify results through quantitative analysis, but rather to generate findings which provide new insights, or a deeper understanding of the underlying reasons for consumer decisions (McDaniel & Gates, 2020; Schiffman & Wisenblit, 2019; Malhotra, 2012). The emerging nature of qualitative research allows the enquiry to be developed throughout the process, allowing flexibility to arrive at a complex, unanticipated interpretation of the research problem based on the meaning created by participants (Creswell & Poth, 2017). It includes data collection methods such as mini-focus groups, field observations and semi-structured interviews, with the most commonly used methods being the mini-focus group sessions and semi-structured interviews (Schiffman & Wisenblit, 2019; Wimmer & Dominick, 2014). By utilising open-ended questions, the researcher can probe each participant for information without limiting the research findings to preconceived ideas; thus, allowing the pursuit of constructs which were not identified or were under-estimated in importance during the initial design of the research

process (McDaniel & Gates, 2020; Schiffman & Wisenblit, 2019). The data is then analysed as non-statistical, subjective and interpretive data to gain an in-depth understanding of the participant responses (McDaniel & Gates, 2020; Malhotra, 2012). Thus, the research describes the complex interactions among factors shaping participants' real-life situations holistically from multiple perspectives (Creswell & Creswell, 2018; Creswell & Poth, 2017). Perceived disadvantages of a qualitative approach include the small sample sizes used, limiting the generalisability of the findings to the sample population instead of being able to apply it to the entire target population; and the flexible nature of the approach, lowering the degree to which it can be replicated or tested for reliability (McDaniel & Gates, 2020; Schiffman & Wisenblit, 2019; Wimmer & Dominick, 2014). However, the intent of qualitative research is not to generalise findings, but rather to provide a particular description of findings related to a specific group, or within a specific context or phenomenon (Creswell & Creswell, 2018). Qualitative enquiries therefore specifically aim for particularity rather than generalisability (Creswell & Creswell, 2018). The flexibility of the approach is also considered to be one of its main advantages, allowing the pursuit of new areas of interest, the discovery of important constructs that were not considered before the onset of the study and the freedom to explore a research problem without preconceived notions or anticipated outcomes (Wimmer & Dominick, 2014; Malhotra, 2012). The qualitative approach utilises several methods to ensure transferability, dependability, credibility and confirmability to ensure robust research, as described in more detail in the section on trustworthiness (Korstjens & Moser, 2018). Due to the exploratory-descriptive nature of the research (McDaniel & Gates, 2020; Churchill, Brown & Suter, 2010), an in-depth qualitative research approach was necessary to gain insight into South African consumer attitudes toward UHT milk alternative products and their purchase. Therefore, a qualitative approach was applied during the research process.

4.4 EXPLORATORY-DESCRIPTIVE RESEARCH DESIGN

The study made use of an exploratory-descriptive design. Since the research topic has not been studied previously, it necessitated an exploratory design in which the themes explored would not be limited to preconceived variables. However, the nature of the research question required descriptions of the multiple factors and consumer behaviour which was found to form the essence of the phenomenon, necessitating a descriptive research design. The objective of exploratory research is to discover ideas and insights when very little or no data is available relating to a research problem (Malhotra, 2012; Churchill *et al.*, 2010). The main advantage of exploratory research is considered its flexible and versatile nature, which lends itself to generating and describing valuable insight when researchers are faced with a novel problem, with limited literature available on the topic, that they do not fully understand (Malhotra, 2012). The exploratory design allowed the researcher to search for broader meanings of reality from

key aspects identified and developed in the emerging study (McGregor, 2018). However, an exploratory design alone could not present research findings in a manner which comprehensively informed the research question, calling for a description of the phenomenon. Consequently, an exploratory design was combined with a descriptive design to gain detailed descriptions of participants' multiple realities and the meaning they ascribe to the previously unknown phenomenon studied (Hunter, McCallum & Howes, 2019; McGregor, 2018). The research sub-questions generated very descriptive data as participants described their beliefs, evaluation criteria and purchase intentions. The main disadvantage of exploratory-descriptive research is the fact that it is not considered conclusive, but instead is viewed as tentative and speculative, therefore, while it does have predictive value, it cannot determine an explicit, measurable cause-effect relationship (McDaniel & Gates, 2020; Zikmund & Babin, 2013). However, the main purpose of the research design was to explore and describe meanings from the participant's reality and context to inform the interpretive model required by the central research question.

4.5 PHENOMENOLOGICAL STRATEGY OF ENQUIRY

As described in the previous sections, the research was approached within the post-positivist paradigm, utilising an exploratory-descriptive qualitative approach. The central research question emerged as the key phenomenon explored in the research. The nature of the research question, more particularly the need to gain a deeper understanding of the lived experiences and realities multiple participants have in common to determine consumer attitudes and intentions toward UHT milk alternatives, led to a phenomenological strategy of enquiry (Creswell & Poth, 2017). A phenomenological strategy is based on the assumption that human experiences can be consciously described since the meaning to the individual is embedded in the conscience of those who live it (McGregor, 2018; Creswell & Poth, 2017; Husserl, 1958). Consequently, it describes the essence of participants' attitudes toward UHT milk alternatives and their purchase intentions. The phenomenological strategy entails prolonged engagement with participants, often through interviews and mini-focus groups and their statements to discover and interpret the patterns and linkages that are meaningful to the participant (McGregor, 2018). These individual experiences and meanings ascribed to the phenomenon are then reduced into a composite description to reflect on and interpret the universal essence of the phenomenon experienced by all participants (Moser & Korstjens, 2018; Creswell & Poth, 2017; Husserl, 1958). The strategy uses epoché, or bracketing, (provided under the section on trustworthiness) to allow researchers to set aside personal experiences during the data analysis phase to create new, unhindered perspectives of the phenomenon based on participant realities (Creswell & Poth, 2017; Husserl, 1958). It involves acquiring understanding through themes generated from meaningful statements made by

participants (Moser & Korstjens, 2018; Creswell & Poth, 2017). The phenomenological strategy culminates in the interpretive summary describing the essence of the lived phenomenon of the central research question (Moser & Korstjens, 2018; Creswell & Poth, 2017; Husserl, 1958). This strategy shaped the research enquiry process, including suitable data-gathering methods, sampling strategies, data analysis and interpretation. To avoid repetition, the phenomenological strategy and how it was applied in these research elements are included in the relevant sections below.

4.6 GEOGRAPHIC LOCATION OF THE STUDY

The geographic location of the study was limited to the geographic boundaries of the Republic of South Africa. Initially, the recruitment strategy was aimed at reaching participants within the Gauteng province from the Florida and main campuses of UNISA. However, due to the low response rate among this group of participants and the inability to meet these participants in person due to COVID-19 restrictions (described in the sections below), the study was expanded to include participants who could be reached online, whether or not they had any connection to UNISA. Since the study focused on South African consumers' attitudes, the online recruitment of participants was still limited to South African residents to gather data from the appropriate study population. People who reside outside South Africa were not eligible to participate in the study.

4.7 DATA-GATHERING METHOD

This phenomenological study used online mini-focus groups and semi-structured interviews to gather data. The initial research proposal intended face-to-face focus groups; however, due to the unforeseen circumstances presented by the COVID-19 pandemic in 2020 and the response measures implemented in South Africa, the methodology was adapted to use online mini-focus groups. South African COVID-19 response measures during the data-gathering phase of the research (March 2020 to September 2020) restricted the gathering of groups in-person during restriction levels three to five. Due to government restrictions, UNISA similarly restricted face-to-face engagement with participants due to the high risk of infectious spread (UNISA communication, 9 April 2020). The university required face-to-face research strategies to be placed on hold during all levels of government response measures but allowed the continuation of research strategies which could be continued online without face-to-face contact between researchers and participants. Consequently, the study adapted and received amended permission to proceed with online data-gathering activities. Participants were recruited for online focus groups, but due to the sudden changes in schedules brought on by the pandemic restrictions, forcing participants to balance work from home, child care, children's schooling and other household tasks simultaneously, the research was unable to schedule timeslots suitable for larger groups of participants, as planned initially. Consequently,

online focus groups were small, ranging from two to three participants who could participate in timeslots indicated to be convenient to the participants, resulting in online mini-focus groups. Individuals recruited for online mini-focus groups who could not participate in scheduled group timeslots were accommodated with a timeslot of their preference, thus changing the mini-focus group approach to also include individual semi-structured interviews. Mini-focus group discussions and semi-structured interviews were recorded, with the prior permission of participants and transcribed. The researcher also took notes during discussions as a backup in the event that recordings failed or turned out inaudible. These recordings, transcriptions and notes were stored on a password-protected computer and access was only granted to the researcher, research supervisor and individuals conducting the transcriptions. Individuals supporting the research process through transcriptions services signed confidentiality agreements, prior to accessing the recordings. Thereafter, the transcripts were used for data analysis.

4.7.1 Mini-focus Groups

Focus group discussions are qualitative data-gathering methods commonly used during phenomenological research to describe the research problem clearly and to generate concepts on which further research can be based (Aaker *et al.*, 2013). Focus groups aim to examine the experiences and views expressed during group discussions initiated by questions on the research topic (Moser & Korstjens, 2018). Traditionally, focus groups typically consist of five to twelve participants who meet at a central location and are encouraged to express their ideas and react to the opinions of other participants on a topic during a free-flowing discussion (Aaker *et al.*, 2013). One of the unique features of focus groups is the group interaction during the discussions (Aaker *et al.*, 2013). Focus groups encourage participants to answer spontaneously with responses from one person stimulating responses from other participants, expanding the depth of the discussion beyond the initial questions presented to the group (McDaniel & Gates, 2020; Malhotra, Birks & Wills, 2012). The main disadvantages associated with focus group discussions include the potential influence of group pressure or dominant individuals in the group (Aaker *et al.*, 2013). However, the moderator guiding the focus group can mitigate the risk of group pressure by ensuring all participants are provided with equal opportunity to present their views and encouraged to contribute, even if their views differ from those of the rest of the group. Two in-person mini-focus groups were conducted with five participants in total, prior to the outbreak of COVID-19 in South Africa. Due to national COVID-19 pandemic restrictions implemented during the data-gathering phase of the research, the data-gathering methods were adapted to continue online rather than in person. Thereafter, eight online mini-focus groups with a total number of 19 participants were conducted. The process was adapted for participants to meet online in small groups of two to

three on a secure, access-controlled platform, Zoom, to prevent face-to-face meetings in the same venue. The access settings to the platform were password-protected and only the moderator could record the discussion or allow participants to enter. Access details were only provided to the specific participants for their particular group session to limit access to the participants and moderator of each session. Since many participants only became familiar with online platforms during the COVID-19 pandemic, the researcher considered the fact that they may not feel as comfortable with online platforms as with in-person discussions. Consequently, groups were purposefully kept small to create mutual trust and a sense of focus whilst providing each participant who might otherwise have felt uncomfortable to participate in large, online discussions a chance to contribute. As indicated by Moser and Korstjens (2018), smaller groups also provide participants with more time to voice their experiences and perspectives. Practical limitations, as encountered in this research, may lead to the use of small (mini) focus groups, but can still contribute a great depth of insight into the phenomenon by allowing each participant time to express their views, which would not necessarily be possible in large focus groups, which tend to become fragmented and difficult to manage (Nyumba, Wilson, Derrick & Mukherjee, 2018). Whilst the risk remains with mini-focus groups that discussions can be limited, or that the group may experience difficulty maintaining a discussion if some participants portray low levels of engagement, mini-focus groups have also been found to minimise distractions and to lead to rich discussions of great depth (Nymberg, Bolmsjö, Wolff, Calling, Gerward & Sandberg, 2019). The moderator ensured that all participants received an equal opportunity to express their views and engage in the discussion by addressing questions to all individuals during the mini-focus groups, thus leading to the depth of discussion as explained. The discussions, lasting between 45 and 60 minutes, were led and developed by a moderator, in this case, the researcher, who prepared a discussion guide based on the research questions (see Appendix C) prior to the online mini-focus groups (McDaniel & Gates, 2020; Malhotra, 2012; Malhotra *et al.*, 2012). As discussions progressed, the type of questions asked, the probes used and the wording of the questions depended on the answers received (Malhotra, 2012). It is common for mini-focus groups to produce valuable insights that were not anticipated initially, therefore the moderator needed to be flexible and use the discussion guide as a guideline only in order to explore deeper insights as discussions progressed (Schiffman & Wisenblit, 2019).

4.7.2 Semi-structured Interviews

As mentioned earlier, the research initially planned to use mini-focus groups, but had to adapt to an online strategy. The change to online mini-focus groups led to more participants being able to participate, since participants could join the discussions from their own location rather than having to be together on-site at the same venue. However, it became more complicated

to arrange group meetings at times that mutually suited the participants recruited, since their lunch times, work hours and availability varied with the additional family responsibilities which participants experienced by working and schooling their children from home during the pandemic. Consequently, several participants expressed willingness to participate, but could not join one of the mini-focus group time slots. The researcher scheduled convenient time slots with these participants, changing the data-gathering method from mini-focus group discussions to semi-structured interviews for these participants. The benefit of adding semi-structured interviews allowed more participants to form part of the research. It also provided an opportunity to check if a more focused one-on-one approach with participants led to similar data or varied greatly from that generated by mini-focus groups, thus contributing triangulation of methods to support trustworthiness. The semi-structured interviews used the same online platform, access protection methods and discussion guide mentioned in the previous section. The only difference in how it was practically conducted was that only one participant was present and had a dialogue with the moderator instead of having a group discussion.

Semi-structured interviews intend to describe the meanings which participants ascribe to the phenomenon under study through dialogue with the researcher (Moser & Korstjens, 2018). Semi-structured interviews are useful to gain deeper insight and understanding into a research problem to uncover consumers' underlying attitudes or prejudices toward a concept or product (Malhotra, 2012; Malhotra *et al.*, 2012). The emphasis is on letting consumers contribute by talking at length on a subject to explore how they feel about a product and how it fits into their daily lives (McDaniel & Gates, 2020). While semi-structured interviews cannot utilise the internal discussions among participants as mini-focus groups do to argue different participant views to generate various perspectives and interpret opposing or similar views, they do provide the benefit of a more focused approach to the individual participant's contribution and lack of group pressure to provide a perceived socially acceptable response. Where individuals could not participate in scheduled online mini-focus group timeslots, the individual participated in an online semi-structured interview, utilizing the same discussion guide as the online mini-focus groups. Eleven semi-structured online interviews were conducted, bringing the total number of participants to 35. Equally valuable data was gathered through semi-structured online interviews than through the online mini-focus groups, with both methods contributing valuable insight to the research.

Disadvantages associated with mini-focus groups and semi-structured interviews are their reliance on a small group of participants and, like other qualitative research methods, often using non-probability sampling, thus the responses obtained cannot be claimed to represent the entire target population (McDaniel & Gates, 2020; Malhotra *et al.*, 2012). However, the main advantage attributed to mini-focus group discussions and semi-structured interviews is

the ability to provide first-hand consumer information that would not necessarily feature in other data-gathering methods (Aaker *et al.*, 2013). Due to the exploratory-descriptive nature of the study, the aim was not to generalise findings, but rather to generate, describe and interpret detailed new knowledge on a little-known phenomenon. The combination of mini-focus groups and semi-structured interviews supported the need for particularity required by the enquiry. With limited information available on South African consumer attitudes toward UHT milk alternatives and their purchase intentions, mini-focus group discussions and semi-structured interviews were particularly useful to gather deeper insight into the essence of the phenomenon and consumers' thinking. The flexibility of these discussions and interviews allowed the researcher to begin the discussion on the broad topic and thereafter to expand the discussion as new or unanticipated information arose, thus gaining deeper insight into the research problem through the emergent approach.

4.8 PARTICIPANTS

The population of this study was South African consumers over the age of 18 years, who were familiar with milk and milk alternatives and may or may not have used these products due to personal reasons, who were willing and able to participate in the data-gathering sessions and who could be reached through the recruitment strategies of the research. The mini-focus groups and semi-structured interviews were open to any willing person who met the inclusion criteria and who could be reached through the recruitment strategies applied. The aim was to gather insight from a variety of individuals who wished to contribute and could provide rich information for a comprehensive interpretation of the research phenomenon. Four characteristics were required for participants in the research and served as the inclusion criteria for the study. Firstly, participants had to reside within the geographical boundaries of the Republic of South Africa that demarcated the study. Secondly, due to ethical considerations, combined with the desire to gather data from individuals who influence their own food choices, participants had to be over the age of eighteen years. Thirdly, participants had to be milk or milk alternative users, or at least be familiar with these products, to ensure that they have a shared interest in the product category, be knowledgeable on the phenomenon and potentially form part of the target marketing group of such products. Participants who were familiar with milk and milk alternatives, but who did not consume it due to health or other personal reasons were included, in order to include individuals who may want to consume these products, but for personal reasons did not find them suitable. Finally, participants had to be willing and able to participate in group discussions or interviews to articulate their lived experiences related to the research topic at length (Moser & Korstjens, 2018; Creswell & Poth, 2017). Consequently, exclusion criteria from the study excluded individuals residing outside the geographic boundaries of the Republic of South Africa,

individuals under the age of eighteen years, individuals who were not familiar with or had no interest in, milk or milk alternative products and individuals who were not willing or able to participate in detailed dialogue with a group or the researcher from participating in the study. No other characteristics were used as exclusion criteria for participation.

4.8.1 Sampling Strategy

The type of sampling strategy selected is determined by the purpose and available resources of the research (Schiffman & Wisenblit, 2019; Wimmer & Dominick, 2014). Since probability sampling is time-consuming, sometimes considered impractical and the costs to execute it are rather high, the purpose of the information to be gathered should be carefully weighed against the costs involved (Wimmer & Dominick, 2014). A non-probability sample presents a more apt, cost-effective and practical alternative in exploratory-descriptive phenomenological studies where the aim is not to generalise findings to the entire population but rather to uncover, describe and interpret a greater depth of understanding into a relatively unknown research question from the lived experiences of individuals with insight into the phenomenon (Wimmer & Dominick, 2014). A non-probability sample, drawing from the study population of South African consumers, was considered suitable for this study, since the aim of the study was more concerned with gathering a greater depth of understanding of a relatively unknown research problem, rather than generalising findings to the entire South African population. A combination of convenience, purposive and snowball non-probability sampling strategies were used in this study.

Convenience sampling methods allow participants to be recruited quickly and economically by selecting participants who are practically accessible and willing to participate (Picardi & Masick, 2014; Zikmund & Babin, 2013). It provides the researcher with the freedom to recruit participants in the most convenient, cost-effective and practical way for the purpose of the study (Zikmund & Babin, 2013; Remler & Van Ryzin, 2011). Since phenomenological studies use a small number of participants but require extensive time to be spent with the participants to understand their lived experiences and the meaning they ascribe to it, convenience sampling becomes important to find participants who are practically able and available to spend the necessary time participating in the research. Thus, convenience sampling became the foundation of the research sampling strategy.

The research combined the convenience sampling method with purposive sampling. The phenomenological study required that participants have experience with the phenomenon under study with the purpose to find detailed exploratory-descriptive information, necessitating a sampling strategy that would not only allow the selection of individuals who met the inclusion criteria mentioned in the previous section, but would also be informative to the enquiry.

Participants who did not meet the required criteria, including participants with a lack of experience with the phenomenon, were eliminated as participants (Wimmer & Dominick, 2014). This further necessitated a purposive sample in which the researcher's judgement could be used to select participants considered to be the most informative to the research (Picardi & Masick, 2014). The purposive sampling strategy allowed the researcher to seek out and request the participation of individuals with specific, predetermined traits, such as milk allergies and vegetarian lifestyles, who would help the researcher understand the research problem and enquiry (Creswell & Creswell, 2018). In order to increase the likelihood of finding individuals who were information rich on the topic, snowball sampling was added to the strategy (Creswell & Poth, 2017). Participants occasionally provided referrals to individuals they knew had experience with the phenomenon under study and these referrals were followed up with requests for participation, forming a snowball sample.

The disadvantages characteristic of non-probability samples applies when convenience, purposive and snowball sampling are used. Since the selection of participants is subjective, sampling error cannot be calculated statistically and the application of the findings to the entire population is unknown (Clow & James, 2014; Malhotra, 2012). The findings can, therefore, not be accepted as representative of the entire target population (McDaniel & Gates, 2020; Zikmund & Babin, 2013). Despite these disadvantages, non-probability sampling methods are considered appropriate for phenomenological studies, if the purpose for particularity rather than generalisability is realised during the application of findings (Churchill *et al.*, 2010). This study, therefore, relied on convenience, purposive and snowball sampling to reach participants. This approach allowed the researcher to include all potential participants who could be reached practically, who met the inclusion criteria mentioned above and who were considered to be rich sources of information in the sample.

4.8.2 Participant Recruitment Process

As an expansion on previous research conducted at UNISA, participants for the in-person mini-focus groups were initially to be recruited from the UNISA Main and Florida campuses. However, due to limitations placed on in-person meetings during the COVID-19 pandemic and a change to online mini-focus groups and semi-structured interviews, the recruitment strategy was expanded to requests for participation posted on social media (Facebook). Participation requests were sent electronically to staff on the campus via UNISA's internal communications network, after approval was obtained and later amended for online data-gathering from the Research Permission Sub-Committee (RPSC) of the Senate Research, Innovation, Postgraduate Degrees and Commercialisation Committee (Reference number 2019_RPSC_059 and 2019_RPSC_059_AR, see Appendix C). While participants could be recruited through UNISA's internal email communication in a cost-effective manner, it still

allowed for a broad variety of potential participants to be recruited for the study. Staff members at UNISA vary between academic, administrative and support staff who brought different opinions to the research. When this recruitment strategy failed to deliver enough participants, the recruitment strategy was expanded to include non-university-related individuals recruited through social media by posting requests for participation on Facebook groups with an interest in food allergies, vegetarian or vegan lifestyles, weight control diets and a healthy, fit lifestyle. It was anticipated that these Facebook groups were frequented by individuals who would typically be familiar with, or have an interest in, milk alternative products or who would form part of the target market for milk alternatives due to health or lifestyle reasons and would consequently lead to the recruitment of individuals meeting the third inclusion criteria of the study. Participants in both recruitment strategies were self-selected by choosing to participate or not in the online mini-focus groups and booking a timeslot using the online SignUp Genius platform. Individuals who could not join the timeslots of online mini-focus groups were accommodated with semi-structured online interviews. Participants were informed at the point of recruitment and on the timeslot booking platform, prior to the online mini-focus groups and semi-structured interviews, that discussions would be recorded and they had to consent to participate prior to the commencement of the scheduled session (see Appendix D). The scheduled sessions on the Zoom platform were password protected and only allowed the participants who booked the session to gain access to the discussions after being admitted by the moderator into the virtual meeting room. The specific login details and password for a session were sent to each participant after booking a time slot to limit access to the specific participants.

4.8.3 Sample Size

Phenomenological qualitative studies are characterised by small sample sizes providing depth in data quality. According to Creswell and Poth (2017), sample sizes for phenomenological studies may typically range between four and fifteen participants to gather rich data from individuals who have a complex, detailed understanding of the problem. The aim is to arrive at thick descriptions of the experiences of fewer participants to find the essence of the phenomenon studied (Creswell & Creswell, 2018).

Qualitative studies use the concept *saturation of data* to determine when sufficient data has been gathered and the study can be concluded, rather than a predetermined number of participants (Archer, 2018; Creswell & Creswell, 2018). Saturation of data is established when data-gathering methods no longer generate new insights and where no new patterns are observed but previous patterns uncovered simply repeat, at which point the data collection activities are concluded (Archer, 2018; Creswell & Creswell, 2018). At the point of saturation, the data should provide the researcher with rich, thick descriptions of participants'

experiences, the feelings they express and the context within which they ascribe meaning to these experiences and their related actions, thus providing a holistic picture to inform the enquiry (McGregor, 2018). Since the findings of the mini-focus group discussions and semi-structured interviews were aimed to be interpretive and gather insight, no minimum or maximum number of participants or sample size was specified in advance for this qualitative study. The depth of discussions and amount of knowledge generated to provide thick descriptions of the phenomenon from participants' perspectives took preference over the number of participants. Once a point of saturation had been reached where no new insights were generated and further mini-focus groups merely substantiated previous findings, data-gathering activities were concluded. According to Aaker *et al.* (2013), three to four focus group sessions are considered sufficient, while other studies held in order of 13 focus group discussions to reach a point of saturation (Kempen *et al.*, 2016). The researcher utilised the coding of the data, described in more depth in the data analysis (Section 4.13), to determine the point of saturation. Once the same codes repeated themselves, rather than new codes being generated, the research themes were supported and the data was considered to be saturated (Archer, 2018). Data-gathering methods continued to confirm saturation was indeed attained. After several further interviews and mini-focus groups generated no new insights or codes, the data-gathering phase was concluded. At this point, it was considered that further continuation of data-gathering was no longer deemed effective. During this research, the point of saturation was reached after four online mini-focus groups and ten semi-structured interviews (or 20 responses), with a combined total of 99% of new concepts uncovered in these data-gathering sessions. However, the researcher continued with the online mini-focus groups and semi-structured interviews until data saturation was firmly established after two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured interviews, with a total of 35 participants. The manner in which the research concluded the point of saturation, at which point the recruitment of more participants was deemed unnecessary, is described in more detail under the data analysis section (Section 4.13.2.7).

4.9 DATA-GATHERING INSTRUMENT

While the previous section presented the data-gathering methods used during the study, this section will present the discussion guide used as the data-gathering instrument. Thereafter, the establishment of trustworthiness and the data analysis methods for the research are described. The mini-focus group discussion guide consisted of three sections, guided by the research questions and first three objectives presented in Chapter 1. The central research question was to determine what shapes the core of South African consumer attitudes toward UHT milk alternative products and their purchase intentions. The first research sub-question was what consumers believe about UHT milk alternative products. Consequently, the first

section dealt with the cognitive component of attitudes and provided the opportunity to gain a deeper understanding of consumers' beliefs regarding UHT milk alternative products. The second sub-question was how consumers evaluate UHT milk alternatives within their own context. The second section covered the affective component of attitudes and created the opportunity for participants to describe the meaning they ascribe to their product evaluation criteria, particularly the perceived favourable and unfavourable attributes of UHT milk alternatives and the importance of each attribute. The third research sub-question was to find which factors impact consumer purchase intentions of UHT milk alternatives. The third section of the discussion guide explored and described the conative component of participants' attitudes to establish the factors that initiate consumers' purchase intentions of UHT milk alternatives. The same discussion guide used for the mini-focus groups was also used for semi-structured interviews. Open-ended questions were presented to participants to initiate further in-depth discussions on each aspect mentioned above. The questions were used as a guideline only to initiate discussions in order to maintain the emergent design of the study and enough flexibility to explore new concepts which arose during the discussions. The discussion guide was not adapted from another study. The questions were pre-tested with two individuals for clarity in the piloting phase. It was established during the piloting phase that questions and their wording were well understood by the individuals, consequently, no changes were made to the discussion guide after the piloting phase. Instead, all questions were kept in the discussion guide, but the questions and concepts used varied according to the discussion of each mini-focus group or interview. Not all questions were used in each discussion since participants occasionally answered a question earlier in the discussion in the process of answering other questions and repetition would be redundant. Questions from the discussion guide were occasionally rephrased and follow-up questions were formulated during the discussions to adapt to and expand on new insights as provided by participants, allowing the research to continue in its emergent design. After each mini-focus group or semi-structured interview, participants were requested to confidentially answer basic demographic questions (adapted from Wassenaar (2016)) and email it to the researcher, if comfortable to disclose the information. The discussion guide and the demographic questions are available in Appendix A and were used to compile the demographic data presented in Chapter 5. The next section will present the operationalisation of the study, whereafter the establishment of trustworthiness of the research findings is provided.

4.10 OPERATIONALISATION OF STUDY

The central research question and sub-questions, as linked to the aim and objectives of the study combined with the conceptual framework of the study (Chapters 1 and 3) shaped the operationalisation of the study within the research methodology. The operationalisation of the

study is provided below (Table 4.1a to Table 4.1d), linking the research sub-questions and objectives to the elements identified from the conceptual framework and the related discussion guide questions in a structured manner.

The data-gathering instrument was developed to ensure that each component was included in data-gathering activities, using the elements of the attitude models in theoretical perspective and conceptual framework as initial guidelines for data to be gathered. While this guided the discussions to ensure the known concepts which could be relevant were discussed, questions were not limited to those presented in Table 4.1a to Table 4.1d but adapted and expanded on with further follow-up questions as the discussion and research process emerged. Likewise, the same structured format and headings were only a guideline and were not applied to the data analysis process to allow room for new themes to be identified and for interpretation of the findings to inform the proposed model rather than elements of predetermined existing models. These findings may or may not have presented similarities to the models from the theoretical perspective, but the aim was to maintain an unbiased approach during data analysis and the interpretation of research findings. The operationalisation of the study provides the structure from which the emergent research methodology was developed. The following section deals with the establishment of trustworthiness of the findings, whereafter the data analysis process is described.

Table 4.1a: Operationalisation of Study

Operationalisation of Study aligned to Research Objectives (a)		
Central Research Question What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?	Aim To propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted.	Model
Research Sub-question	Research Objective	Element
Sub-question 1 What do consumers believe about UHT milk alternative products in their own frame of reference?	Objective 1 To gain a greater depth of understanding of consumers' beliefs related to UHT milk alternative products.	Tri-Component Model Cognitive component <i>Consumer beliefs of product</i>
Sub-question 2 How do consumers evaluate UHT milk alternatives within their own context?	Objective 2 To describe the meaning consumers ascribe to their product evaluation criteria of UHT milk alternatives.	Tri-Component Model Affective component <i>Evaluation of product</i>
Sub-question 3 Which factors impact consumer purchase intentions of UHT milk alternatives?	Objective 3 To establish the factors that initiate consumers' purchase intentions of UHT milk alternatives.	Tri-Component Model Conative component <i>Intention toward behaviour</i>
Sub-question 4 How can the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions be holistically described and interpreted?	Objective 4 To propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted.	Proposed Model Based on themes uncovered in the findings of Objectives 1 to 3.

Table 4.1b: Operationalisation of Study

Operationalisation of Study aligned to Research Objectives (b)
<i>Discussion Guide Questions as linked to Sub-questions, Objectives and Model Elements</i>
<p>Sub-question & Objective 1: COGNITIVE COMPONENT</p> <p>Salient beliefs</p> <ul style="list-style-type: none"> • What comes to your mind when I mention UHT milk alternatives? Please provide 3 words. • Does this impression hold for both plant-based and dairy-based milk alternatives, or do you distinguish between the two groups? • How familiar are you with the milk alternative products mentioned above? • Have you used any of the above-mentioned milk alternative products in the past? <ul style="list-style-type: none"> ○ If so, how would you best describe milk alternative products and your experience of these products? ○ If not, what would you expect the products to be like? • How would you / do you think one would normally use milk alternatives?
<p>Sub-question & Objective 2: AFFECTIVE COMPONENT</p> <p>Positive/negative attributes</p> <ul style="list-style-type: none"> • Do specific attributes of milk alternative products impress you? • Are there specific attributes which disappoint or frustrate you, or are unappealing to you? • What is your opinion about the sensory properties (taste, smell, texture, appearance) of plant-based and dairy-based milk alternative products? (This can be your opinion on the two product categories in general, or on specific products which you have an opinion about.) • What are your favourite and least favourite attributes of milk alternative products? (This can be your opinion on the two product categories in general, or on specific products which you have an opinion about.) <p>Importance of attributes</p> <ul style="list-style-type: none"> • Which aspects do you consider when selecting milk alternatives? • To what extent does milk alternatives meet your expectations regarding these aspects? • Are there any attributes which could be improved to make milk alternatives more appealing to you? • To what extent will claims like enriched, immune boosting/growth enhancing, GMO-free, lactose-free, organic, environmentally friendly, rBST free influence your decision when purchasing milk or milk alternatives?

Table 4.1c: Operationalisation of Study

Operationalisation of Study aligned to Research Objectives (c)
<p>Sub-question & Objective 3: CONATIVE COMPONENT</p> <p>Expected outcome of behaviour</p> <ul style="list-style-type: none">• Why do you think consumers would consider alternatives useful, or desirable, to purchase?• Would the use of milk alternatives be a good choice for you personally? Please motivate your answer• Subjective norm<ul style="list-style-type: none">○ What do you think are South African consumer opinions in general on milk alternatives?○ What do you think will motivate South African consumers to drink milk alternatives?○ What would your family or friends think if you used any of the milk alternatives mentioned?<ul style="list-style-type: none">▪ Would they have specific recommendations on using or not using it?▪ Would they use milk alternative products themselves?▪ How important would their opinion be in your personal choice of milk or milk alternative products?• Attitude toward behaviour<ul style="list-style-type: none">○ Would you sacrifice milk products currently in your diet in exchange for any of the milk alternative products mentioned above? Please motivate.○ Would you recommend the use of milk alternatives to family or friends?○ What would you say to motivate them to use, or not to use, these products? <p>Perceived behavioural control</p> <ul style="list-style-type: none">• Controllability<ul style="list-style-type: none">○ Would it be possible for you to use milk alternative products taking your circumstances into consideration?○ What would make it easy or difficult?○ Would you be able to sustain it for more than a year? Please motivate your answer.• Self-efficacy<ul style="list-style-type: none">○ How much control do you have over the type of milk or milk alternative products purchased in your household?○ If others influence this choice, whose opinions and choices carry the most weight during purchase decisions? And why that person?

Table 4.1d: Operationalisation of Study

Operationalisation of Study aligned to Research Objectives (d)
<p>Sub-question & Objective 3: CONATIVE COMPONENT (continued...)</p> <p>Behavioural intention</p> <ul style="list-style-type: none">• What are the most important considerations for you when purchasing UHT milk / milk alternatives? Please motivate your answer.• Are there any reasons why you would not purchase milk alternatives, or any of the specific products mentioned?• How likely are you to purchase any of the mentioned milk alternative products? Please motivate your answer.• Which types of milk or milk alternatives do you prefer? / Please rank the following milk-alternative products according to preference (1 being most preferred and 8 least preferred): Please motivate the reason for your first choice.<ul style="list-style-type: none">○ Soymilk; Almond Milk; Cashew Milk; Oat Milk; Rice Milk; Coconut milk; Lactose-free milk; Functional, enriched and fortified milk
<p>Sub-question & Objective 4: Proposed Model</p> <ul style="list-style-type: none">• Based on themes uncovered in findings of Objectives 1 to 3

4.11 TRUSTWORTHINESS

Since qualitative research does not measure data in a quantitative manner, it cannot apply the same tests for reliability and validity as in quantitative research (Creswell & Creswell, 2018). Instead, qualitative data is recognised for its subjective and interpretive nature and strives to gather quality data by ensuring trustworthiness (Maree, 2012; Shenton, 2004) and transparency through reflexivity (Korstjens & Moser, 2018). Trustworthiness is built on a combination of four concepts: credibility, transferability, dependability, confirmability and reflexivity (Korstjens & Moser, 2018).

Credibility refers to the degree to which the findings represent reality or the confidence that research findings and interpretation are truthful presentations of participants' original views (Korstjens & Moser, 2018). Credibility can be enhanced in various ways during research through prolonged engagement, persistent observation and triangulation methods (Maree, 2012; Shenton, 2004). Through prolonged engagement with the research participants and the data generated, the researcher invested sufficient time to become familiar with the context of the participants within which they use and purchase milk or milk alternatives. This ensured that their statements were correctly understood through follow-up questions to participants to verify if the researcher interpreted the discussion correctly and during the data analysis through repetitive revisits to the entire data set, as well as to smaller sections as themes and concepts were developed during the data analysis phase. The prolonged engagement with the data also led to persistent observation. During the data analysis phase, the researcher constantly engaged with the data to analyse, code and label concepts and categories. This led to persistent observation as data was repetitively reread and restructured until the desired depth of insight was attained and could be presented according to important and relevant themes found in the data (Korstjens & Moser, 2018). The data-gathering method did not enable the researcher to reach participants a second time to apply member checking of data after data analysis. However, throughout mini-focus groups and interviews, the researcher regularly paused the discussion prior to moving on to the next question to rephrase the data gathered from the discussion and check with participants if their intentions and views were correctly understood and recorded in the notes by the researcher. This immediate form of member checking strengthened the data to ensure that interpretations and conclusions resembled their perspectives and not those of the researcher (Korstjens & Moser, 2018). Similar findings obtained between mini-focus group discussions and semi-structured interviews further supported credibility through method triangulation, which increases confidence in findings by using two or more measures or methods to substantiate findings and support completeness of data (Korstjens & Moser, 2018; Heale & Forbes, 2013).

Since transferability, or the extent to which findings can be applied to other contexts or situations, cannot be directly demonstrated in qualitative research, the judgement thereof is left to the reader to determine if research findings can be transferred to other contexts (Korstjens & Moser, 2018). The judgement of transferability is supported throughout the research by thick descriptions of the data and participant experiences, the research process followed, the sample strategy and size, inclusion and exclusion criteria, participant demographics, the geographical location of the study and the availability of the discussion guide (Korstjens & Moser, 2018).

The dependability, or the likelihood of attaining similar findings if the process was to be repeated in a similar situation and the confirmability, or the objectivity with which data is gathered and interpreted, cannot be directly measured (Korstjens & Moser, 2018). Both dependability and confirmability are supported through a detailed, transparent description of the data-gathering method, instrument and data analysis in the research (Korstjens & Moser, 2018). With the complete set of recordings, transcriptions, notes, reflective thoughts and detailed records kept throughout each step of the research, an audit trail can be established from the onset to the completion of the research (Korstjens & Moser, 2018). This ensures that findings are interpreted and presented within context and grounded in the data, rather than being subjectively comprised from the researcher's experience and perspectives (Maree, 2012; Shenton, 2004). It was further addressed in this research through the adoption of established and accepted research methods such as mini-focus groups and semi-structured interviews; tactics to ensure honesty from participants such as creating an atmosphere in mini-focus groups where participants are encouraged and comfortable to voice their own opinions; the examination of other research findings; and continuous reflective evaluation of the process as the project developed (Maree, 2012; Shenton, 2004).

Reflexivity, or the critical self-reflection of the researcher's own biases, preferences and assumptions and its impact on research decisions, were considered equally important in the research to ensure trustworthiness and transparency of research findings and interpretation (Korstjens & Moser, 2018). Reflexivity was supported during the research process through an epoché to support bracketing, as often used in phenomenological studies, to provide detail into the researcher's perspective and background (Creswell & Creswell, 2018; Creswell & Poth, 2017). Reflexivity supported self-awareness to ensure the researcher's personal experiences could be bracketed and that the research findings and interpretations presented were the participants' perspectives and not the personal ideas of the researcher (Creswell & Creswell, 2018; Korstjens & Moser, 2018). It was further supported by careful memo-keeping and documentation of the researcher's reflexive notes during the mini-focus groups, interviews and data analysis phase during the development of codes and themes forming part of the

audit trail (Creswell & Creswell, 2018). The researcher also made frequent notes and comments on the research process and potential ways to present it during the writing phase of the research. While the previous sections presented a description of the approach, the geographical location, data-gathering method, instrument and trustworthiness of the research, the next section presents the epoché and a detailed description of the data analysis method follows.

4.12 EPOCHÉ

As part of the reflexivity process for the phenomenological study, the researcher opted to utilise a brief description in the epoché to acknowledge and bracket the background information of the researcher, rather than providing repetitive information in the findings chapters (Creswell & Poth, 2017).

This research was conducted for a doctoral study in consumer sciences. The researcher has a predominantly quantitative research background in consumer science, more specifically with a focus on consumer decision-making and the role of attitudes in their decision-making. The researcher has an interest in exploratory-descriptive work to establish how consumers decide on a niche or alternative product consumption and purchases and which other factors impact this decision. Apart from attitude-related research to date, the researcher is also interested in sensory science, particularly the consumer experience and evaluation of the sensory properties of products and how it translates to consumer choices to consume or not to consume a product. With a consumer-centred approach, the researcher has a keen interest in understanding the essence of what drives consumer purchase decisions, what hinders consumers from finding products which meet their needs, how their needs could be met better if the relevant industry were able to adapt its product offering and how specific products fit into their daily lives. The researcher passionately drives the concept that products should provide value to the consumer according to the consumer's needs, rather than the consumer having to utilise available products which only partially meet their needs. This consumer-centred approach, as opposed to an industry-centred approach, as well as the researcher's detail-orientated nature guided the researcher's frame of reference to focus on participant experiences in a detailed manner. The predominantly quantitative background and methodical work approach led the researcher to approach the research process, particularly data analysis, in a structured and methodical manner. The researcher's quantitative background, which typically focuses on objectivity in research, made the researcher inclined to consciously focus throughout the data analysis phase to present the experiences of participants rather than the researcher's experiences. This led to a strong focus aiming for objectivity away from the researcher's own background and experience in the presentation of data. However, it is accepted that qualitative research is subjective by nature and the researcher's interpretation

of findings, as well as research process decisions guiding the emerging enquiry would be impacted by the perspective of the researcher.

The researcher grew up consuming high quantities of dairy products on a daily basis. However, during early adulthood, the researcher began to experience cow milk allergies and had to reduce dairy consumption drastically. This triggered an interest in milk alternative products. However, the researcher did not completely eliminate cow milk, nor use milk alternatives due to a personal preference for the sensory characteristics of cow milk. The researcher had limited experience with UHT milk alternatives prior to the research. Consequently, the researcher decided to purchase and taste the various UHT milk alternatives available in the South African market before commencing with the study. During this experience, the researcher rediscovered a preference for dairy-based milk alternatives over plant-based milk alternatives. This was mostly driven by the sensory experiences presented by the alternatives, but also due to severe allergic reactions experienced after tasting almond milk, cashew milk and coconut milk. Further, the researcher found it rather important that milk alternatives should be suitable for use in hot beverages. Thus, the sensory characteristics of milk alternatives and the reasons why consumers would use milk alternatives, including the specific intended purpose, had an impact on the researcher's frame of reference prior to the commencement of the study. The researcher recognised these personal perspectives and aimed to ensure that these elements formed part of the enquiry, but that findings presented were extended beyond these concepts and founded on the meanings and experiences which participants associated with milk alternatives and not on the researcher's views. The researcher consciously aimed to arrive at the study with an open-minded and receptive approach to the views and experiences expressed by participants. The reflexivity process applied during the data-gathering and analysis phases of the research further supported the researcher to purposefully ensure that data was not analysed or criticised based on personal experiences or preconceived ideas. Instead, the analysis was done in a manner that was open to the new ideas, information and opinions of the participants of the study. The next section provides a detailed description of the data analysis process followed.

4.13 DATA ANALYSIS

After permission was attained from the participants, the mini-focus group discussions and semi-structured interviews were recorded on the Zoom platform. The researcher stored these original recordings on a password-protected computer for future reference. Recordings were transcribed, creating a verbatim written copy of data gathered orally during discussions (Aaker *et al.*, 2013). After receiving the transcripts, the researcher checked that transcripts corresponded verbatim with the recordings to ensure accuracy and support trustworthiness of the research process. The researcher used the services of three transcribers, one fluent in

English, one fluent in Afrikaans (one of South Africa's official languages) and the third proficient in both English and Afrikaans. The majority of discussions and interviews were conducted in English. However, a few participants felt more comfortable to express themselves during the entire discussion, or parts thereof, in Afrikaans. Since the researcher is proficient in both English and Afrikaans, this did not create difficulty with the interpretation of the participant's intended meaning expressed during discussions and interviews. Transcripts that were either completely or partially in Afrikaans were not translated into English to retain the authenticity of the original data gathered. However, where quotes were used in the presentation of the findings, the researcher translated the quotes as directly as possible into English in a manner which would not compromise the intended meaning behind the statement. The researcher also kept notes during discussions as a backup to recordings. Where technical problems impacted three recordings, making them inaudible or unable to retrieve, the notes of the moderator were used for analysis purposes. The initial transcriptions were in Microsoft Office Word format. The researcher used a personal computer to store, organise, capture and manage the various steps of the data analysis. The researcher did not use qualitative data analysis software, but opted for more direct, hybrid interaction with the original text from transcripts through printed hard copies, manual notes and computer software such as Microsoft Office Word and Excel to work through the analysis process. The researcher found that a computer interferes with the creative analysis process by creating distance between the researcher and the data (Creswell & Poth, 2017) and consequently printed hardcopies of the transcripts and sections of the data at various stages of the analysis process to allow for physical highlighting, colour-coding and note-making to interact closely with the data. The researcher also engaged in drawing mind-maps and graphs to reflect on the data gathered and how it created meaning from individual participant statements into the holistic essence of the phenomenon. The hard copies of these notes and graphics used during the process were stored in a secure space for reference. Notes, highlighting and colour-coding were captured after the manual processes to allow for organisation and quick retrieval of the information.

4.13.1 Inductive-Deductive Approach

Due to the qualitative nature of the enquiry combined with the researcher's strong systematic manner, the researcher utilised a hybrid inductive-deductive approach as described by Creswell and Creswell (2018). The data analysis was initiated inductively using an open-ended approach to minimise assumptions in the attempt to identify and make sense of emerging ideas, patterns and categories from the data from which the enquiry could develop themes (Archer, 2018; Boyatzis, 1998). The researcher worked back and forth between the data, ideas, patterns and categories with this inductive process until a comprehensive set of themes

was established (Creswell & Poth, 2017; Boyatzis, 1998). Throughout the emerging inductive process, amendments were made to ensure that initially ascribed patterns of meaning and categories were relevant to the data. Once the themes were determined from the categories, the researcher looked back to the data deductively to verify if each theme was supported by evidence from the data and whether further data were required to support the themes (Creswell & Creswell, 2018). During the deductive verification, the researcher adapted or combined categories found not to fit or duplicate each other and recombined categories and themes as necessary, thus arriving at the inductive-deductive approach.

4.13.2 Thematic Analysis

Although the discussion guide was initially informed by the broad theoretical background provided on attitudes and some of the terms used to describe concepts were found appropriate from the theoretical background, the research purpose was not to develop and test the validity of theories through a grounded theory approach (Corbin & Strauss, 2008). Therefore, the data analysis did not use a deductive, content analysis approach, checking for frequency, as would be suited to grounded theory (Archer, 2018; Creswell & Poth, 2017; Corbin & Strauss, 2008). Instead, the purpose of the research was to gain a depth of understanding of what shapes the core of South African consumer attitudes toward UHT milk alternatives and their purchase intentions, giving rise to a phenomenological study to arrive at a description of the essence of meaning within this phenomenon (Creswell & Poth, 2017). A thematic analysis process was considered the most suitable approach to find the meaning participants ascribe from their experiences to the phenomenon of UHT milk alternative use and purchase intentions (Archer, 2018; Creswell & Poth, 2017; Boyatzis, 1998). A thematic analysis follows an inductive approach to essentially break down a mass of data into its smallest, meaningful units and naming these units, referred to as coding (Archer, 2018; Creswell & Poth, 2017; Boyatzis, 1998). These codes are then used to find patterns to recombine them into categories which create meaning together and name these units of meaning as themes (Archer, 2018; Creswell & Poth, 2017). During thematic analysis, the researcher worked from particulars in the form of quotes and meaningful statements from individual participants towards increasingly abstract information (Creswell & Poth, 2017). The process involved analysing data systematically through multiple steps to create meaning of the data as presented by the multiple realities of the individual participants (Archer, 2018; Creswell & Creswell, 2018; Braun & Clarke, 2006). The themes developed are used to arrive at the underlying principles of the phenomenon under study (McGregor, 2018; Boyatzis, 1998). Thematic analysis forms part of the emergent design where the intent is to develop the research process through its data-gathering, analysis, interpretation, discussion and presentation stages to gain a deep understanding of

the phenomenon from the lived experiences of participants which cannot be derived merely from theory (McGregor, 2018).

While utilising an inductive approach to initiate the thematic analysis, the researcher found that terminology from the attitude theory was useful to describe emerging patterns and categories and used these terms where relevant during the analysis. The enquiry, however, was not limited to the existing terminology and its underlying theories. New terms were constructed from emerging ideas and patterns as required. While the researcher did note the frequency of occurrence of certain categories in the data, it was not used to quantify any presentation or interpretation of data. It was merely noted by the researcher to recognise it as important categories, frequently under discussion by participants, which could indicate a strong link between the data category and the purchase of milk alternatives and consequently needed to be explored further. The frequency of occurrence was only quantified and applied to determine saturation of data as described in the next section. The data analysis phase of the research has been guided by the approaches presented by Archer (2018), Boyatzis (1998), Braun and Clarke (2006), McGregor (2018), Creswell and Creswell (2018), Creswell and Poth (2017) and Moser and Korstjens (2018). While small variances were found, the process these authors described for phenomenological thematic analysis was largely similar. The thematical data analysis approach used during the study is detailed below.

4.13.2.1 Organisation and Preparation of Data

Recordings of the online mini-focus group discussions and interviews were transcribed verbatim in Windows Office Word. The analysis of qualitative data from mini-focus groups and semi-structured interviews begins with preparing transcripts and organising data into digital filing systems to allow for quick retrieval (Creswell & Creswell, 2018; Moser & Korstjens, 2018; Braun & Clarke, 2006). All participant names or references to institutions which could identify participants were removed. Any product names mentioned by the brand by participants were replaced with the generic product names of the category. Transcripts were filed per data-gathering session on the researcher's computer.

4.13.2.2 Immersive Reading and Detection of Meaningful Statements

The researcher printed the transcriptions and read through the transcripts multiple times to gain familiarity with the text and to generate a sense of the overall participant experience. The purpose was to reflect on the depth of the data gathered, the emerging ideas and meaning that participants ascribed to UHT milk alternatives and purchase intentions before breaking it down into smaller units. Thereafter, the researcher worked through the transcripts, highlighting meaningful statements, sentences, or quotes which pertained to the research question and participant experiences (Archer, 2018; Creswell & Poth, 2017). The researcher initiated the

enquiry process by writing notes in the margins of the transcripts, including notes on emerging ideas and noteworthy information and quotes provided by the participants and reflective notes on gaps and further questions. As important statements, phrases and keywords were highlighted and notes were written, the researcher began to record general thoughts on the data. Based on the meaningful statements highlighted, brief descriptive summaries and broad emerging concepts (later referred to as emerging initial codes) were noted (see example in Table 4.2).

Table 4.2: Meaningful Statements, Descriptive Summary and Emerging Initial Codes

Text	Descriptive summary	Emerging initial codes
Focus Group 1 – [REDACTED] NAME OF AUDIO : FG 1 TRANSCRIPTION LEGENDS : INTERVIEWER AND 2 PARTICIPANTS		
Interviewer: Please tell me what comes to mind when you hear UHT milk alternatives? P1: Okay, I definitely think of a more healthier, safer product to consume. I believe also... definitely more environmentally friendly, particularly for the poor cows that are continually kept in that period where they can produce milk. So that has definitely shifted my opinion to want to actually move towards a milk alternative. That has been a big key factor. So yes, those two - health and... because I have also read a lot of articles about how milk can cause cancer and things like that. So, these plant-based milks are definitely more appealing to me at this point in time.	First impression – milk alternatives Healthier, safer product Environmentally friendly Animal welfare Milk – causing cancer Plant-based – appealing, want to move towards alternatives	Beliefs Beliefs Appeal of use Expectations - health

These concepts were not invariant in nature and remained flexible for amendment as the research enquiry developed through its different stages. Names of the emergent initial codes often emerged from concepts in social sciences and attitude theory but were not limited to this approach. The researcher’s main concern was finding code names that best described the information contained in each unit of meaning. Due to the bulk of the data gathered, the meaningful statements were colour-coded at this point according to the emerging initial codes to facilitate the location of similar content in the text. The highlighted text in transcripts, descriptive summaries, researcher notes and broad emerging concepts were captured electronically in tables in Microsoft Office Word. Up until this point, the word processing software supported the highlighting of text and note-making. The research emerged from these transcripts, notes and initial codes through a process of expanded coding, into categories and themes to arrive at a holistic description of the essence of the research phenomenon. The flow of the process is visually depicted in Figure 4.1 to create the framework for the concepts discussed in further detail in the sections below.

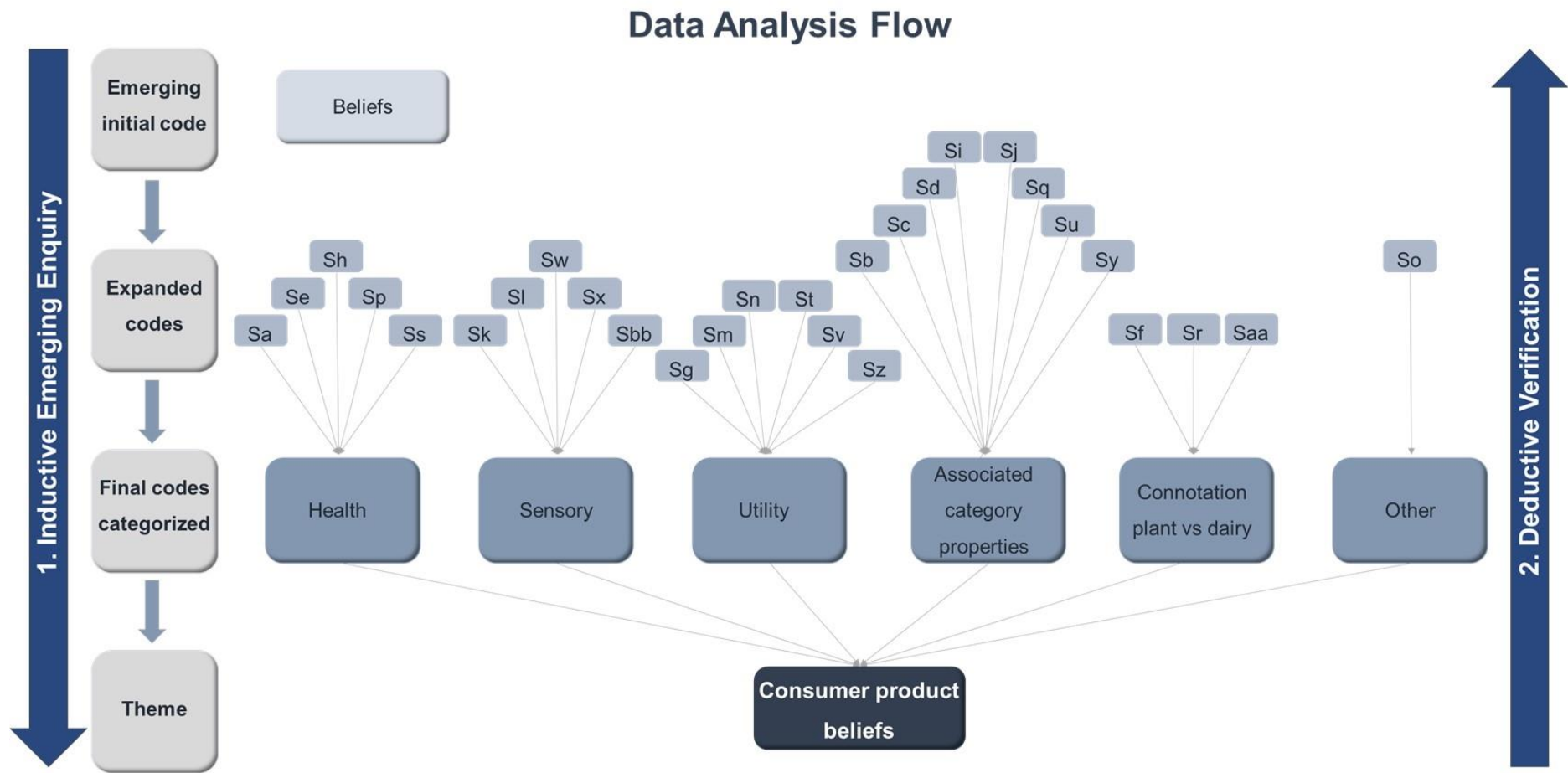


Figure 4.1: Data Analysis Flow

4.13.2.3 Coding

In order to create meaning from the highlighted meaningful statements, keywords and quotes, the researcher engaged in the coding process. Coding started by aggregating the text into smaller units of meaning (as embarked on with the highlighting of meaningful statements), thereafter a representative word was noted in the margin (emerging initial codes), allowing segments of the data to be characterised and labelled (Creswell & Creswell, 2018; Boyatzis, 1998). Coding allowed the researcher to purposefully manage, identify, sort and query the data to facilitate further analysis by creating units of meaning from the aggregated data (Archer, 2018; Creswell & Poth, 2017; Boyatzis, 1998). The researcher kept the naming of the emerging initial codes abstract to shape an overall perception of the content of the data gathered. However, the initial codes were too vague to move on directly to creating themes, thus the researcher reviewed the original text, meaningful statements and descriptive summaries to engage with the data in greater depth. The researcher continued with an inductive process of open-coding to create as many detailed units of meaning as needed by the data under study to inform the research questions, seeking evidence to support codes from the different data sets of the transcriptions (Moser & Korstjens, 2018; Boyatzis, 1998) and assigning labels to each unit of meaning to form extended codes (Creswell & Poth, 2017). To simplify and standardise the extended coding for quick filtering and retrieval later, the researcher opted to use letters to represent descriptive names for the extended codes, as presented in the code list in Appendix F: Table F.6. Descriptive names were found suitable to ensure the thematic analysis could be further developed based on detailed units of meaning from which emerging patterns could be observed. Since only the researcher conducted coding, the coding list was kept simple for quick referral and the researcher could ensure that codes were used consistently across the different data sets. At this point in the thematic data analysis phase, the researcher found that Microsoft Office Word no longer provided the required functions to easily arrange such a bulk of data. Consequently, the researcher carried the data over to Microsoft Office Excel which allowed the researcher to filter data according to specific codes without losing the initial sequence of transcriptions. The expanded codes for the data were included in a column next to the relevant sections of the transcription (example in Table 4.3).

Table 4.3: Expanded Coding

Focus Group	Number	Participants	Transcription	Descriptive summary	Emerging initial codes	Expanded codes
FG1	1 A & B	FG1P1 & FG1P2	Interviewer: Okay, thank you. And you [P2]? P2: Coconut milk I admit does not look so great to me. It looks watery . But it tastes good . Yes, you have just got to get over the fact that it is watery . But I do not use this in my coffee or my tea . And I have also had to cut back. I started getting terrible migraines and I started cutting back on coffee. So I just have one cup of coffee a day and in that I will use a proper dairy product . My children, like [P1], will drink the coconut milk as a beverage , straight.	Coconut – appearance not good, watery, taste good. Not used in coffee. Use dairy product in coffee/tea once daily. Reduce consumption Children drink coconut milk as beverage.	Evaluation of product Belief Expected Outcome Experience / Familiarity / Use / non-use	Efp Sxn Sfn Smm Uop Ukh Uj

The expanded codes were developed to form a description of the data upon which further categorising and development of themes could be based. However, prior to further categorising, the researcher reviewed the text, emerging initial codes and expanded codes to ensure data and units of meaning were treated consistently in the same manner and provided a comprehensive description of the data gathered. Where needed, more codes were created, or similar codes were combined and text was reclassified if it was found that another code would be more applicable to illustrate its meaning.

4.13.2.4 *Categorizing Codes into Subthemes*

The inductive approach of thematic analysis allowed the researcher to use the codes to find emerging patterns in the data which could be classified into categories to form increasingly abstract units of information from which emerging themes could ultimately be developed (Creswell & Poth, 2017; Braun & Clarke, 2006; Boyatzis, 1998). The extended codes were analysed systematically and codes dealing with closely related units of meaning were classified together into categories (Moser & Korstjens, 2018; Braun & Clarke, 2006; Boyatzis, 1998). The coding sheet was used to provide an overview of the expanded codes and codes were initially clustered into preliminary categories based on the coding sheet (see example in Table 4.4). This allowed the researcher to move further from particular information provided by participants to generalised categories of descriptive data.

Table 4.4: Categorizing Expanded Codes

Category	Code	Description
Beliefs		
health	Sa	health / allergies / weight loss
	Se	lactose-intolerance
	Sh	negative health impact of cow milk on body
	Sp	nutritional content
	Ss	fitness related
sensory	Sk	grainy / flocculation / poor texture
	Sl	creamy / rich
	Sw	nutty
	Sx	watery
	Sbb	bland/tasteless
utility	Sg	variety available
	Sm	suitable in hot beverages
	Sn	convenient packaging available
	St	suitable to drink per glass
	Sv	suitable for baking / cooking ingredient
	Sz	suitable with cereal

However, merely categorising expanded codes from the list was not considered sufficient to ensure individual sets of data were categorised correctly. The researcher engaged in a back-and-forth process between the categories created, the codes and the meaningful statements

in the text until an accurate and comprehensive set of categories was established (Creswell & Poth, 2017). Categories were named using content-characteristic words or phrases (Moser & Korstjens, 2018). Ultimately, these categories, or combined codes creating units of meaning, formed the subthemes presented in the findings chapters. The researcher created diagrams, mind-maps and continuous reflexive notes supporting reflection on what was achieved from the emergent analysis and what was planned further as the research process was developed.

4.13.2.5 Theme Generation

The thematic analysis in a phenomenological study aims to use an inductive approach to move from specific statements and experiences expressed by multiple participants through repeated and multiple levels of analysis toward the creation of abstracted themes (McGregor, 2018). Participant statements which may have seemed meaningless on their own form clusters of meaning when combined with similar, related or opposing participant statements (McGregor, 2018). In essence, themes are clusters of codes grouped according to similarities, which create meaningful units from patterns found commonly in participants' transcriptions (Archer, 2018). Themes were developed based on recurring ideas, words, phrases, patterns or topics which were found threaded through the data of various data sets (see Tables F.1 to F5 in Appendix F) (McGregor, 2018). As themes emerged from the data, these common patterns warranting deeper investigation were identified and described (McGregor, 2018; Braun & Clarke, 2006; Boyatzis, 1998). After expanded coding, the researcher is faced with so many codes, complicating meaning-creation from the data (Archer, 2018). Themes created from aggregated codes and categories supported the researcher in the identification of underlying patterns and common ideas, describing the essence of the research phenomenon (Creswell & Poth, 2017; Boyatzis, 1998). Themes were named based on the description of their content. These names were generated by the researcher in some instances based on the data generated. In some instances, theme names emerged from the social sciences and literature where certain terms were considered descriptive of the theme. The emerging themes were linked to the research questions and formed the main headings in the findings chapters from where it served to inform the interpretation of the greater research phenomenon. Themes were supported by evidence from direct quotes from multiple and diverse participant perspectives (Creswell & Creswell, 2018; Braun & Clarke, 2006). Themes were further supported by thick descriptions of the data in the findings chapters, presenting a detailed portrayal of participant experiences beyond superficial statements, but rather based on the deeper interpretations of the feelings and meanings that participants associated with their actions and experiences to present rigorous data (McGregor, 2018).

4.13.2.6 Deductive Revision of Data Analysis Processes

As mentioned earlier, once the emergent inductive research process established a comprehensive list of themes, the approach was changed to analyse the themes, categories, codes and data generated deductively. This step aimed to verify that each theme was sufficiently supported by the data and to identify gaps where further data was required. During the deductive revision phase, the researcher constantly moved between the data, codes, reflective notes and processes and patterns, ascribing meaning to categories and themes and searching for the concepts identified from the categories and themes. As part of the deductive process, the researcher filtered supporting data for each theme, clustering the categories and expanded codes on the Microsoft Office Excel sheet. Data per theme was transferred to tables in Microsoft Office Word for its easier word processing functions. Once again, the researcher printed the data for each theme to interact closely with the themes and their supporting data and reflective notes without the distance created by using a computer. During this process, the researcher also cleaned up the data by removing the bulk of the text in transcriptions, leaving only the highlighted meaningful statements, sentences, phrases or words for a focused approach during the interpretation and presentation of data (example in Table 4.5).

Table 4.5: Deductive Revision

Beliefs – Sensory – linked strongly to discontinued use.

Final#	Transcription	Descriptive summary	Coding
378	"I found that soy milk has a ... smell." "There is some or the other smell that I do not like." "And I think it is the creaminess... that is why I have preferred to go without it."	Used: Soy -negative - smell - lacks creaminess	<u>Sln</u>
261	"I liked the taste very much. It was nice and creamy."	Positive - lactose free: - Sensory – taste • Creamy	<u>Slp</u>
164	" <u>milk</u> blend... tasted like water"	Dairy blend - negative sensory experience - watery	<u>Sxn</u>
231	"Rice? Probably watery, tasteless"	Rice - Negative sensory - Watery - tasteless	<u>Sxn</u> <u>Sbbn</u>

The researcher continuously recoded and refined the categories and themes to identify missing information and duplication of categories or themes until the researcher was satisfied that the processes were consistent, the findings were accurate and provided breadth and

depth of information to answer research questions and inform the interpretation of the phenomenon studied (Archer, 2018; Moser & Korstjens, 2018).

4.13.2.7 Saturation of Data

The researcher borrowed the concept of saturation of data from the grounded theory approach to determine when the sample size and data generated are sufficient to support all the research themes generated (Archer, 2018; Creswell & Creswell, 2018; Corbin & Strauss, 2008). Data saturation is defined as the point where no new themes, codes or insights emerge during data-gathering and analysis activities generated (Archer, 2018; Creswell & Creswell, 2018; Corbin & Strauss, 2008). Once this point of data saturation is reached, data sources are considered to be exhausted and themes and categories are saturated and considered sufficiently supported (Creswell & Creswell, 2018; McGregor, 2018; Corbin & Strauss, 2008). At this point of saturation, data collection, analysis and coding were concluded (Archer, 2018; Creswell & Creswell, 2018) and the researcher moved on to the interpretation and presentation of findings.

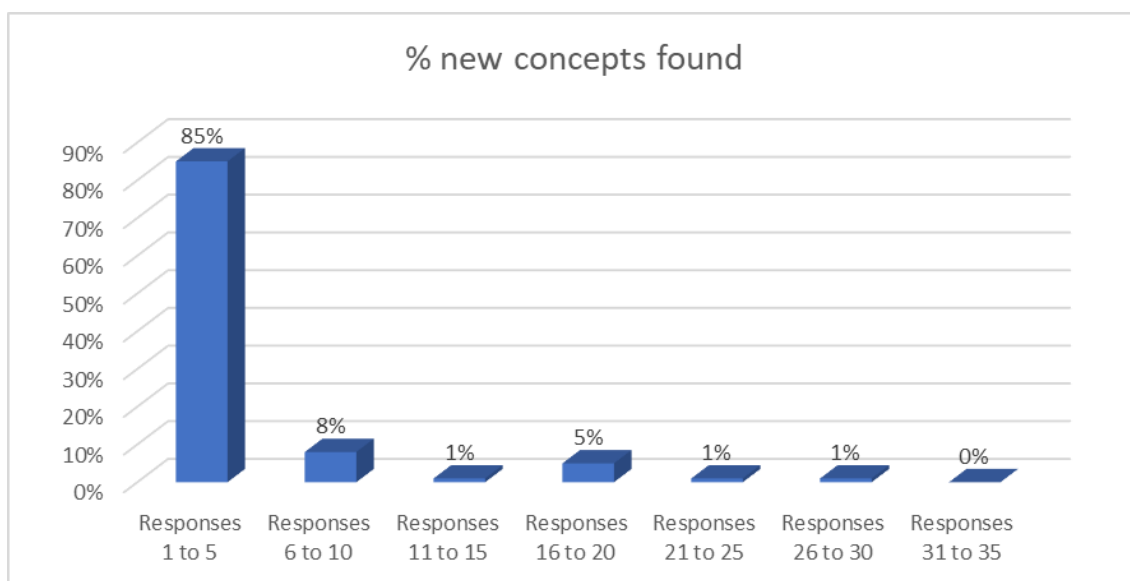


Figure 4.2: Saturation of Data

The only time during the research when the frequency of occurrence of codes was determined, was to determine the saturation of data. The researcher kept track of the first time a new code was created during the data-gathering activities. Saturation was determined based on the point where no new codes were created and consequently, no new information was generated. Saturation of data was tested after discussions with every five participants. The occurrence of new codes and the point of saturation are depicted visually in Figure 4.2 and Figure 4.3. Saturation was reached after the participation of 20 individuals (four online mini-focus groups and ten semi-structured interviews). Eighty-five percent of new codes (or units of meaning)

were uncovered within the first five participations (Point 1), 8% of new codes were created during participations six to ten (Point 2), 1% of new codes emerged from participations 11 to 15 (Point 3).

This sharp decline in the establishment of new concepts observed led to the belief that saturation of data may have been reached at Point 3, but it was tested with five more responses. Responses 16 to 20 (Point 4) provided 5% of new concepts and responses 21 to 25 (Point 5) again only uncovered 1% of new concepts. It was determined that saturation of data had been reached at Point 4, with very few new concepts uncovered afterwards. However, the researcher continued with the online mini-focus groups and semi-structured interviews until themes were continuously repeated and data saturation was established with no new concepts uncovered after Point 6. After 35 responses (Point 7) with two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured interviews, data-gathering activities were concluded.

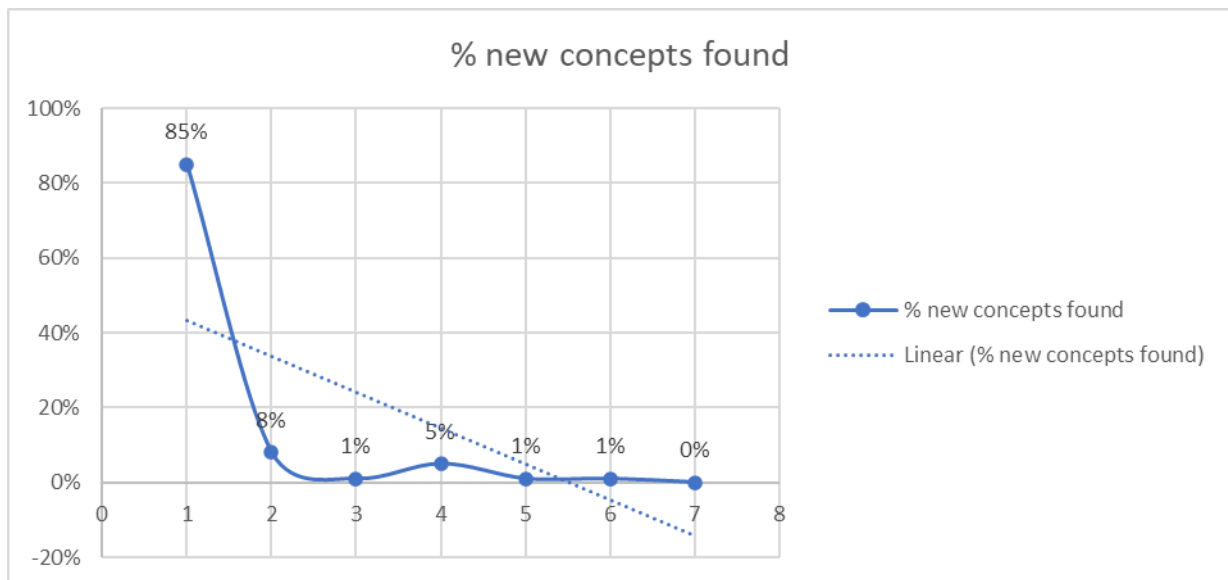


Figure 4.3: Point of Saturation

Subthemes established during the data analysis phase portrayed repetition between two and 246 times and no new concepts were established with new mini-focus groups or semi-structured interviews by Point 7. Based on the lack of new concepts and frequent repetition of themes, saturation of data was established and the data-gathering process was concluded.

4.14 PRESENTATION AND INTERPRETATION OF FINDINGS

The intended outcome of this phenomenological study was to arrive at a detailed description of the themes that capture the essence of South African consumer attitudes toward UHT milk alternative products and their purchase intentions. The aim was to answer the following research sub-questions:

- Sub-question 1:** What do consumers believe about UHT milk alternative products in their own frame of reference?
- Sub-question 2:** How do consumers evaluate UHT milk alternatives within their own context?
- Sub-question 3:** Which factors impact consumer purchase intentions of UHT milk alternatives?
- Sub-question 4:** How can the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions be holistically described and interpreted?

The study required a holistic account of the findings to report multiple perspectives from the lived experiences of South African participants to discover the meanings they ascribed to the product category in practice (McGregor, 2018). To develop this complex depiction of the phenomenon, the researcher used the themes and subthemes (earlier indicated as categories) from the thematic analysis to describe the essence of what participants experienced and the complex interactions between the different factors shaping the phenomenon (Creswell & Poth, 2017). To ensure the findings represent the participants' contributions, the researcher utilised bracketing to set aside the researcher's own existing perspectives to facilitate a new outlook on the phenomenon through the realities of the participants (see Section 4.11). Findings were interpreted to make carefully considered judgements about meaningful patterns, themes and categories emerging from the data in an effort to create meaning from the data. The themes and subthemes which emerged from the data analysis formed the main headings and subheadings in the findings chapters, allowing a quick overview of the phenomenon from the headings and subheadings of the findings chapters (Archer, 2018). The findings sections provided rich data per theme and subtheme from the participant's perspectives, including quotes, to provide the reader with an intimate encounter with the essence of the research phenomenon (Archer, 2018). The researcher's interpretations were simultaneously provided in the findings sections based on the meaningful patterns emerging from the data and the reflection of the researcher after immersive interaction with the data over an extended period of time. The interpretation of the data aimed to go beyond the established themes, finding patterns and linkages between themes which hold meaning for the participants, for building a logical chain of evidence in support of the essence of the phenomenon (McGregor, 2018; Creswell & Poth, 2017). These findings and interpretations were also visually presented through figures in the relevant sections. Findings and interpretations were contextualised within literature in the discussion chapter to offer explanations, draw conclusions and make recommendations (Creswell & Poth, 2017).

Findings were presented and interpreted using a thematical arrangement in three chapters, according to the research sub-questions, before arriving at the discussion and interpretation in answer to the central research question:

What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?

The essence of the phenomenon to answer the central research question was drawn from the findings and interpretations of the research sub-questions. The synthesis of the holistic portrayal of the phenomenon developed into increasingly abstract levels until it supported a composite description of the essence of South African consumer attitudes and intentions toward UHT milk alternatives, culminating in the proposed model presented in Chapter 9 (Creswell & Poth, 2017). This concludes the sections describing the methods and approaches used during the data-gathering, analysis, interpretation and presentation of the enquiry. The next section presents the ethical considerations adhered to during the research.

4.15 ETHICS

The research proposal, including the proposed methodology, was approved by the Ethics Committee of CAES at UNISA before the commencement of the study (CAES Ethics Reference number: 2019/CAES/034). Due to the impact of COVID-19 regulations on in-person gatherings during the data-gathering phase of the research which required data-gathering methods to adapt to online discussions, amendments were submitted and approved by CAES (see Appendix B).

The research adhered to ethical requirements stipulated by UNISA (2013) in its *Policy on Research Ethics* during the entire research process to meet ethical considerations. The research was conducted for the benefit of society, not for a specific institution. Findings were reported accurately and truthfully, irrespective of whether the expected outcomes were supported or contradicted.

The rights and interests of participants were respected and protected during the entire research process. The research did not harm participants or infringe on their privacy, nor did it share the information participants provided with anyone. The research did not unreasonably burden or exploit participants, nor did it unnecessarily consume their time or make them incur a loss of resources, opportunities, or income. All personal information and records, as well as any information obtained during the research that may reveal the identity of participants, remain confidential and anonymous. Demographic information, session recordings, transcriptions and data gathered were stored on password-protected computers and will be destroyed five years after all research activities have been concluded. The obligation to maintain privacy, anonymity and confidentiality extends to the researcher, anyone who assists

in the research process, including transcribers of data (see Appendix E) and anyone who might have access to the information. Online mini-focus groups were only recorded, after prior consent from participants (see Appendix D) and transcribed in an anonymous form before analysis.

Participants were regarded as autonomous agents with the right to choose whether or not to be participating in the research. The request for participation (Appendix D) clearly stated that the information would be used for research purposes and provided a document on their rights and responsibilities. Participants consented to voluntary participation in the mini-focus groups after being informed through the participation request and on the SignUp Genius booking platform. Participants had to indicate consent prior to booking a timeslot on the booking platform, after reading the consent document and before the commencement of the online mini-focus groups. Participants were informed of their right to withdraw any previously given consent at any time during the research process.

No distinction was made between participants based on demographic information. Demographic information was requested and voluntarily provided merely to describe the population group participating in the research. No particular group was purposefully or unfairly excluded from the research. Since the research does not deal with any stigmatising, sensitive or potentially damaging information or issues, there were minimal risks involved for participants. No physical, social, or psychological harm was suffered and the study made provisions to minimise privacy and confidentiality risks to participants. Only information that was relevant and necessary was collected. Access to the virtual meeting room on Zoom for online mini-focus groups and semi-structured interviews was password-protected and login details and passwords were only provided to participants in that specific session. Settings in the virtual meeting room were set so that the moderator had to admit participants of each session before an individual could access the virtual meeting room, further contributing to access control and online security of the session. Data used in the findings do not identify participants and are presented as anonymous, abstracted facts. Publishing research findings will not be done in a manner which can harm research participants.

The conduct of the research was honest, fair and transparent. The researcher did not commit plagiarism, piracy, falsification or fabrication of findings at any stage of the research. The researcher did not engage in discriminatory, harmful or exploitative practices or harassment. The researcher did not impose personal beliefs or views on or try to seek personal or economic gain from anybody involved in the research. The researcher did not coerce participants to provide specific answers by promising material or financial rewards if they answered in a way that was beneficial to the researcher. The research committed not to be involved in any

exploitation of participants, communities, institutions or vulnerable persons. The researcher committed to protect the rights of any vulnerable person who chose to participate in the research. Children (persons under the age of eighteen) were not eligible to participate in the research.

4.16 CONCLUSION

The research used a postpositivist, qualitative approach in order to reach its objectives. As an exploratory-descriptive phenomenological enquiry, it aimed to gather deeper insights to arrive at the essence of South African consumers' attitudes toward UHT milk alternatives and toward the purchase intentions thereof. The ultimate goal of the research was to arrive at a model to provide a framework within which the central research question could be described practically, while simultaneously broadening academic knowledge on the subject. The study collected data through two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured online interviews, with a total of 35 participants. The same discussion guide was used to initiate discussions for all data-gathering methods and was flexible to be adapted according to the research's emergent design as guided by the operationalisation of the study. Trustworthiness of the findings was supported by credibility, transferability, dependability, confirmability, reflexivity and an epoché bracketing the researcher's past experiences and perspectives to support transparency. The data was analysed thematically using a rigorous inductive-deductive approach. A description of the way the researcher arrived at the interpretation and presentation of data was provided. Ethical clearance was obtained prior to and adhered to throughout the research process, as detailed in this chapter. The research findings and interpretations are presented in the next three chapters according to the research sub-questions.

CHAPTER 5

FINDINGS – CONSUMER PRODUCT BELIEFS

Provides the participant demographics of the research sample. Thereafter, the findings related to the first research sub-question on what consumers believe about UHT milk alternative products in their own frame of reference are presented.

5.1 INTRODUCTION

The purpose of the research was to develop a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted. To arrive at the aim of the research, four sub-questions needed to be answered with a detailed presentation of the meanings which South African consumers ascribed to the phenomenon based on their perspectives. Only once these subquestions were comprehensively described could the research enquiry arrive at a holistic description to answer the **central research question**:

What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?

The findings and interpretations thereof are presented according to the research sub-questions and related objectives. This chapter starts by providing the participant demographics for the research sample. Thereafter, the findings related to the first sub-question of the research are presented to reach the first objective:

Sub-question 1: What do consumers believe about UHT milk alternative products in their own frame of reference?

Findings of the two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured online interviews are combined, since the same discussion guide was utilised for all data-gathering activities. The previous chapter provided a detailed description of the thematic analysis process and how the researcher arrived at the findings and interpretations presented. The findings and interpretations for each theme and subtheme are presented together to achieve an integrated, comprehensive description for the reader. The following two chapters will present the findings related to the remaining research sub-questions, thereafter a chapter is dedicated to the discussion of the findings in conjunction with findings from literature. The central research question and the proposed model based on the findings and interpretations presented in Chapter 9.

5.2 PARTICIPANT DEMOGRAPHICS

Due to the inclusion criteria, all participants resided within South Africa and were at least 18 years of age. Participant demographics displayed in Table 5.1, indicate that 20% of participants were male and 80% female. More than half of the participants fell within the 18-39 years age category (57%), with the remainder of the participants falling in the 40-64 years (37%) and 65+ years (6%) age categories. It is possible that the demographics of the study, indicating more female participants and participants between the ages of 18–39 years, may have been impacted by increased interest among consumers in these groups in the UHT milk alternatives product category and, consequently, a higher response rate from these demographic categories during participant recruitment. However, this is still unknown and this suggestion will only be able to be confirmed through research linking South African consumer demographic market segmentation to UHT milk alternatives. The majority of participants resided in Gauteng province (85%), with the remainder residing in the Eastern Cape (3%), KwaZulu Natal (3%), Limpopo (3%), North-West (3%) and Western Cape (3%). Since participant recruitment initially started among staff of the University of South Africa's Florida and Main Campuses, located in Gauteng, the majority of participants resided in the Gauteng urban area. Once the recruitment strategy was expanded beyond the university's staff to an online recruitment strategy, participants from other provinces, including rural towns, could also participate. However, the majority of participants reached still resided in Gauteng.

Participants' relationship with the object of study ranged from frequent, or regular, consumption of UHT milk alternatives (26%), occasional use of UHT milk alternatives (37%), some past consumption of products within the product category (34%), to no past experience of UHT milk alternative consumption (3%). Consequently, most participants indicated some form of relationship with the object of study through the various levels of consumption of UHT milk alternative products, indicating familiarity with the product category. Only one participant indicated a lack of actual consumption of any products in the product category, however, this participant did indicate a familiarity with UHT milk alternatives through regular exposure to products used by family, friends and colleagues. Participants' levels of consumption, or relationship to the object of study, were often found to be linked to their reasons for product consumption, as described in more detail in the findings section 7.2 on expected outcomes. Participation according to data-gathering method comprised 31% semi-structured interviews, 54% online mini-focus groups and 14% in-person mini-focus groups.

Table 5.1: Participant Demographics

Participant Demographics		
	Frequency (n)	Percentage
Gender		
Male	7	20
Female	28	80
Age Group		
18 – 39 years	20	57
40 – 64 years	13	37
65+ years	2	6
Province of Residence		
Eastern Cape	1	3
Gauteng	30	85
KwaZulu Natal	1	3
Limpopo	1	3
North-West	1	3
Western Cape	1	3
Relationship to Object of Study		
Frequent Consumption	9	26
Occasional Consumption	13	37
Some Past Consumption	12	34
No Experience of Consumption	1	3
Data-gathering Method		
Semi-structured Interview	11	32
Online Mini-focus Group	19	54
Mini-focus Group	5	14
Total	35	100

The demographics of the study may have been impacted by the sampling and participant recruitment strategies applied. Due to the nature of a phenomenological study which aimed to determine the experience of participants through their eyes without distinguishing between participants, the findings and consequently the demographics of the sample, are only a description of the participants. The study does not strive for representativeness, generalisability, or transferability to the entire population. Instead, the demographic data is provided to inform the reader of the sample who participated in the study and whose particular personal experiences of the phenomenon and the meaning they created thereof were captured in this thesis.

5.3 THEME 1: CONSUMER PRODUCT BELIEFS

The first sub-question of the research enquiry was to understand what consumers believe about UHT milk alternative products within their personal frame of reference. Consequently, the discussion guide used during the mini-focus group discussions and semi-structured interviews included several questions that could potentially guide the discussions to generate data that would facilitate a greater depth of understanding (Appendix A). The exact phrasing of the questions varied. Not all questions were necessarily used in every data-gathering session, as some of the questions were covered through a participant's response to another question and additional follow-up questions were asked to allow flexibility for emerging data to be explored. During the coding process of the data analysis phase, extensive data was uncovered relating to consumer product beliefs and 28 expanded codes were created to cover the extent of the data gathered sufficiently. These codes were categorised based on similar or related units of meaning, arriving at findings for the five sub-themes presented and interpreted in the sections below. The cluster of subthemes created one of the main research themes and was named *consumer product beliefs*. For this enquiry, *consumer product beliefs* relate specifically to the beliefs an individual holds toward a product and its attributes. The findings on consumer beliefs related to UHT milk alternative products, as developed from the codes and subthemes during the data analysis phase are depicted in Figure 5.1. The first theme on *consumer product beliefs* (*Theme 1*) was found to be comprised of five subthemes, namely: *health (1a)*, *associations with plant-based vs dairy-based milk alternatives (1b)*, *associated product category properties (1c)*, *sensory characteristics (1d)* and *utility (1e)*. While the five main themes are described as Theme 1 to Theme 5, sub-themes are presented with a number linking it to the relevant theme and a letter (for example 1a, 1b, 1c, 1d and 1e) to distinguish among the different sub-themes among the main themes.

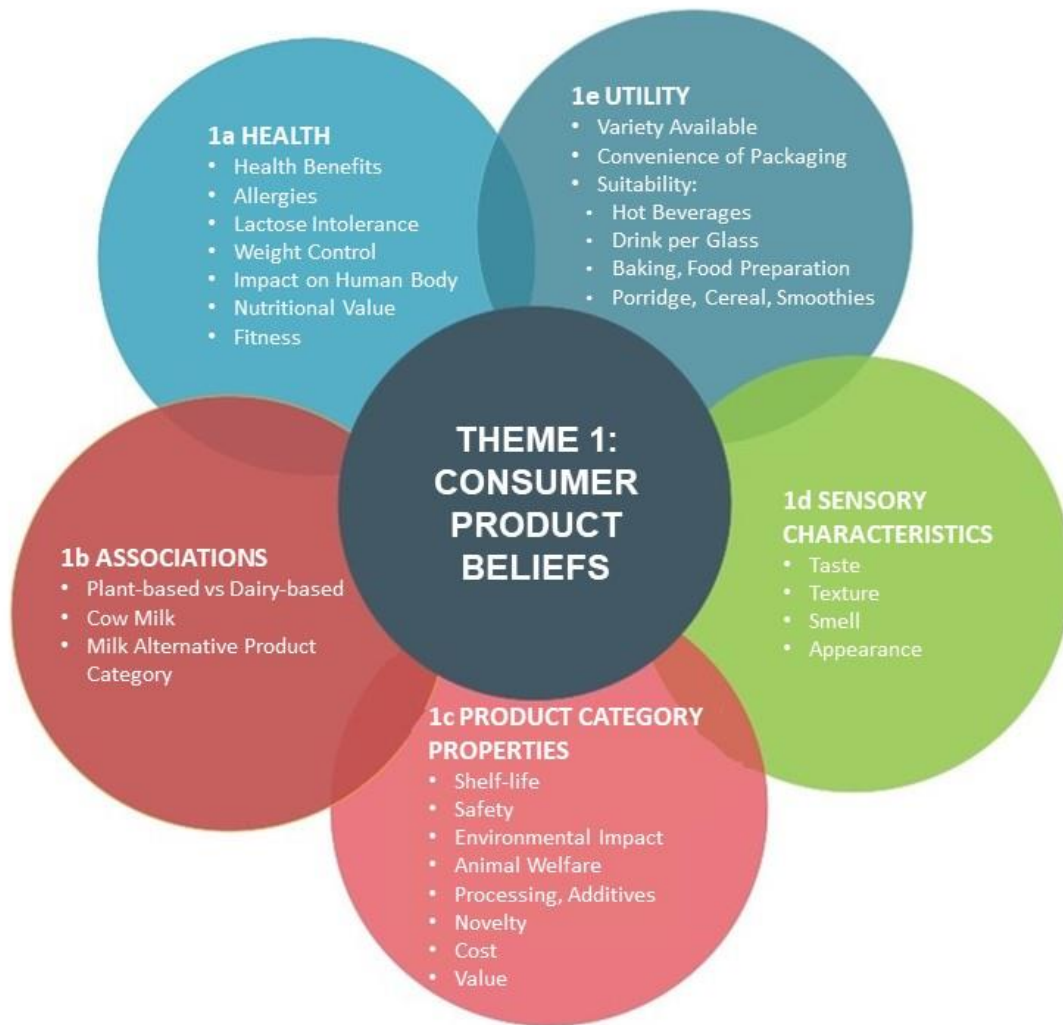


Figure 5.1: Theme 1 - Consumer Product Beliefs

5.3.1 Sub-theme 1a: Health

During the thematic analysis, one recurring subtheme was participants' association between milk alternatives and health. These associations between health and milk alternatives were established from five codes created during the data analysis, which linked participant beliefs related to health and milk alternatives. The codes and the categorisation thereof into sub-themes and themes for all findings can be found in Appendix F: Table F.6. Different consumer groups emerged with the discussion of beliefs on health and milk alternatives. Some participants ascribed health benefits to the product category, or specific products in the category; other participants linked the consumption of milk alternatives to specific health conditions such as milk or nut allergies and lactose intolerance; a group of participants believed a link existed between milk alternatives and weight control, while another group believed products in the product category could impact health and human body if consumed; and still others believed the product category possessed nutritional value or could support a healthy, active lifestyle and the attainment of fitness goals.

5.3.1.1 Health Benefits

Participants' beliefs related to the health benefits of milk alternatives ranged from being considered healthier options than milk, to milk alternatives being beneficial in certain circumstances, or not being as healthy as cow milk. Participants indicated that milk alternatives were often considered to be products that health-conscious consumers will use, which was reiterated by the product category in-store location where milk alternatives sometimes are *'packed with the health products and not with the milk'*. Participants with a pro-plant-based mindset indicated that they used milk alternatives *'because of health a lot of the time'* and considered it *'a trade-off between going to see a doctor or putting something that is safer for your body'*. These participants made various meaningful statements linking the use of plant-based milk alternatives to perceived health benefits: *'plant milks ... [the] good thing about them is that they are healthy'*; *'I definitely think of a healthier product to consume'*; *'they [have] health benefits ... the plant ones are better'*; *'I would think it is probably a healthier alternative'*; *'the nut milks ... the cashew, the almond, the coconut ... are very healthy'*. Other participants believed that, under certain circumstances, plant-based milk alternatives held more health benefits than cow milk. One participant expressed this belief in the following way, *'maybe there are health benefits for people that cannot drink normal milk'*. Another participant indicated that *'soy milk is the healthiest'* and that the participant *'used it ... while ... pregnant'* since *'it was recommended by ... medical practitioners'*. While the participant used cow milk, the participant indicated that, when *'used for those specific reasons'* the participant *'loved it because of its health benefits'*. In contrast, participants with a pro-dairy mindset indicated that they were *'sceptical of various health benefits'* acclaimed to plant-based milk alternatives. They believed dairy to be a healthier option than plant-based milk alternatives and indicated, *'in terms of health benefits we drink normal milk'*.

5.3.1.2 Allergies

Participant beliefs related to milk alternatives and food allergies were indicated to be both a driver of the milk alternative product category and a limiting factor in its consumption. Plant-based milk alternatives were believed to be a suitable milk replacement for individuals with cow milk allergies who needed to follow a cow milk exclusion diet, *'I have realised that a lot of people do use alternative milk products because of ... food allergies'*. Other participants indicated the belief that milk alternatives are for individuals with cow milk allergies through expressions that they did not need it, since they were not allergic to cow milk: *'I think if one of us had allergies then obviously we would have definitely bought it'*; *'plant-based milk alternatives ... I would not really have bought [it] ... because I do not really have allergies'*; and *'to me it feels more like a luxury item ... except if it is ... a necessity if you are allergic to something ... then definitely that is something else'*. Various participants mentioned that soy

milk *'used to be the only available alternative'* for individuals with cow milk allergies, fixing the belief that soy milk was a milk alternative for individuals with cow milk allergies strongly in the consumer mindset. Rice milk was considered an alternative *'if you are really allergic to everything else'*. However, various participants also indicated that some plant-based milk alternatives were unsuitable for individuals with allergies to the main ingredients. Almond milk, coconut milk, soy milk and other nut-based milk alternatives were the most frequently mentioned milk alternatives associated with allergies and consequently considered unsuitable for consumption by individuals with these allergies. Some participants also expressed frustration that milk alternatives, which they believed should serve as milk replacement products, still contained common allergens or ingredients other than the main ingredient mentioned, which rendered it unsuitable for its perceived purpose from an allergy perspective.

5.3.1.3 *Lactose Intolerance*

Participants also believed that milk alternatives could present suitable options for lactose-intolerant individuals. Several participants stated the association between milk alternatives and lactose intolerance: *'people who are lactose-intolerant ... go for these milks'*; *'I do understand that there are a lot of lactose-intolerant people'*; and *'it is a genuine concern that there are so many lactose-intolerant people'*. This again established the belief held by participants that milk *'alternatives are for specific people'*. Plant-based milk alternatives as well as lactose-free dairy-based milk alternatives were believed to be useful products for individuals experiencing lactose intolerance, as seen from participant statements such as, *'if you are lactose-intolerant then there are specific plant-based milks which you can consume'*; *'my son is lactose-intolerant and use rice milk from a young age'*; *'my eldest daughter is lactose-intolerant so soy milk is something that always catches my eye'*; and:

When she does use the lactose-free milk it helps ... she does not get those cramps, she does not feel bad ... she does not have a stuffy nose ... she does not get an upset stomach ... she can feel the difference ... it works for her.

Similar to the beliefs that milk alternatives are for individuals with cow milk allergies, participants also acknowledged the need for individuals with lactose intolerance to use milk alternatives. Lactose intolerance was believed to make milk alternatives a necessity for many people. While participants who did not have concerns related to lactose intolerance did perceive the need for lactose-free milk alternatives, it was believed to be suited for the specific purpose and not for general use: *'I enjoy lactose-free milk, but it is not necessary for my health'*; *'I haven't tried lactose-free milk, because I didn't need it'*; *'but there might be people who can really benefit from it'*; and *'if you need it, then it is okay if you buy a product that*

specifies that it is for that. One participant did, however, mention that lactose-free milk is not suitable for individuals who are allergic to cow milk, just for individuals who are lactose-intolerant.

5.3.1.4 *Weight Control*

Milk alternatives were often believed to be suitable milk replacements for cow milk for weight loss, or as part of weight control diets; as one participant stated, *'I would have tried it purely because of the recipes from a ... weight loss diet perspective'*. Different weight loss diets were believed to recommend or avoid milk or specific milk alternatives. One participant indicated that it was widely believed that soy milk would be more suitable for weight loss than cow milk, but that it was inaccurate:

I used soy milk when I did [branded weight loss diet], because they said normal milk leads to weight gain ... but then I gained more weight with the soy milk.

Some participants claimed that dieticians and widely followed weight loss diets caution against the use of cow milk due to its carbohydrates, indicating that it leads to weight gain and recommend milk alternatives high in fat as replacement: *'if you look at the different dieting crazes where they try to reduce your overall carbohydrate intake'*; and:

You will get those people who say 'no real milk is fine and you need so much a day' ... [you] will get others who will say 'no dairy is really not good for you; it makes you put on weight ... you must replace it with something else.

Participant statements such as: *'Carbs-wise is the only reason why I used almond milk because I wanted to move away from [cow] milk ... since many diets ... disparage the use of [cow] milk'*; *'I would use it ... if I do [high-fat, low carbohydrate] type of diets'*; *'[there are] different ways of eating - like ... all of these different diet types ... and certain diet types kind of promote these alternatives, whereas others do not'* reiterated the belief that the use of some milk alternatives is promoted in weight loss diets. Various participants described milk alternatives as *'more like a diet food kind of thing'* and believed their usefulness *'maybe if it is less kilojoules or something, then you want to try it when you are on a diet'*.

5.3.1.5 *Impact on Human Body*

Some participants expressed specific beliefs related to the impact of milk and milk alternatives on the human body. These beliefs could either drive them towards using milk alternatives or away from such intentions, displaying the strong links between consumer product beliefs, health and utilisation intentions. Individuals who believed that *'cow milk is not meant for humans'* were more inclined to use plant-based milk alternatives. In contrast, several

participants believed that soy milk *'is actually not good for you'* and indicated that they were *'very much against using soy products'*. Several participants also expressed beliefs that heat treatment of products, particularly ultra-high heat treatment, impacted the naturalness and health benefits of milk and dairy-based milk alternatives provided to the human body, as seen from the following statements: *'I have also read that actually the UHT milk because it is so heat-treated, it actually is less healthy than normal milk'*; *'I prefer less processed'*; *'I'm cautious of anything coming from a can or a box, I try to avoid it'*; and *'Everything is processed ... It's about what will be beneficial to my body ... heat energy destroys [nutrients]'*.

5.3.1.6 Nutritional Value

Various beliefs related to the nutritional value of milk alternatives emerged from the codes and meaningful statements. Some participants expressed that the high sugar or carbohydrate content of milk alternatives, such as the dairy-based blend, rice milk and coconut milk, made their nutritional value doubtful or undesirable. Several participants believed that *'rice milk has no nutritional value'* and that they *'do not know what it does for you'*. Participants believed it was both high in carbohydrates and fat and created the need to supplement calcium in the diet if rice milk was used. Participants believed that milk alternatives differ in nutritional value from cow milk, but that soy milk particularly was enriched and fortified to present a similar nutritional value to cow milk. Participant beliefs were divided regarding the value presented by enriched and fortified dairy-based milk alternatives. Some participants indicated that it was an unnecessary gimmick with *'hardly anything added to it'*, since they and their children relied on a balanced diet or supplements and not on milk alone to meet their nutritional requirements. As one participant stated:

There's only omegas and a little vitamins added ... my child gets her omegas through supplements prescribed by the doctor and she drinks her vitamins every morning, so I find it unnecessary ... and will not purchase it.

Others believed that it would be a desirable product for children during their weaning phase to ensure their nutritional requirements were met:

I would probably use the enriched milk especially when your children change from breast milk or from bottle milk to normal milk. There was a time when I tried to get more enriched milk for them. Just a short period ...but I would have considered it for the children.

5.3.1.7 Fitness

Some milk alternatives were also believed to be suitable in support of an active, healthy lifestyle. Participants mentioned that they *'see a lot of people using things like almond milk in*

their smoothies and so forth in gyms’ and that they ‘associate ... almond milk with an active lifestyle’. Similar beliefs were held regarding soy milk: ‘soy milk is probably going to be a very high protein milk’; and:

It is going to be something that if you need extra protein, ... if you go to the gym ... for muscle recovery ... you can use it afterwards with your protein products.

Among the dairy-based milk alternatives, the chocolate protein-enriched milk alternative was considered a useful source of protein after a physical workout or jogging to support post-exercise muscle recovery. Participants indicated that it ‘is a quick way to fill up with proteins to prevent your body from losing protein when you have just exercised’ and ‘it is actually something that is easy to use after you have had a gym session for muscle recovery’.

5.3.2 Sub-theme 1b: Associations with Plant-based vs Dairy-based Milk Alternatives

Beliefs associated with milk alternatives often displayed a clear distinction in the consumer mind between plant-based and dairy-based milk alternatives.

5.3.2.1 Discernment between Plant- and Dairy-based Milk Alternatives

Statements from various participants indicated that they ‘clearly distinguish between plant-based milk alternatives and dairy-based milk alternatives’; ‘there is a definite distinction’; and ‘I definitely see the dairy-based and plant-based as separate’. Individuals following vegan lifestyles or milk avoidance diets due to milk allergies ‘focus on what it is made of’ to be sure suitable options are selected. These participants typically made statements such as ‘I am vegan so I do not use the normal milk’; ‘main ingredient must be vegan’; ‘[we] use plant-based, [we’re a] vegan household’; and ‘I am very specific because I know it’s only this that I can use’. General beliefs related to the plant-based milk alternatives indicated that some participants saw it as ‘processed different drinks’ and ‘not real milk’. Some believed that ‘the word ‘milk’ gives a misconception because it is not really close to milk ... [although] you would use it as a milk alternative’. Others believed that:

Milk alternatives are the various types of ‘look-alike’ milk that have been slowly coming into the market and which offer people who cannot have regular cow’s milk an alternative.

5.3.2.2 Associations with Cow Milk

On the contrary, individuals with a strong affinity for cow milk also made a clear distinction between plant- and dairy-based milk alternatives, often based on the different sensory properties associated with the two categories: ‘I will stick with the dairy-based but there will be

a clear distinction between the two'; *[plant-based alternatives] differs from the normal taste of milk*'; *'I did not enjoy plant-based UHT milk alternatives, but I like dairy-based UHT milk products'*. Two participants did mention confusion regarding the market position of dairy-based milk alternatives, such as enriched *'growth milk'*. Dairy-based milk alternatives were not necessarily considered an alternative by all participants since *'it actually contains real dairy'*. It was rather perceived as value-added milk products (favourably), or *'gimmicks'* (unfavourably), instead of a complete milk alternative such as plant-based milk alternatives.

5.3.2.3 Associations with Milk Alternative Product Category

Milk alternatives were often associated with plant-based milk alternatives. When participants were asked what comes to mind when thinking of UHT milk alternatives, responses included: *'the most common thing that I know about milk alternatives ... soya milk'*; *'Plant-based milks. Dairy free'*; *'Milk alternatives ... Soy, yes. Soy, coconut, almond ...'*; *'if I thought alternatives I immediately would have thought 'plants''*; *'I would just immediately think plant-based'*; *'I think they're from plants and I do not think that they will taste the same as the ones that I am used to'*; and *'to me, the first thing that comes to mind is that it is for specific people'*. Participants believed that the taste would differ from normal cow milk and that *'the alternatives are for specific people'* who are allergic to cow milk or vegan. While almond milk and soy milk were commonly accepted as milk alternatives, some participants indicated that the concept of rice and oats milk alternatives did not fit their association with milk: *'rice milk ... to me it is odd'*; *'oat milk ... it was like ... oats ... diluted. I did not really understand the milk concept behind it'*; *'rice is something you must eat, not drink'*; and *'rice milk ... [I do] not really associate it with milk'*. While some participants associated coconut milk as a milk alternative, other participants indicated that they perceive coconut milk more as an ingredient in food preparation than as a milk alternative.

5.3.3 Sub-theme 1c: Associated Product Category Properties

Certain recurring beliefs associated with the UHT milk alternative product category were found, ranging from beliefs on UHT product properties, safety, environmental and animal welfare concepts, to the perceived novelty, cost, value and naturalness of milk alternatives.

5.3.3.1 Shelf-life

Findings demonstrated that participants characteristically associated the term *'UHT'* with dairy products possessing a long shelf life in comparison to fresh milk: *'I am thinking about the shelf-life'*; *'first thing that comes to my mind is immediately the long-life milk'*; *'it keeps for long because it is UHT'*; and *'it has a longer lifespan'*. UHT milk and milk alternatives were often referred to as *'long-life milk'*. Participants believed that the long shelf-life combined with its ability to be stored at room temperature until opened added to its perceived convenience.

Some participants considered milk an essential foodstuff in the house and kept UHT milk in the house for emergencies if they ran out of fresh milk. Others indicated that they live alone and that fresh milk did not last long enough for them to avoid wastage. These participants considered purchasing UHT options more feasible due to the longer shelf-life. Although the majority of plant-based milk alternatives available on the South African market at the time of the research were UHT products, participants did not seem to associate plant-based milk alternatives directly with their UHT properties, but rather with other perceived properties of the product category. The concept of UHT milk seemed to be more pronounced when referring to cow milk and dairy-based milk alternatives where participants made a clear distinction between UHT and fresh products.

5.3.3.2 Safety, Environmental Impact and Animal Welfare

Findings related to the perceived safety, environmental impact and animal welfare of milk alternatives revealed rather opposing beliefs among participants. Beliefs related to milk and milk alternative safety were often associated with claims such as *'hormone-free'*; *'organic'*; *'grass-fed'* while environmental concerns were linked to concepts such as *'GMO-free'*; *'sustainable'*; *'water consumption'* and animal welfare to concepts such as *'free-range'*. Beliefs related to plant-based milk by some participants were often stated in relation to cow milk. Some participants believed that plant-based milk alternatives were a *'safer product to consume'* than cow milk, while various others perceived it to be more *'environmentally friendly'*. One participant stated that *'stewardship is important'* and that she believed there was *'no need to use dairy'*. The use of plant-based milk alternatives as part of some participants' vegan lifestyle was expressed as making the participants *'feel good'* in their individual efforts to *'consider the environment, animal welfare and health'*. Other participants also stated beliefs that cow milk production impacted the welfare of the *'poor cows'* that *'continually ... produce milk'* and their belief that the use of plant-based alternatives supported animal welfare causes. Some participants questioned *'the environmental sustainability ... of dairy farming'* and indicated their belief that progressive technology led to *'more intensive and invasive'* farming practices with an increasing need *'for sustainable farming practice which is sensitive to the impact it might have on the environment'*. However, unlike vegan participants, they did not consider complete dairy avoidance necessary, but rather indicated that *'dairy ... will have to adapt ... as people become more sensitive to the dangers of dairy farming'*. Their concern about the environmental impact as farming practices intensified led to a perceived need to adapt and re-align dairy farming practices in future. These concerns and expressed preferences for more natural products, were not only related to an environmental concern, but also to milk safety concerns and the belief that cows are fed growth hormones which end up in milk used for human consumption. In contrast, participants using cow milk did not consider

plant-based milk alternatives to be more environmentally friendly than cow milk production. One participant highlighted the high levels of water utilisation required for nut-based milk alternative production. Findings showed that various participants are sceptical of claims on packaging related to safety, environmental and animal welfare concepts, especially among participants who consume cow milk. Participants' statements reflected this scepticism in the following ways:

I'm not impressed with little words like organic ... or free-range, or whatever'; 'grass-fed ... we see often on these milk stuff and it sounds well in theory ... it should have an influence on the quality ... but does it really'; 'growth hormones ... I don't think milk is the big culprit'; and 'other things like environmentally friendly, hormone-free and those things ... to be honest, I just absolutely do not believe it.

Findings indicated that this scepticism of claims made on products did not indicate that participants did not value the concepts, but rather that they were sceptical about the reality of implementation of claimed production practices and the real value reflected in the final product. Participants indicated that safety, environmental and animal welfare claims were often considered merely *'good marketing'*.

5.3.3.3 Processing and Additives

Further, participants with a preference for fresh, natural products, believed that UHT milk alternatives are *'highly processed'* for the sake of an extended shelf life. They believe that processed products are harmful to the human body and should be avoided, as observed from the following statements: *'everything in the milk has been sterilised through the Ultra High Temperature'*; *'I am hesitant of anything in a box, bottle or can ... I prefer not to purchase it'*; *'I try to avoid processed foods as far as possible ... these processes cause trouble'*; *'I prefer my milk as natural as possible'*; and *'everything is processed, then you begin to question it ... why can it not stay natural?'* Many participants, with a preference for natural products also indicated their preference for minimal product additives and often associated UHT milk alternatives with too many additives. Participants' statements, such as *'I like things to be as pure as possible'*; *'I check if there are things that I do not understand that is in the ingredients list then I try and stay away from that'*; *'sometimes there are palm kernel oil or palm sugar ... if I see it, I am wary of it'*; *'if there is any hidden sugars, I rather leave it'*; and *'I check for flavourings and colourants ... then I try to avoid it'* portrays this preference for pure products with familiar ingredients.

5.3.3.4 Novelty

Findings portrayed that participants who particularly indicated a preference for cow milk, or for natural products, often believed that UHT milk alternatives were a *'fad'*, *'exotic'*, or a novelty and questioned the real need for such products. The need for plant-based milk alternatives such as oat and rice milk was questioned as seen from the following participant statements: *'why would I want to have oat milk? I can eat oats and then I do not want to put oat milk on my oats'*; *'rice milk ... why would I want to add it to my coffee'*; and *'cashews I would be a little bit suspicious of ... I like cashew nuts, but I do not see why you would need to make milk out of them'*.

This group of participants were found to be even more critical of some dairy-based milk alternatives and believed enriched or fortified dairy-based milk alternatives were a *'gimmick'*, *'notion'* or *'fad'*. Research supportive of claims and the real value presented by the products were questioned: *'chocolate high protein recovery ... what is this notion and I am saying notion because I do not know if there actually has been research into this'*; *'Sports recovery [protein-enriched] ... that is such a gimmick'*; *'the protein-enriched sports recovery chocolate milk ... what nonsense is this'*; *'I do not believe if ... something is enriched and I do not really care either ... my vitamin needs ... come from other food'*; *'Yes, it might be good for your growth ... how do I know'*; *'growth milk [enriched] ... if you get all your vitamins in, then it is unnecessary'*; and *'omegas and a little bit of vitamins added ... I find it unnecessary'*. The main question reflected by these participants was summarised by one participant: *'Why is it there? Will my body benefit from it, or is it just a fad?'* Both plant- and dairy-based milk alternatives were believed by some participants to be *'lifestyle'* products - *'you sometimes get the impression that these are like ... I do not know how to put it ... kind of lifestyle milks, you know?'* The true need for lactose-free milk was also questioned by some participants as one participant stated, *'people who declare themselves to be lactose-intolerant, go for these milks and to me it is always like 'Are all of these milks really needed?'* Another participant indicated that the launch of a specific brand of lactose-free milk resulted in a craze among South African consumers, while the product turned out to be normal milk: *'apparently the new craze was [lactose-free brand], which everyone thought was an orange milk and it turned out to be normal milk'*. Several participants believed that *'there are too many options available in the market'* and indicated that:

You have got this milk shelf and 20 different kinds of milks and you start wondering if all of these are really needed or are some of them being marketed as kind of gimmicky stuff?

The beliefs regarding the novelty of UHT milk alternatives were strongly held by participants and were indicated by several participants to impact their purchase intentions.

5.3.3.5 Cost

The majority of participants believed that UHT milk alternatives were *'more expensive than dairy milk'*; or *'very expensive'*. For some participants the perceived cost of milk alternatives was indicated to have a direct impact on their accessibility to consumers: *'most plant-based milks are very expensive, so it would not meet my needs'*; and:

I do think that price is very, very important in South Africa because the products might be available, but it will still be a small group who can actually afford to buy these products.

One participant indicated the belief that:

South Africans in general ... are very price conscious. Even wealthy people are price conscious. So, if these alternative products are very expensive, then people ... avoid them because they are expensive.

Alternatives were considered a luxury item by some participants, unless required for health reasons such as milk allergies.

5.3.3.6 Value

Beliefs related to the cost of UHT milk alternatives were not considered in isolation, but rather in relation to the perceived value presented by the product to the participant. The cost of milk alternatives was measured with the price of cow milk as a point of reference. Participants indicated that the price *'needs to be competitive'* especially if it *'is supposed to be a direct alternative'* for a staple product such as cow milk. However, the cost of milk alternatives was not always believed to be a limiting factor to all participants when measured by the perceived health benefits. One participant indicated that:

It is expensive and we acknowledge that they are not cheap products, but we are still prepared to buy them. Because of health a lot of the time.

Some participants did not believe plant-based milk alternatives to be value for money due to the low actual content of the primary ingredient and the perceived lack of purity. Participants indicated that *'I realised that it is all basically like the nuts or the actual plant material, but the diluted flavours. Personally, I do not feel like paying that much ...'*; and:

The ingredients, for example ... a lot of the almond milks ... contain something like 2% almonds and the rest is water and I do not know what else ... a lot of it is scientific names so you do worry about what is in that milk.

They stated their disappointment *'that regulations allow the other ingredients'* and considering the lack of purity *'feels cheated, especially for the price paid'*.

5.3.4 Sub-theme 1d: Sensory Characteristics

Participants expressed several beliefs related to the sensory properties of UHT milk alternatives. Sensory properties of milk alternatives were found to be closely linked to the participant's evaluation of the product. The combination of the beliefs related to sensory properties and the participant's evaluation thereof strongly impacted utilisation and purchase intentions, with participant statements often found linking these three concepts. Consequently, detailed findings related to product sensory properties and participants' evaluation criteria are presented in the next chapter to present it in context and to avoid repetition. Beliefs found to be generally associated with the sensory properties of the UHT milk alternative product category are presented broadly in this section. Participants mentioned that the dairy-based UHT milk alternatives are *'basically normal milk'*, while plant-based alternatives were often referred to as *'it's just not milk'*. This indicates that beliefs regarding the sensory properties of milk alternatives were often shaped in participants' minds, with cow milk as the benchmark against which alternatives were measured.

Participants who evaluated the sensory properties of milk alternatives favourably often did not expand in detail on their beliefs related to the sensory properties of milk alternatives other than statements indicating that *'it is nice'*; *'I like it'*; and *'[it] tasted quite nice'* and continued the discussion on why and how they use the milk alternatives. In contrast, participants evaluating the sensory properties unfavourably, expanded on their beliefs related to the sensory characteristics of milk alternatives and their intention not to purchase it. Consequently, these findings should not be interpreted as milk alternatives possessing predominantly unfavourable sensory properties, but rather that beliefs on sensory properties were an important consideration to individuals who found it to be lacking in their expectations; while participants who viewed it favourably did not feel hindered by beliefs on sensory properties, did not necessarily expand on it during the discussion and may have granted more consideration to other product properties.

5.3.4.1 Taste

Recurring beliefs on the taste of UHT milk alternatives ranged from rice milk believed to be *'tasteless'*, *'very bland'*, *'not tasting like anything'* and having a *'baby-food taste'* to the various

nut milk alternatives believed to have a *'nutty flavour'*. Some participants believed that *'some [milk alternatives] have a bit of an after-taste'*, while others believed *'it starts to taste rather artificial'*. When unsweetened, participants believed that it was *'possible to taste the plant'* in plant-based milk alternatives and that the taste was *'basically like the nuts or the actual plant material, but the diluted flavours'*. Others believed that milk alternatives were *'too sweet'*, but it was generally mentioned that coconut milk had an inherent *'sweeter taste'* or *'slight sweetness'* contributing to its appeal as a food preparation ingredient. While not considered unfavourable, one participant indicated that coconut and rice milk possessed *'too a pertinent flavour'* to be utilised for some purposes.

5.3.4.2 Texture

Beliefs related to texture varied from dairy-based UHT milk alternatives believed to be *'creamy'* and *'rich'*, while the dairy blend was believed to *'lack creaminess in coffee'* and was considered to be *'too thin'*. Plant-based alternatives were believed to be either *'too creamy'* or *'less rich than dairy'*, *'very watery, or watered down'* and lacking the creamy texture associated with cow milk. Several participants also believed that plant-based milk alternatives possessed a *'grainy'*; *'barley-like'*; *'plant-like'*; or *'grass-like'* mouthfeel which felt like *'having beans in one's mouth'* or *'made hot beverages taste like soil'*. Almond milk was believed to *'turn thick'* a few days after the box was opened and to separate and *'flocculate'* in hot beverages leaving pieces of fat floating in, or a *'skin'* on top of, hot beverages which *'cannot be mixed into the milk again'*.

5.3.4.3 Smell and Appearance

Participants mentioned a few beliefs related to the smell and appearance of milk alternatives. While not describing a specific associated smell, some participants indicated that plant-based milk alternatives possessed an *'off-putting smell'* in statements, such as *'there is some or the other smell that I do not just like'*; *'I did not like the smell'*; and *'rice and oat milk does not smell nice'*. The appearance of plant-based milk alternatives was believed to *'look watery'*. Some participants indicated that lactose-free UHT milk and plant-based milk alternatives possessed an *'off-putting orange-brown colour'*.

5.3.5 Sub-theme 1e: Utility

Participants indicated various beliefs related to the use of milk alternatives ranging from the variety available for use, to the convenience of packaging and to the use of milk alternatives for specific purposes. Participants indicated that milk alternatives are utilised in various ways, particularly in hot beverages, occasionally to drink per glass, as an ingredient in baking and food preparation and with breakfast cereal and porridge. Several beliefs regarding the suitability of different types of milk alternatives to be utilised in the commonly mentioned ways surfaced from the data.

5.3.5.1 *Variety Available for Use*

Participants indicated that soy milk was traditionally the only milk alternative available in the South African retail market for individuals allergic to milk or following vegan lifestyles. The availability of UHT milk alternatives was indicated as a limiting factor to purchase behaviour in the past, as one participant indicated *'there were no alternatives which we were aware of'*. However, the availability of UHT milk alternatives seems to have improved as participants indicated that the *'great variety [of plant-based milk alternatives] available makes it really easy'*; *'there is a range of products'*; and *'if you go past the soy milk, there are about 14 or 15 different types of options'*. One participant however did mention that in comparison to developed countries, the plant-based options were still rather limited for vegans in South Africa. Difficulties with availability rather seemed to stem from the fact that participants believed that a variety of options were unavailable in convenient locations in the retail outlets which they frequented. As some participants stated: *'plant-milk ... I do not think that they are always available in supermarkets'*; *'you might find them maybe in certain shops that I might not always go to'*; and *'I cannot go to different shops to purchase milk alternatives'*. Participants in rural towns indicated that while UHT milk alternatives were available in their area, the choices available of specific brands or types of products were occasionally limited. One participant from a rural area indicated that, while it is *'a farming community'*, their local supermarkets and health shop did stock UHT milk alternatives and that *'you could go to any supermarket in the area and find milk alternatives'*. However, the stock and brands kept by the local supermarkets were *'based on the local demand'* with *'coconut and almond being two popular choices'*. Milk alternatives believed to be in lesser demand, such as rice milk, oat milk and cashew milk, were believed to be harder to find in the area. Other participants in rural areas indicated that preferred UHT milk alternatives were *'often unavailable'* and could not be ordered online due to the high cost of delivery to small towns, thus limiting the variety available to the participant. Participants catering for children with milk allergies believed the variety available in urban areas to be convenient, however, they did mention their concern to find suitable milk alternatives when on holiday. They did not always find suitable options available in holiday destinations which led to conscious planning for suitable milk alternatives ahead of vacations. Some participants believed that *'plant milks ... are not easily available'*. In contrast, some urban participants believed *'that there were perhaps too many options available in the retail market'*.

5.3.5.2 *Convenience of Packaging*

Apart from the convenience of location and variety of UHT milk alternatives available, participants also linked the concept of availability to the availability of suitable pack sizes for their needs. Participants believed that plant-based UHT milk alternatives were not available in

convenient pack sizes, impacting their intention to purchase it: *'you normally just get the big packages, you get the one litre ... you do not get the 250 ml or the 500 ml which will be better'*; *'my perplexity with that is that it is usually a litre and in my recipes I never need a whole litre'*; and *'I wanted to buy it, but they only sell it in litres'*. Plant-based UHT milk alternatives were believed to possess only a short shelf life once the container is opened, leading to product wastage if it is discarded. Participants indicated that *'after a day or two it becomes thick ... then I throw it away'*; *'it goes off quickly'*; and *'I don't use it as quickly as normal milk and then it becomes a sour and thick business'*. One participant expressed the frustration of the loss considered in relation to the product cost: *'I just wish I could throw away less, because it is rather expensive. So, I have to consider carefully before opening it'*. Participants believed that they use a smaller volume of milk alternatives, than they would of normal milk, leaving them *'unable to consume all before it goes off'*. Several participants indicated that they tried to freeze milk alternatives to avoid wastage but did not believe that it possessed good freezing properties, *'I tried to freeze it ... I could not get it in smaller containers and it did not work at all'*; and *'you cannot freeze it at all'*. Consequently, various participants believed that the available pack sizes are inconvenient and expressed the need for smaller pack sizes in the market: *'if I can find a small pack, I will rather purchase that'*; *'it has an influence on me, the pack size'*.

5.3.5.3 Suitability for Use in Hot Beverages

Various participants indicated the need for milk alternatives to be suitable for use in hot beverages, *'It must actually look like milk'*; *'I do not like coffee with drop off something strange in it'* and believed that some milk alternatives were more suitable than others, *'there are ones that are better for coffee'*. Some participants believed that the sensory properties of plant-based milk alternatives were unfavourably altered when used in hot beverages, *'nut milks ... I did try some of them in the coffee or tea and it just does not do it for me'*; and *'you cannot drink any of these milks with it'*. Almond milk was the most frequently mentioned product and beliefs on its suitability in hot beverages varied among participants. One participant indicated that almond milk in cappuccino was considered a treat at coffee shops, but that *'it was very rich'* and that it would only be suitable for occasional use. Among participants following vegan lifestyles, several participants indicated that *'almond [milk] is for coffee and tea'*. However, most participants believed almond milk not to be suitable for use with hot beverages. Participants indicated that *'almond milk does not work at all in coffee'* and linked this belief to several sensory characteristics when it is added to hot beverages: it is *'not that great'*; *'too thin and watery ... in hot drinks'*; *'almond milk ... does not work in coffee ... it makes your coffee taste like soil'*; *'As soon as you put the almond milk into a hot liquid then it turns like sour milk'*; and *'Like when you throw into your coffee milk that is old'*. Some participants mentioned that

other milk alternatives were more suitable for hot beverages, such as soy milk, while others could not find something suitable and dropped all milk and milk alternatives from hot beverages. One participant indicated that:

My daughter drinks [hot beverages] with almond milk and from what I have seen, it puts me off ... as soon as she puts the milk in the coffee it turns like sour milk – it has little pieces in it and that puts me off.

The participant indicated a preference for soy milk instead, '*Soy milk does not do that ... at the cafeteria ... I have got soya milk there, for in case I want a cappuccino*'. Other participants displayed different beliefs regarding the suitability of soy milk in hot beverages, indicating '*you cannot put it in tea ... it curdles completely*'; '*if you put it into coffee, ... it looks quite funny*'; and '*It looks like sour milk sometimes*'. Various participants indicated that soy milk separates when included in hot beverages and consequently did not believe it to be suitable for use in hot beverages. Coconut milk was not believed to be suitable as milk replacement in hot beverages, as participants indicated '*coconut milk ... as a milk alternative for my coffee I am a bit sceptical to try that*'; and '*coconut milk ... I do not use this in my coffee or my tea*'. It was believed to be more suitable for use in recipes and food preparation. Few participants mentioned using rice milk in hot beverages, but those who did indicated that '*rice milk is high in fat, so it's not nice in coffee at all*'. The dairy-based blend was believed to be unsuitable for use in hot beverages since it was believed to be '*too thin*' and '*lack creaminess in coffee*' with participants indicating the '*need to add more than normal milk to have a milk experience*'. Lactose-free milk was believed suitable for use in hot beverages with participants indicating that '*lactose-free milk actually goes really well ... I could not actually tell the difference between the coffee when having full cream or using this alternative*' and '*I use it basically only in tea and coffee ... it worked really well*'.

5.3.5.4 Suitability to Drink per Glass

Although consumers often drink cow milk as a beverage, very few participants considered milk alternatives to be suitable to drink as a glass of milk. Lactose-free milk was believed to be '*drinkable*' and one participant indicated that '*my children ... will drink the coconut milk as a beverage, straight*', while another indicated that the children '*loved oat milk*' and would drink it as a beverage per glass. The remaining participants, who indicated that they would use milk alternatives, indicated that '*it is not something that I would drink*' and '*it is not a drinking milk, as a glass of milk*'. These participants indicated sensory properties of pure milk alternatives as the limiting factor '*it does not taste the same at all*'; '*coconut milk is just too much like coconut ... I will not pour myself a glass to drink*'; and '*I doubt that I will just drink it purely as-is*'. They believed the product category was more suitable for use in baking or food preparation

as observed from statements such as: *'I used coconut milk and it is perfect for using it in a dish but I did not drink it'*; *'almond milk ... will probably be for cooking ... but I will not drink it'*; *'[cashew] can work very nicely in cooking ..., but I will never drink it'*; and *'coconut milk ... would be ok in your food ... in curry or something ... but for drinking I would never use it'*.

5.3.5.5 Suitability for Baking and Food Preparation

The most frequently mentioned belief related to the use of milk alternatives was its suitability in baking and food preparation. Some participants indicated that they *'did not see [plant-based milk alternatives] as milk'*, but rather as *'something you use in cooking'* and *'I will not use it as a milk but just in food'*. The belief that milk alternatives are suitable as ingredients in cooking and baking was firmly established among participants. Participants following a vegan-based lifestyle indicated that *'soy milk is the preference when you bake and when you make sauces'*; *'I always stick to the soya when I bake and cook'*; and *'most vegan people use soy milk for baking purposes'*. Coconut and almond milk were believed to be suitable as a milk replacement in recipes and food preparation by vegans, individuals with cow milk allergies following cow milk avoidance diets and individuals who normally use cow milk but are willing to experiment with different ingredients. Many participants believed that coconut milk brought something unique to the flavour of dishes and indicated that *'[coconut milk] works well in dishes'*; *'it is nice and rich and makes the food tasty'*; *'the flavour of coconut works well with protein, such as chicken and meat and makes it creamy'*; *'coconut milk ... was perfect in curry dishes'*; *'it does make the dish taste different'*; *'absolutely delicious ... to cook with coconut milk'*. In addition to the frequent indications of coconut milk's suitability for use in cooking, it was also considered to possess the needed sensory properties to serve as a milk replacement in baked goods: *'I would use it mostly in baking'*; and *'if you're going to bake ... coconut milk definitely has a better texture and flavour for baking'*. Similarly, with almond milk, participants believed that almond milk is suitable for use in recipes and baking, often associating it with a desire to experiment or make something special. This could be observed through participant statements, such as *'I am attracted by almond milk simply because of the recipes'*; *'then I might try to explore with it'*; *'if I want to make a special food and maybe it needs almond milk or so, then I will use that'*; and *'we use it often in our muffins ... it just brings everything together'*. For individuals with milk allergies, or those following a cow milk avoidance diet due to lifestyle choices, or low carbohydrate weight control plans, the use of coconut and almond milk as replacement ingredient in recipes was considered valuable.

5.3.5.6 Suitability for Use with Breakfast Porridge, Cereal or Smoothies

Few participants indicated beliefs related to the suitability of milk alternatives for use with cereals, porridge or breakfast smoothies. Oat milk was not considered suitable for use with porridge, as indicated by one participant *'I do not want to put oat milk on my oats'*. Another

participant indicated that *'the rice milk and coconut milk does not work with cereals ... the flavours are too prominent'*. Almond milk was believed to be suitable for use with cereal and smoothies. Participants indicated that *'almond milk is very nice in your breakfast or a smoothie, but then you eat it cold'*; *'almond milk works well as an alternative with cereal or porridge'*; and *'[daughter] uses almond in her breakfast cereal'*. No beliefs were expressed about the use of dairy-based milk alternatives with cereal, porridge or smoothies; however, it could be that many participants noticed a greater difference in sensory properties between plant-based milk alternatives and cow milk than with dairy-based alternatives. Consequently, they may replace cow milk more easily with dairy-based alternatives without too much conscious thought.

5.4 COGNITIVE COMPONENT

The findings in this chapter specifically aimed to achieve the first objective of the research:

Objective 1: To gain a greater depth of understanding of consumers' beliefs related to UHT milk alternative products (*cognitive component of attitudes*)

Participant beliefs related to UHT milk alternatives were found to be varied according to the meaning that the individual ascribed to the products or product category. However, similarities and patterns were identified, supporting Theme 1 and sub-themes 1a to 1e which collectively constructed consumer product beliefs, or the cognitive perspective (Figure 5.2), which the enquiry aimed to understand in greater depth. The potential linkages between this theme, or the cognitive component of participant attitudes and participant purchase intentions are presented in Chapter 8.

5.5 CONCLUSION

In conclusion, participants were found to associate UHT milk alternatives with specific health-related beliefs. These beliefs were constructed of health benefits ascribed to products, allergies which could serve as a driving or deterring factor in the use of milk alternatives, the potential suitability ascribed to products for individuals with lactose intolerance, or weight and fitness goals, the impact participants believed milk or milk alternatives would have on the human body and the nutritional value ascribed to UHT milk alternatives. Consumer product beliefs were found to include specific associations made in the participant's mind with plant-based and dairy-based milk alternatives, cow milk and the UHT milk alternative product category. Participants also held beliefs which they associated with properties of the product category, such as shelf-life, safety, environmental impact, animal welfare, processing, additives, novelty, cost and value. Further, participants were found to hold strong beliefs regarding the sensory characteristics, including the taste, texture, smell and appearance, of UHT milk alternatives, which could drive them to, or deter them from, product consumption. Finally, findings indicate that participants held beliefs toward the perceived utility of UHT milk

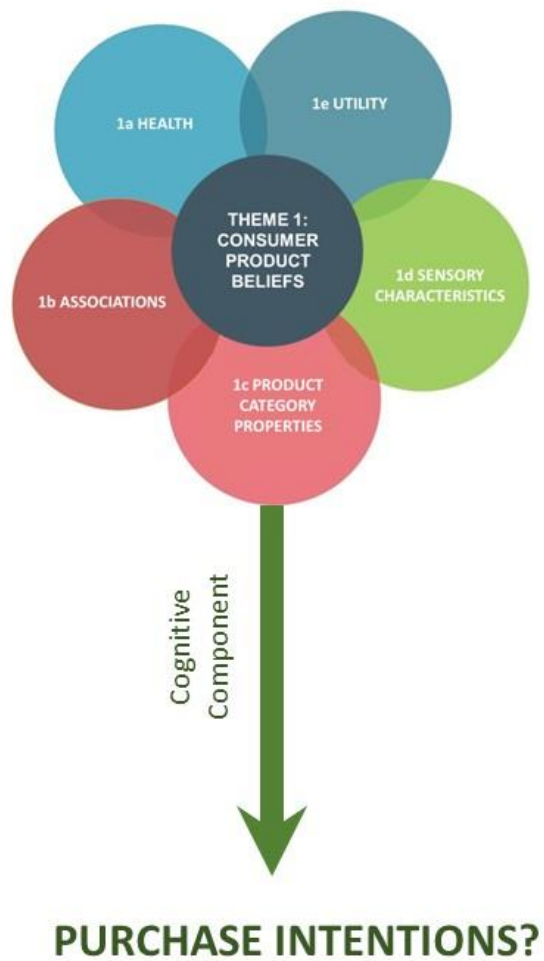


Figure 5.2: Consumer Product Beliefs – Cognitive Component

alternatives, particularly toward the variety of products available for use, the convenience of packaging and product suitability for use in hot beverages, baking, food preparation, with porridge, cereals and smoothies, or to drink per glass. Collectively, these findings presented the research enquiry with a meaningful depth of understanding of consumers' beliefs related to UHT milk alternative products. Consumer product beliefs however only formed one theme in the research findings.

CHAPTER 6

FINDINGS - PRODUCT EVALUATION CRITERIA

Presents the findings related to the second research sub-question on how consumers evaluate UHT milk alternatives within their own context. Findings related to consumer product beliefs and their evaluation of products are collectively interpreted to establish consumer attitudes toward the UHT milk alternative product category.

6.1 INTRODUCTION

The previous chapter presented the research findings particularly related to consumer beliefs about UHT milk alternatives providing a greater depth of understanding of how consumers perceive the product category and the components that constitute these beliefs. Consumer product beliefs alone, however, were not found to be the only element to shape the meaning participants ascribed to UHT milk alternatives. The way participants evaluated their beliefs about the product category was found to be a dynamic element underlying their overall description of the products. The findings presented in this chapter aimed to answer the second research sub-question to achieve the second objective:

Sub-question 2: How do consumers evaluate UHT milk alternatives within their own context?

Thereafter, the collective interpretation of consumer product beliefs and evaluation of products are presented, presenting their attitudes toward UHT milk alternative products as shaped by these two research themes. The next chapter will present findings on non-product-related elements impacting consumer purchase intentions of UHT milk alternative products.

6.2 THEME 2: EVALUATION OF PRODUCTS

As mentioned earlier, participants were found to ascribe meaning to products based on their beliefs about the products or product categories. However, the value they ascribed to the beliefs held was determined by the way the individual participant evaluated the product. Several themes and subthemes were identified during the research which were found to constitute participants' evaluation of products. These evaluation criteria are discussed in the following sections. Vast amounts of data were found during the initial emerging coding process on participants' evaluation of products, including the impact of familiarity and previous use on the participant's evaluation of a product (see Section 6.2.7 for reasons of inclusion with this theme). The initial emerging codes of evaluation, use and familiarity led to the creation of 69 expanded codes to provide a comprehensive framework within which these constructs could be interpreted. These codes were categorised into seven similar or related units of meaning, arriving at findings for the sub-themes as presented in the sections below (Figure 6.1).



Figure 6.1: Theme 2 - Evaluation of Products

Together, the cluster of subthemes established another main research theme, namely *evaluation of products*. For this study, *evaluation of products* refers specifically to the individual's assessment of product attributes associated with UHT milk alternatives, the importance of these attributes to the individual and the favourable or unfavourable judgement ascribed by the individual to the attributes held by the product. The second theme, *evaluation of products (Theme 2)*, was comprised of the following subthemes (presented with a number linking it to Theme 2 and a letter to distinguish among the different sub-themes): *importance of intrinsic product properties (2a)*, *importance of functionality (2b)*, *importance of acquired product properties (2c)*, *importance of promotion (2d)*, *evaluation of products and categories (2e)*, *evaluation of product preferences (2f)* and *impact of familiarity and experience on product evaluation (2g)*. Each of these sub-themes was comprised of the various codes categorised under the sub-theme during data analysis which can be found in Appendix F: Table F.6. Figures of UHT milk alternatives in this chapter are presented to provide the reader with the

visual display which meets the consumer in the South African retail space. All products displayed were available during the time of the research in the South African retail market, but only serve as a sample of the available products and not a comprehensive presentation.

6.2.1 Sub-theme 2a: Importance of Intrinsic Product Properties

6.2.1.1 Food Safety

Participants associated the shelf-life, origin, familiarity and naturalness with product safety and found them to be important criteria in their evaluation of products. Many participants considered the expiry date to be an indication of safety and an important consideration at the point of purchase, as observed from typical statements such as *'the first thing I look at is the expiry date and I try to take the one with the furthest expiry date'* and *'I always check the expiry date'*. Apart from the importance of the product packaging indicating an expiry date, participants also found it important that the product must last well once opened and indicated a willingness to pay slightly more for familiar brands which they knew would last well and would be safe to consume. A similar association was observed between the place of origin and food safety. Various participants indicated that it was important for them to use locally produced products since they trusted and were familiar with the local production standards. Several participants indicated a distrust of the safety and quality of imported products because they have *'too little information of other countries' regulations and production methods'*. Participants indicated that *'a good safety record ... is something that I will look at'* at the point of purchase with products from reputable producers and local origin being considered favourably.

6.2.1.2 Naturalness

Participants indicated unfavourable evaluations of products that they considered to be too processed or containing too many unfamiliar ingredients or additives. Participants expressed concern about potential exposure to growth hormones and antibiotics in milk and dairy-based milk alternatives and indicated that it would impact their choice between available products, *'if I know one is antibiotic-free I will take that one'*; and *'I just want to know ... that there are no other growth hormones in there'*. With plant-based milk alternatives, participants expressed concern regarding potential exposure to pesticides and genetically modified organisms (GMO) but displayed more favourable evaluations of organic products. Participants also expressed unfavourable evaluations of products which they considered to be too processed or unnatural. This impacted their product selection as one participant stated, *'if something is natural and has not been modified too much, I would be more likely to use it'*. Several participants indicated that they *'try to avoid the use of processed foods'* since they considered it harmful to the human body and believed that natural food is necessary for good health. Participants indicated that they *'want to know if it is natural'* and *'it must be as real as possible'*. Some participants considered pasteurisation and UHT processes unfavourably as tampering with products'

naturalness, resulting in a *'sterile product'*. They questioned the need to process food and potentially harm the human body in efforts to increase product shelf-life. However, some participants indicated that while the processing concerns them, they would continue to use UHT milk and milk alternative products due to their favourable evaluation of the sensory characteristics and the convenience of products which could be stored at room temperature for long periods prior to opening. Participants evaluated products containing preservatives, many additives, or unfamiliar additives unfavourably and preferred products with clean ingredient lists and with *'no preservatives at all'*. Participants concerned about preservatives indicated that they would sacrifice convenience and make more frequent purchases to avoid preservatives. Participants who evaluated additives unfavourably indicated that they habitually read product labels for the ingredients and *'look at the available products to compare them'* since they *'want to know that this is a pure'*; *'want to know what is inside'*; and *'want to see what is added on and why it is added'*. A high level of scepticism was expressed if products contained too many or unfamiliar ingredients as found in this example:

The ingredients for example, I think a lot of the almond milks ... contain something like 2% almonds and the rest is water and I do not know what else ... it is all ... a lot of it is scientific names. So, you do worry about what is in that milk and whether it is actually healthy for you?

One participant stated, *'I check if there are things that I do not understand that is in the ingredients list, then I try and stay away from that'*, indicating the unfavourable evaluation of unfamiliar ingredients and the impact on purchase intentions. Participants also indicated unfavourable attitudes towards colourants, flavourings, additives and palm oil and would aim to avoid products containing these additives, as summarised by one participant: *'I see how much has been added to the milk. I like things to be as pure as possible'*. Participants following vegan lifestyles expressed the importance that the *'main ingredient as well as the other ingredients must be suitable for a vegan lifestyle'*. Similarly, individuals with food allergies expressed their frustration at the lack of purity in milk alternatives and their disappointment *'that regulations allow the other ingredients'*. One participant mentioned willingness to pay a premium, within the participant's budget for products with no additives.

6.2.1.3 Added Sugar

Participants were concerned about the nutritional value of milk alternatives and often mentioned that they *'always read the ingredients'* and study the labels (see Figure 6.2 for examples from South African product labels).

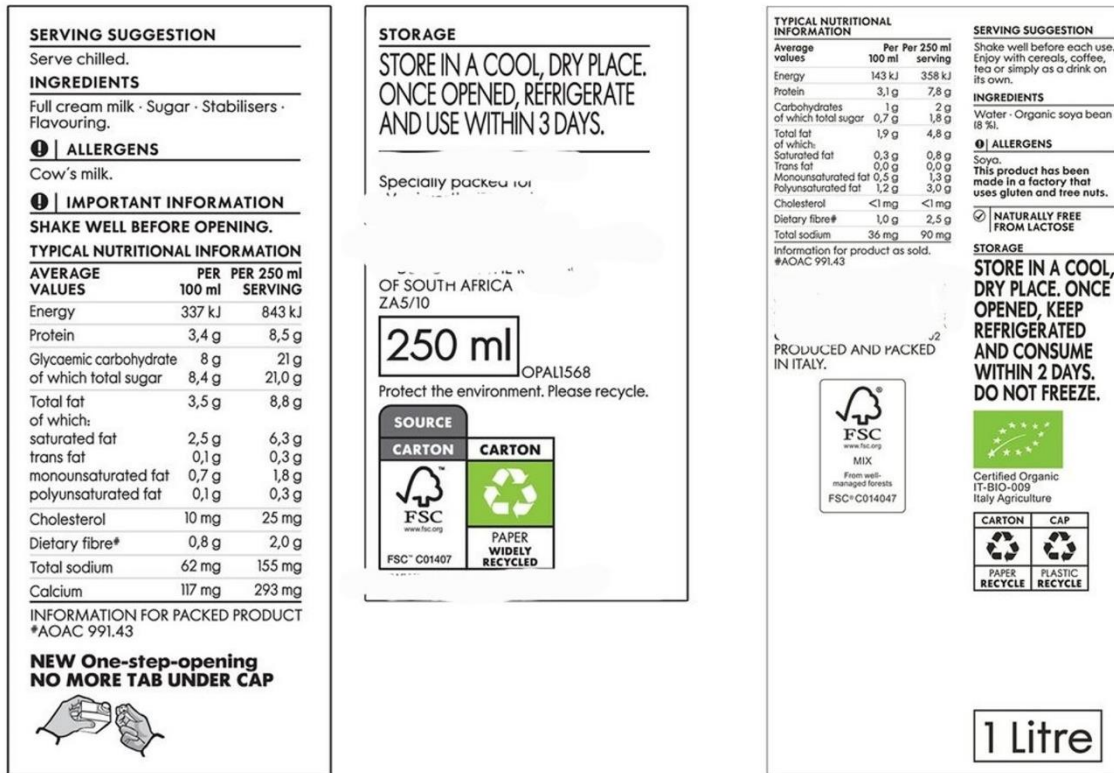


Figure 6.2: Product Labels (Woolworths, 2022f; Woolworths, 2022k)

Participants evaluated milk alternatives found to contain added sugar unfavourably and expressed that a high sugar content would unfavourably affect their decision to consume milk alternatives, *‘the sugar content ... will affect which products I would choose’*; *‘a big issue for me is the amount of sugar in the products ... I definitely look at that’*; *‘I do not like anything that has got added sugar’*; and *‘I used to buy them and then I was horrified with how much sugar, so I actually just stopped buying them’*. Participants also expressed unfavourable evaluations of products featuring artificial sweeteners to replace sugar and flavoured products, such as chocolate-flavoured products. Participants’ preference for natural ingredients impacted their evaluation of the use of products containing artificial sweeteners unfavourably, as observed from the following participant statement:

These stabilisers and ... if there is artificial sweetener in the product, I will not buy it. I am very focused on getting a product that has more natural sort of ingredients.

Flavourants in products equally evoked unfavourable product evaluations due to a perceived artificial taste and the perception that flavoured products are usually sweetened. Participants indicated that *‘if they add sugar or something to kind of enhance the taste, it starts to taste rather artificial’*; and:

[I] automatically associate a flavoured product with something that has been sweetened ... especially if it is chocolate or strawberry flavours ... then you know to stay away [from the product].

Some participants indicated that flavourants, especially chocolate flavour, were added to convince consumers to purchase products which they otherwise would not have chosen, thus evaluating added flavourants highly unfavourably.

6.2.1.4 Nutritional Content

Participants using milk alternatives frequently indicated that some alternatives were high in carbohydrates and considered unsuitable for use as part of low-carbohydrate diets. These participants mentioned that they would habitually read the nutritional information on the packaging (Figure 6.2) and compare different products to find low-carbohydrate milk alternatives. Rice milk in particular attracted unfavourable evaluations from participants with its perceived high-carbohydrate content, along with the perception that it contained little other nutritional benefits. One participant summarised this product evaluation in the following manner: *'I do not think I will ever buy rice milk, in my perception, it is just a lot of carbs and I do not know what it does for you'*.

The fat content of the various milk alternatives was considered to be important in evaluation of alternatives, since many participants expressed that they were using milk alternatives because they wanted to replace cow milk, considered to be high in carbohydrates, with low-carbohydrate higher-fat options. The findings on these product evaluations related to weight control purposes are discussed in more detail in the section on functional suitability, but the favourable evaluation, which some participants ascribed to milk alternatives with a high-fat content should be noted here. When considering dairy or dairy-based milk alternatives, the importance and preferences participants expressed regarding fat content varied widely. Several participants mentioned the importance of dairy and dairy-based milk alternatives they use to be full cream, often associating this preference to their unfavourable evaluation of skim milk, which was considered to be *'water with a little bit of milk'*, lacking creaminess and *'having a different hue'* which was described as turning hot beverages *'blue'*. Other participants expressed their preference for low-fat dairy and dairy-based milk alternatives with full cream options used for children and low-fat options used by adults in the household. A few participants indicated their preference to use fat-free milk alternatives, *'I would drink something like lactose-free milk but would prefer it to be fat-free ... I do not like the rich, full-cream taste in milk'*. Some concerns were expressed about the high-fat content of plant-based milk alternatives such as coconut milk, as well as the fat content of a *'double-cream'* almond

product in the South African market. The high-fat content was evaluated as being too high by one participant indicating:

The cream lies so thick on top inside the box that the milk cannot be poured out and you cannot mix the fat back into the milk ... you will die of all the fat ... it's an unpleasant experience.

Other participants indicated that the fat globules of some plant-based milk alternatives, such as almond milk, would float at the top of hot beverages, considered to be 'off-putting' in the use of the product.

6.2.1.5 Sensory Characteristics

Participants indicated the sensory properties of milk alternatives to be one of the most important considerations in their choice to purchase milk alternatives. As mentioned by one participant, 'In terms of taste and so forth ... well, it has got to be attractive'. Unfavourable evaluations of the sensory attributes of both dairy-based and plant-based milk alternative products were indicated to lead to discontinued use, demonstrating the importance of sensory properties to participants. This was observed from several participant statements such as: 'if I am not satisfied with the product, I will, next time, not buy it'; 'the taste sometimes is a major issue for me ... plant milks ... normally do not taste nice'; and

I must say that for me the taste is very important, ... I am actually disappointed [plant-based milk alternatives] tastes very watery or watered down and it lacks this creamy texture and taste which I really enjoy in milk.

The sensory characteristics were often compared to that of cow milk, 'It is just not something I like, ... it does not taste like milk'; and 'the taste was a big off-putting factor ... it is a bit ... disappointing to have the watered-down taste, especially if you think of it as milk'. Participants considered the sensory attributes of milk alternatives to be more important than price in their choice to purchase milk alternatives, '[the dairy blend] just tasted like water ... I decided not to buy it anymore, even if it is cheaper'. The sensory characteristics were also considered to determine the value ascribed to milk alternative products, as one participant stated, 'I did try some of them and that is why I feel that the taste is actually important to me ... Is it worthwhile to buy such a product?'

6.2.1.6 Percentage Content of Main Ingredient

Participants expressed the importance ascribed to the ingredients contained in milk alternatives based on three main concerns. Participants using milk alternatives due to food allergies indicated that milk alternatives often included common allergens, such as nuts, whey and soy, in the ingredients rendering it unsuitable for individuals with food allergies. The value

of products was linked to the percentage of the indicated main ingredient that the product actually contained, with participants expressing frustration and disappointment when the actual content was lower than expected: *'[the] main ingredient must be ... highest percentage'*; *'not pure as expected ... feel cheated, especially for price paid'*; and *'[it is] expensive ... almond milk [only contains] 6% almonds'*. Participants also stated the importance that products should have *'no extra additives'* but should be *'more natural'*.

6.2.2 Sub-theme 2b: Importance of Functionality

Participants used milk alternatives for a variety of reasons. Consequently, they considered it important that the milk alternatives selected should be functionally suitable for their intended purpose.

6.2.2.1 Vegan or Vegetarian

Participants using milk alternatives due to a vegan lifestyle indicated the importance to *'always look at the ingredients'* since they were *'very focused on using plant-based [milk alternatives]'*. Animal-derived milk was considered unsuitable for their purpose, while plant-based milk alternatives were often considered suitable. They did however express the importance that the main product ingredient and all additives must be suitable for a vegan lifestyle.

6.2.2.2 Food Allergies

Participants with food allergies, or household members with food allergies, similarly emphasised the importance that ingredients and any additives in milk alternatives should be suitable for their needs and indicated that they would *'focus on what [products selected are] made of'*. Participants with nut, soy and coconut allergies indicated that milk alternatives containing such ingredients would be unsuitable for them to utilise. This group of participants indicated disappointment that some milk alternatives still contain allergens as additives when the main ingredients are considered to be suitable for their use. Since cow milk allergies were often the reason participants used milk alternatives, several participants indicated that they could only use plant-based milk alternatives, but checked product labels that it did not contain any dairy derivatives, such as casein or whey. These participants stressed that dairy-based milk alternatives, such as lactose-free milk, should not be considered suitable for individuals with cow milk allergies, since the basis is still cow milk protein.

6.2.2.3 Weight Control

As mentioned earlier, participants also read product labels for nutritional information on the product content to determine its suitability for a chosen weight loss diet. Individuals using milk alternatives for weight loss were equally concerned with the product ingredients as participants using milk alternatives due to vegan lifestyles or allergen avoidance diets. However, they

ascribed greater importance to the nutritional content, particularly fat and carbohydrate content, of milk alternatives.

6.2.2.4 *Fitness*

Participants considering using milk alternatives for protein supplementation after exercise placed greater emphasis on the protein content of milk alternatives. High protein milk alternatives were considered functional for the purpose *'to fill up with proteins to prevent [one's] body from losing protein when [one] have just exercised'*.

6.2.2.5 *Fit for Intended Purpose*

Finally, participants also considered a product's suitability for a specific purpose to be important in product selection. This was often based on the sensory attributes of the product when used in a specific manner. Some milk alternatives were considered to be better suited for cooking or baking purposes, while others would be considered more suitable for use in hot beverages, drinking per glass, or for use with smoothies, porridge or cereals. The intended purpose of the product was a prominent point of consideration at the point of purchase.

6.2.3 **Sub-theme 2c: Importance of Acquired Product Properties**

6.2.3.1 *Price*

The majority of participants indicated that the price would be an important consideration in their decision to purchase milk alternatives. When asked what would be considered important at the point of purchase, responses included: *'is the price reasonable?'*; *'it sounds terrible, but it will be price'*; *'price is still important to me'*; *'the price plays a big role'*; *'cost'*; *'I usually see which one is the cheapest'*; and *'affordability'*. The price of milk alternatives was evaluated utilising the price of cow milk as benchmark, with consumers indicating that they would consider purchasing milk alternatives *'if the price is competitive compared to dairy milk'*. However, the cost was also measured by their personal ability to afford the products, with several participants indicating that they need to consider whether a product would be affordable within their budget. Several participants indicated that *'South Africans in general ... are very price conscious'* and *'if these alternative products are very expensive, then people [would] just avoid them'*. Affordability was a major consideration and often a limiting factor, in South Africans' ability to use milk alternatives, with some participants stating that even if the products were available, *'it will still be a small group who can actually afford to buy these products'*. The price of some milk alternatives, such as almond milk, led to unfavourable product evaluations, due to their perceived high costs. The price of the product was often considered in relation to the value it presented to the participant. For example, some participants indicated that they liked lactose-free milk but considered it an unnecessary expense to pay more for lactose-free milk than for *'normal'* cow milk, since they did not need

it for health purposes. Participants often mentioned the value ascribed to a product, asking *'Is it worthwhile to buy such a product?'* However, a high perceived price did not always lead to unfavourable product evaluation among participants. Some participants indicated that while they *'acknowledge that [milk alternatives] are not cheap products'* they were *'still prepared to buy them ... because of health'*. These participants expressed that health considerations exceeded price considerations in their evaluation criteria, but that product costs still needed to match their budget. It would become more an evaluation of value to them, rather than a question of cost at the point of purchase. Occasionally, a low price also led to unfavourable participant evaluation. The dairy-based milk blend was perceived to be *'cheaper'*, however, its sensory properties led some participants to believe that it was an inferior product to normal cow milk. As one participant expressed, quality and sensory characteristics were considered important at the point of purchase and that *'cheaper products are not necessarily better'*.

6.2.3.2 Availability

Participants often mentioned availability to be important at the point of purchase along with the product price: *'If it is in the shop and it is reasonable, I would use it'*. The concept of availability was found to encompass more than just the physical availability of milk alternatives when shaping participant evaluations of availability. Participants indicated the importance of the variety of products available to suit different needs, such as health needs, vegan lifestyle needs and milk allergy needs. Participants with vegan lifestyles indicated the need for increased availability in the variety of plant-based milk alternative options. While individuals with lactose intolerance and cow milk allergies indicated that availability was limited in retail outlets and often restricted to soy milk in the past, they indicated that the accessibility and variety of milk alternatives available had improved recently. The availability of a variety of options was considered to make a lifestyle affected by allergies simpler to manage. Availability of suitable milk alternatives was still considered to be problematic in small towns where individuals were limited to the products stocked by local retailers, as well as in holiday destinations, where participants were not familiar with retailers in the area that would stock suitable milk alternatives, leading to challenges in meal planning and time spent searching for milk alternatives. In urban areas, participants indicated the importance of availability of products in the retail outlets which they frequented for normal grocery shopping, as participants indicated they *'cannot drive to [several] shops to find suitable products'*.

6.2.3.3 Sampling

Apart from the importance participants ascribed to availability in product selection, several participants also mentioned that the availability of product samples prior to purchase would support them in the selection of products that would otherwise just be avoided due to unfamiliarity. Once again, participants mentioned that the sensory attributes of products were

considered a deciding factor in their choice to consume milk alternatives. Due to the perceived high cost, participants indicated that they were hesitant to purchase *'the whole box'* to *'just taste it and decide whether you like it or not'*. Participants expressed a preference for small sample packs to support their evaluation of alternatives and consequently, their decision-making when purchasing alternatives for the first time.

6.2.3.4 *Pack Size*

Evaluation criteria related to the concept of availability were also closely linked to convenient pack sizes of milk alternatives. When discussing availability, several participants expanded beyond the mere availability of a product and mentioned the importance of suitable pack sizes in their intention to purchase milk alternatives. With plant-based milk alternatives, participants mentioned that the quantity required for their intended purpose played an important role in product selection. Several participants mentioned that plant-based milk alternatives were only available in one-litre pack sizes, but that they used smaller quantities of the product at a time than they would of cow milk. As mentioned by one participant, *'My perplexity with that is that it is usually a litre and, in my recipes, I never need a whole litre'*. This was considered to lead to product wastage, since they indicated that plant-based milk alternatives did not last as long as cow milk after opening and that it was not possible to freeze unused plant-based milk alternatives for later use. Apart from the desire not to waste a food product, participants also considered these products to be expensive, leading to a loss of unused product being considered economically undesirable. Several participants mentioned that a lack of availability of smaller pack sizes in the plant-based milk alternative product category led to discontinuation of product use, or at least to extensive consideration and caution prior to purchasing and opening a container. These participants indicated that they would purchase plant-based milk alternatives more frequently if smaller, more convenient pack sizes were available. Among participants using UHT dairy-based milk alternatives, the need was expressed for the availability of bulk options for lactose-free milk, such as the UHT six-pack observed in the market for UHT cow milk, to increase affordability and convenience for families. However, the importance of sturdy bulk packaging which does not tear or fall apart once picked up in the evaluation of options was also mentioned. In general, participants expressed that a convenient container fitting well in the fridge, with a lid designed to pour easily, without spillage, would also be considered during their evaluation and would influence the specific product selected at the point of purchase.

6.2.3.5 *Packaging and Labelling*

Participants mentioned several aspects of the packaging which played an important role in product selection. Participants using, or considering using, milk alternatives frequently mentioned that they find it important for the nutritional information and product ingredients to

be indicated on the packaging. They indicated that they particularly read the labels in search of this information prior to product purchases and based on this information would *'look at the available products and compare them'*. The manner in which participants evaluated packaging, shaping their perception of what constitutes attractive packaging varied greatly and would be recommended for further research. Concepts that were mentioned included a preference for environmentally friendly packaging; neutral packaging creating an organic perception, rather than displaying the actual nuts, grain or plant the product is produced from; packaging with a specific natural style or story (creating an environmental- or farm-emotional connection); and packaging with realistic images clearly displaying the nut, grain or plant serving as basis of the product for quick reference (see Figure 6.3 for typical labels depicting this concept, as found in the South African retail space).

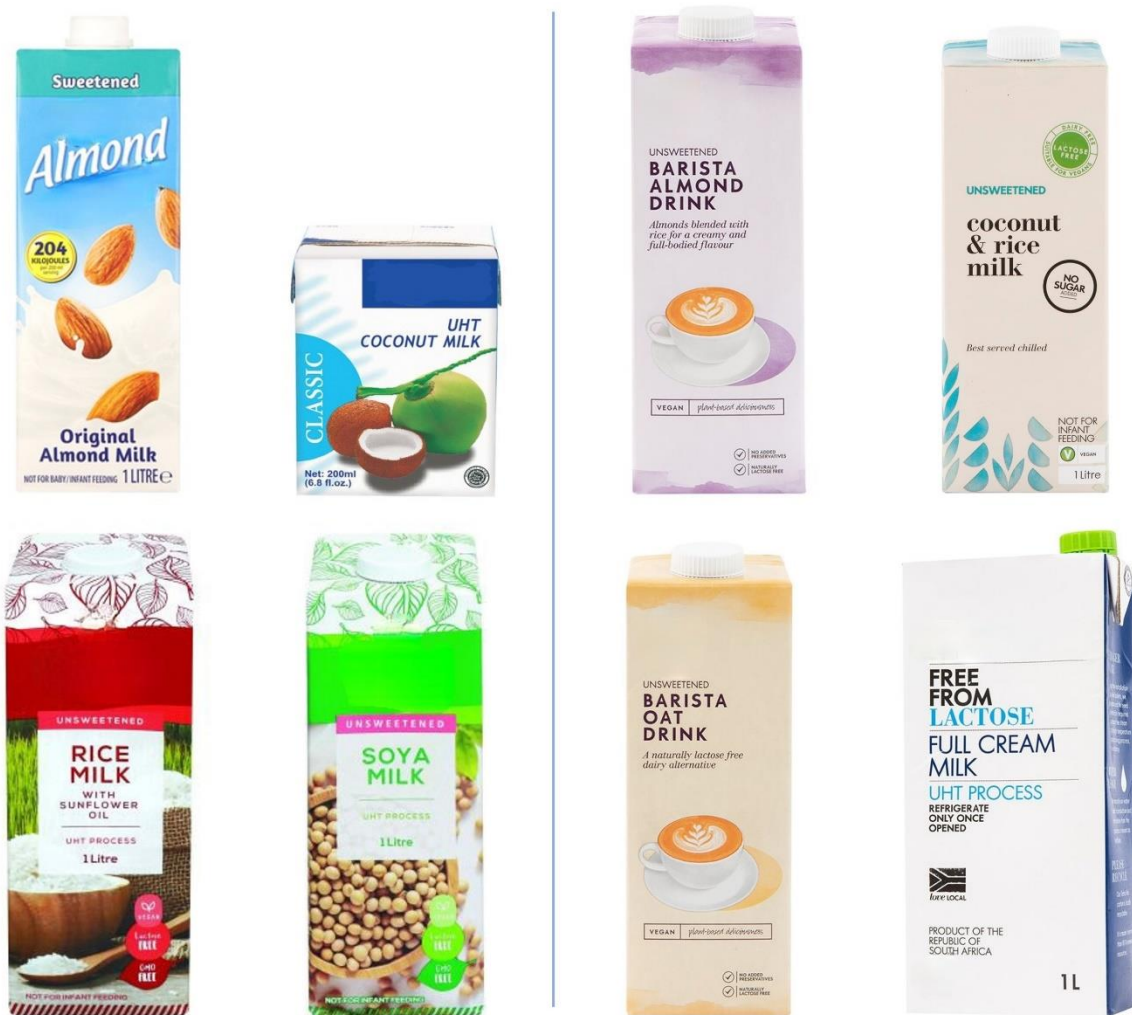


Figure 6.3: Realistic vs Neutral Packaging (Blue Diamond Growers, 2022c; Lifestyle Foods, 2022c; Lifestyle Foods, 2022d; Pulau Sambu, 2022a; Woolworths, 2022a; Woolworths, 2022e; Woolworths, 2022b; Woolworths, 2022f)

Participants indicated that packaging and labelling which they found attractive would impact their choice favourably. However, they also indicated that the product price would be more important in their evaluation criteria than attractive packaging.

6.2.4 Sub-theme 2d: Importance of Promotion

Various participants expressed the need for increased knowledge and promotion of milk alternatives among South Africans.

6.2.4.1 Marketing and Recommendations

As two participants indicated, marketing for milk alternatives was evaluated to be minimal, '*I do not think ... there is actually a lot of marketing*' and '*I think if they advertise it a bit better, then we would be more inclined [to use milk alternatives]*'. Apart from general product promotion, participants indicated that active in-store marketing, such as the availability of small samples, would influence their knowledge of and inclination to use milk alternatives. Despite participants indicating that insufficient promotion of milk alternatives was observed, several participants indicated that their product selection was more strongly influenced by word-of-mouth recommendations from significant others, than by product marketing or claims on product packaging.

6.2.4.2 In-store Location

The in-store location of milk alternatives was also considered to contribute toward participants' evaluation of milk alternatives. A participant stated that '*some of the milk [alternatives are] packed with the health products and not with the milk ... you do not always go to the health products aisle*'. Since participants indicated that they considered items in the health products aisle to be more expensive, placement of milk alternatives in the health products aisle was perceived to impact their familiarity with the product category, whilst also establishing unfavourable evaluations that milk alternatives are expensive and only suitable for individuals with specific health concerns.

6.2.4.3 Familiarity

Participants often indicated that their product evaluation at the point of purchase was impacted by familiarity. Several participants supported this finding through statements such as: '*familiarity for me is the overriding thing ... I have got to know the milk*'; '*you ... grab the familiar*'; and '*I usually go for what I know*'. Brand familiarity was often associated with the sensory characteristics, quality and trusted production methods by participants. Some participants indicated that their purchases would be brand specific because they '*feel it tastes nicer*' and that '*some of the brands do not taste really good*'. Others indicated that they would pay slightly more for quality and better shelf-life that they are familiar with, while some participants would prefer certain brands based on the trust the brand built over years in the

consumer mind related to their production methods, transparency and quality. These participants indicated that there were also specific brands which they did not buy. Participants who felt less strongly about brand purchases often indicated that they preferred some brands over others, but that their actual selection at the point of purchase would be impacted more by their evaluation of price than their evaluation of brand. However, some level of familiarity with the brand purchased was still considered to be important, *'I am not terribly brand-loyal ... but I do need to know them'*. While some participants indicated that they did not purchase higher-cost brands, but would purchase the in-house brand of retailers due to cost considerations, it was still important to them that they should be familiar with the quality and sensory characteristics of the in-house brand selected. These participants did not consider themselves to be brand conscious but had specific quality expectations of products purchased.

6.2.4.4 Label Claims

Findings related to the evaluation of claims made on product packaging as part of product promotion presented different participant perspectives (see Figure 6.4 for typical claims found on South African products).

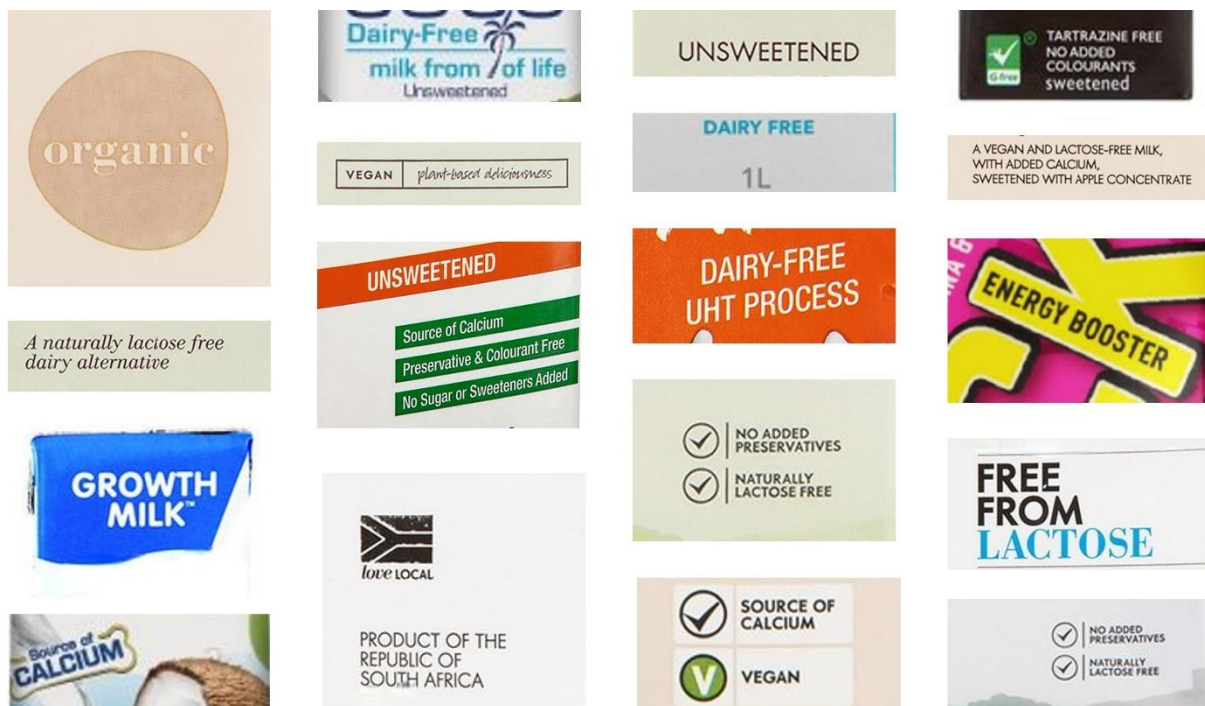


Figure 6.4: Label Claims (PriceCheck, 2022b; Pulau Sambu, 2022b; Shop First Choice S.A., 2022; SPAR, 2022f; Woolworths, 2022g; Woolworths, 2022c; Woolworths, 2022f; Woolworths, 2022k; First Choice, 2020; Earth&Co, 2019b)

Some participants considered product safety claims, such as hormone-free, GMO-free, preservative-free, additive-free, antibiotic-free and organic, health claims, such as immune-boosting and enriched, environmental claims, such as environmentally friendly production

practices or packaging, insect-friendly and natural and social claims, such as locally sourced and fair trade, desirable and favourably influential on their evaluation of products. Participants finding safety and environmental claims desirable expressed concerns about the safety of highly processed or mass-produced foods and the impact of food production processes on the environment. Individuals finding health claims to be desirable often had specific health needs, or children in the household who they believed could benefit from health claims. Several participants stated that a fair trade, or *'farmer-friendly'*, claim would favourably influence their evaluation of a product due to their concern for the economic and safety challenges faced by local farmers. A few of these participants indicated that they would be willing to pay a premium for such claims, but that it would still need to fit into their budget. Participants indicating a willingness to pay a premium for such claims did indicate a preference for information on evidence and a clear definition of what is claimed on the product label, *'I actually want to be able to see that, more than just them putting it on a little label'* and indicated that they would actively research such claims. Others indicated that while they view these claims favourably, they would not be willing, or able, to pay considerably more for products with such claims.

In contrast, many participants expressed scepticism on product label claims either because they doubted the legitimacy of such claims actually being implemented in practice, or because they were sceptical of the value added by such claims. Participants made statements such as: *'I just don't believe it ... so I do not even give attention to it'*; *'it does not influence my purchase intention, instead, it would make me frown'*; *'I'm sceptical of such things'*; *'claims cannot always be trusted'*; *'I do not think that I will look at those a lot because from what I have seen there are many ways of going around these things'*; *'you can say things which are actually misleading'*; and *'I will read the label very carefully because I also know that it can say it is enriched when hardly anything is added to it'*, indicating their distrust that such claims are legitimately practised or enforced. Claims were rather evaluated as *'selling points'*; *'selling gimmicks'*, or *'marketing'* and *'the majority thereof not true'*. These participants also expressed cynicism about whether the claims on products contributed actual value to the product, as observed from statements such as, *'I'm not impressed with things like organic ... it should have an impact on product quality, but does it really?'*; *'GMO is not necessarily a bad thing ... some products need to be modified [for increased availability]'*; *'when it comes to the other milks ... I am a bit of a sceptic ... they are being advertised as this and that so I am sceptical of various health benefits'*; and *'it might be good for your growth ... how do I know?'* These participants indicated that they had a pragmatic approach and did not pay too much attention to product claims. They indicated that they *'will not pay more for something like that'*. A few participants expressed indifference towards product claims, *'when I go to the shop, I just take*

the milk off the shelf ... it is really something that I am not too worried about, indicating that claims do not influence their purchase intention.

6.2.4.5 Sustainability

Sustainable production practices were considered to be important evaluation criteria by some participants. One participant indicated that the high level of water consumption to grow almonds was unsustainable, rendering almond milk to be perceived as a product with a detrimental environmental impact. Other participants indicated their concern about the environmental impact of dairy farms, especially as production practices intensify to meet the demand of growing populations. These participants expected sustainable production practices in South Africa to become increasingly important in the future, leading to the need for dairies and farms to adapt and re-align the practices. Some participants indicated that they considered plant-based milk alternatives to be more sustainable, while others indicated that they believed *'there are awesome [dairy] products [available] ... that ... follow sustainable farming practices'*. Again, participants indicated that they *'need to actually find hard evidence'* of sustainable practices followed with such claims.

6.2.4.6 Animal Welfare

Animal welfare was considered an important consideration by several participants. Some participants indicated that they would purchase dairy brands with good animal welfare reputations supporting such label claims. However, participants following vegan lifestyles often indicated animal welfare as the main reason behind dairy avoidance and use of plant-based milk alternatives. Vegan participants often stated, *'I do not want to support animal agriculture'* and expressed concerns about how cows are treated in milk production systems. Other participants, who did consume dairy, indicated that they did not necessarily consider undesirable media messages of poor animal welfare practices in other countries to necessarily be true or applicable within the South African dairy industry.

6.2.4.7 Origin

Participants considered knowledge of the origin of milk alternatives to be important in their evaluation of alternatives and indicated the importance that the country of origin should be indicated on product packaging. Participants indicated that they *'would rather choose a South African product'* since they *'want to know where it comes from'* and it is important to them that products are locally sourced. The preference for local products was based on various aspects considered important to participants. Firstly, products sourced locally were considered more environmentally sustainable. As one participant indicated:

I do tend to look at the country of origin because I do not think it is quite appropriate for us to import milk ... just from a carbon footprint point of view.

Secondly, participants indicated that they *'would check that it is actually made in South Africa'* and would particularly avoid using imported milk alternatives of Asian origin, since they did not trust food safety standards, or believe that there is sufficient control of production methods and ingredients added to products of Asian origin. Participants indicated that they were familiar with the food safety reputation of local brands, South African production methods and regulations and therefore preferred to purchase milk alternatives of South African origin. Thirdly, participants evaluated imported products as *'quite expensive'*, impacting their willingness to purchase imported products. Finally, participants also indicated that they *'will try to buy South African products'* because they feel *'it is the right thing to do'*. Some participants indicated that they would like to see more products branded by the farm or community of origin since they liked *'to support the local farmers'* and communities, but not if it impacted the price considerably. Others felt more strongly about local farmer support as a matter of principle, as observed from statements such as *'It is not easy being a farmer in this country'*; *'I really feel that they are the backbone of our economy in many ways'*; and *'being able to support South African farmers, I think it is very important'*. Thus, including the country of origin on product packaging was considered essential, while the inclusion of farm or community of origin branding was considered desirable by participants.

6.2.5 Sub-theme 2e: Evaluation of Products and Categories

While the previous sections presented findings on attributes considered to be important to participants in their evaluation of a product, the next sections will present the findings related to participants' evaluation of UHT milk alternatives as a product category, the UHT plant-based milk alternatives product category and the UHT dairy-based milk alternatives product category. The findings of this section were derived mostly from the questions stated in the second objective of the operationalisation of the research in Chapter 4. However, where participants expanded their discussion from their beliefs of a product to the evaluation of it, the questions presented under the first objective often presented overlapping data also relevant to findings in this section. Participants were typically presented with words, such as *coconut milk*, *soy milk* and *lactose-free milk*, in the discussion combined with an image of different UHT milk alternatives represented in the South African retail market (Figure 6.5). Brand names and logos were removed from all product images prior to display to participants and for any presentation of findings, to avoid prejudiced discussions linked to specific brands in the South African market.

Participants may or may not have had past experiences with the products or some of the products on which to base their evaluation thereof. Where participants had past experience with a product, they often expanded extensively on their evaluation of the product. Where participants did not have past experience with a product, they would often mention their lack

of familiarity with the product and would provide their subjective evaluation of the product based on what they believed and expected the product to be like. Both objective and subjective evaluations were considered useful for the study, since they influenced how the participant perceived the product when observed on the retail shelf and their likelihood to purchase the product.



Figure 6.5: UHT Milk Alternatives Image (Alpro, 2022b; Blue Diamond Growers, 2022b; Checkers, 2022a; Clover S.A., 2022c; Clover S.A., 2022e; Lactalis South Africa, 2022b; PriceCheck, 2022a; Shop First Choice S.A., 2022; SPAR, 2022c; SPAR, 2022d; Waitrose & Partners, 2022; Wellness Warehouse, 2022c; Woolworths, 2022l; First Grade International Ltd., 2019)

The findings presented in this section aim to comprehensively provide the details of insights uncovered during the research process. However, it should be noted that participants who evaluated a product unfavourably may have been more descriptive of the reasons why they evaluated a product unfavourably than those who evaluated a product favourably. The inclusion of more detailed descriptions of unfavourable product or category evaluations should thus not be interpreted as highly unfavourable evaluations of the product in general, but rather as an indicator where products do not meet all participant's needs or expectations, in combination with the possibility that participants who evaluated a product favourably expanded less on their descriptions and often merely indicated that they liked the product.

6.2.5.1 UHT Milk Alternative Product Category

In general, participants' evaluation of the UHT milk alternative category ranged widely from highly favourable, indifferent, to highly unfavourable. Favourable evaluations of UHT milk alternatives were based on the extended shelf-life associated with UHT products, with various participants referring to UHT products as *'long-life'* products and its convenience. Several participants indicated favourable evaluations of the product category, indicating that available products do meet their requirements. Milk alternatives were also favourably evaluated as products that are useful for individuals with food allergies. Participants evaluating the product category favourably indicated their intention to use such products. Undecided evaluations of the product category were often linked to a lack of familiarity among some participants with milk alternatives, as one participant indicated: *'I did not know much about it, that is the fact'*. Unfavourable evaluations of the product category were often based on the belief that UHT milk alternatives were highly processed and unnatural, or considered *'not real milk'*. Unfavourable evaluations of the product category were also based on some participants' lack of familiarity with the product category leading to the belief that milk alternatives were exotic or strange. Participants who evaluated the product category unfavourably, indicated a preference for *'normal'* cow milk, or to go without milk rather than use alternatives if the evaluation was based on disagreeable past experiences.

One distinct finding from the data was the frequent indication by participants that their willingness to consume milk alternatives was particularly linked to their evaluation of the sensory properties of products, indicating the importance of sensory properties in purchase intentions. Participants frequently indicated that the unfavourable evaluation of the sensory attributes of the milk alternative product category would lead to the use of cow milk, or no repeated purchases: *'I do not like the taste of alternatives ... I drink ... normal ... cow milk'*; and *'I always thought [milk alternatives] taste bad ... so I will simply not purchase it again'*. Unfavourable sensory descriptions linked to UHT milk alternatives included descriptions that the product category was *'watery, tasteless and not enjoyable'*, that it altered the taste and texture of hot beverages and had an unpleasant *'aftertaste'*. However, it was also indicated that the sensory properties of products in the milk alternative category improved slightly with refrigeration. Participants using milk alternatives due to cow milk allergies indicated the need to be realistic in the evaluation of the sensory characteristics of milk alternatives. One participant indicated the perceived tendency to *'go into the experience looking for differences'* and that one is *'always trying to figure out how it is different from ordinary [cow] milk'* while one is satisfied with the sensory properties of milk alternatives.

6.2.5.2 UHT Plant-based Milk Alternatives

Participants expressed a variety of evaluations of plant-based milk alternatives as a category. These findings will only be mentioned briefly in this section, since many of these evaluations were also expressed toward specific plant-based milk alternatives as presented in the following sections. Findings on favourable evaluations of plant-based milk alternatives include statements that some participants believe milk alternatives to be healthier and safer than cow milk and that nut-based milk contain healthy fats. It was also favourably expressed to present a variety of products suitable for vegans. One participant expressed the rather nonaligned evaluation that the participant *'did not see it as milk'* but rather as *'something you use in cooking'*. Unfavourable evaluations of the plant-based category included statements that it was perceived to be expensive, not suitable for use in hot beverages and containing too many sweeteners, sugar or taste-enhancing additives. Some participants expressed unfavourable evaluations of the sensory characteristics of plant-based milk alternatives, indicating an off-putting colour, a watery texture and an artificial taste, again indicating that *'it is definitely not milk'*. During the research, a UHT liquid coffee creamer product was launched in the South African market, containing palm oil and available in vanilla or hazelnut flavours. The researcher mentioned it occasionally during mini-focus group discussions and interviews to establish participants' evaluation of such a product. However, very few participants have seen the product in the retail space, limiting any real information gathered and mentioned their concern to utilise palm oil products based on health and environmental concerns. Before the conclusion of the research, the product was discontinued. Consequently, no findings were presented on the UHT liquid coffee creamer other than the consumer concern mentioned about using palm oil. The findings on participants' evaluation of specific plant-based milk alternatives are presented in the following sections, whereafter findings on dairy-based milk alternatives are presented.

6.2.5.3 Almond Milk

The majority of participants were familiar with, or have at least seen, almond milk in the South African retail space (Figure 6.6).

While the findings cannot be quantified representatively to the South African consumer from the data of the mini-focus groups and semi-structured interviews in the study, it was noted that more participants expressed a favourable than unfavourable evaluation of almond milk. Almond milk was often mentioned as being a suitable milk substitute for individuals following a low-carbohydrate, weight-loss diet, as several participants stated, *'you want to try it when you are on a diet'*; and *'almond milk ... is a good alternative for some of the diets'*, or in food preparation and baking for individuals who are vegan or allergic to cow milk.



Figure 6.6: Almond Milk (Alpro, 2022a; Blue Diamond Growers, 2022b; Blue Diamond Growers, 2022a; Blue Diamond Growers, 2022c; SPAR, 2022a; Woolworths, 2022h; Woolworths, 2022a; Earth&Co, 2019a)

While almond milk was considered useful by participants allergic to cow milk, several participants indicated that an allergy to nuts prevented them from using almond milk. Participants who followed cow milk avoidance diets, whether due to allergies, weight concerns or vegan lifestyles, often indicated that they used a combination of plant-based milk alternatives. The specific product selected was often based on the purpose, since all plant-based milk was not considered equally suitable for all purposes. Participants indicated that almond milk had an intense ‘nutty’ taste. This was considered favourable by those who liked nuts and unfavourable by participants who didn’t like nuts. Due to its taste being described as ‘overwhelming’, participants indicated that one could only use small volumes of almond milk at a time. The ‘rich, nutty taste’ of almond milk was considered suitable for use with breakfast cereals or smoothies, however, as one participant indicated ‘then you eat it cold’. Several participants indicated that the sensory characteristics of almond milk were perceived to be best when it was cold: ‘almond milk ... was best to use it when it was ... refrigerated’. Most participants, however, did not consider the sensory properties of almond milk suitable to drink as a glass of milk or in hot beverages. Several participants indicated unfavourable evaluations of the use of almond milk in hot beverages based on changing sensory properties with heat, as seen from the following statements: ‘As soon as you put the almond milk into a hot liquid then it turns like sour milk ... [like] milk that is old’; ‘almond milk does not work in coffee at all ... it makes the coffee taste like soil’. While the majority of participants did not consider almond milk suitable for use in hot beverages, some participants did consider it to be better than other

plant-based milk alternatives and consequently used it in hot beverages. However, some participants indicated that they rather dropped all milk alternatives from their hot beverages due to the disappointing sensory properties in hot beverages and drank their hot beverages 'black'. One participant indicated a more favourable evaluation of the use of almond milk in cappuccino as an occasional treat at a local coffee shop due to its nutty taste, but considered it to be too rich for daily use. Participants indicated that there was a 'barista almond milk' available in the South African market for use with hot beverages. However, one participant indicated that *'the fat lies so thick at the surface inside the box, the milk cannot be poured ... and you do not get the fat mixed into the milk again'*. The participant further indicated, like several others, that the fat globules *'remains floating on top'* in hot beverages and it *'is not a pleasant experience'*. Participants indicated that almond milk was less creamy than cow milk but was *'absolutely delicious'* when used in food preparation. When used as a milk substitute, almond milk was favourably evaluated and perceived to *'bring everything together'* in baking. Several participants indicated that they would use almond milk in cooking and baking, but not for drinking. One unfavourable aspect frequently mentioned was the short shelf life of UHT almond milk once opened, with participants indicating that they cannot use it quickly enough before it goes off. Participants indicated that the almond milk thickens a day or two after opening and that they must then discard it. Other participants indicated that they *'tried to freeze it ... and it did not work at all'*. The short shelf life once opened, combined with the inability to freeze almond milk often led to product loss, which participants considered wasteful and expensive. Thus, the need for smaller pack sizes was expressed. Several participants considered almond milk to be expensive, especially considering the low actual percentage of the base product, as one participant stated, it is *'only 6% almonds'*. The perceived high price rendered it difficult to purchase as milk substitute for some participants who considered it to be *'quite more expensive than normal milk'*. Participants' evaluation of the sensory properties of almond milk varied widely. Participants indicated that the sensory characteristics depended on the brand used and that *'some of the brands do not taste really good'*. Several participants who experimented with almond milk described it as having *'a bad aftertaste'*, *'a plant-like taste and smell'*, *'a terrible taste'*, *'a plastic taste'*, *'no substance'* and *'no mouthfeel in tea'*. It was further described as *'watery'*, *'too sweet'*, *'tasting thinner than water in tea'*, *'smelling like baby food'*, lacking a *'creamy mouthfeel'* and *'curdling in tea'*. These participants indicated that they tried almond milk and that *'it tasted very bad'*, they *'didn't like it'*, or that it was *'not as great as expected'*. They indicated that *'it is not milk ... [it] is a plant product'* and that they *'would not use it again'*. On the contrary, participants who relied on plant-based milk alternatives due to cow milk allergies and vegan lifestyles described almond milk more favourably as one of the preferred plant-based milk alternatives. One participant perceived almond milk to be the closest to dairy milk texture. Other favourable statements on the sensory properties of almond

milk included: *'almond milk is nice'*; *'it tastes lovely ... I love it'*; *'unsweetened almond [milk] ... I am very happy with the product'*; and *'I am crazy about nuts ... that texture and aroma when you open it ... the whole concept of nut milk'*. Again, the sensory properties were indicated to vary according to brand with one participant stating, *'I am now using the [brand] almond milk just because it tastes ... it is really delicious'*. Other evaluations of almond milk included the perceptions of some participants that almond milk *'is probably a healthier alternative'* since they *'associate ... almond milk with an active lifestyle'* as sportsmen and athletes are often observed using almond milk. Finally, some participants considered UHT almond milk too processed, unnatural and with too many additives and indicated that they did like almond milk, but would prefer fresh, homemade almond milk perceived to taste better and to be healthier.

6.2.5.4 Soy Milk

Participants' evaluation of soy milk was found to be rather unfavourable in general. Participants indicated that several soy milk products are available in the South African retail market and that soy milk used to be the only milk alternative available in the past for individuals who were allergic to cow milk or followed vegan diets (see Figure 6.7 for typical images of soy milk in the South African market).

Many participants indicated that this contributed to a very unfavourable evaluation of soy milk, with the thought of soy being off-putting. Soy milk seemed to gain a rather unfavourable image among consumers in the last few years with participants indicating that *'soy is not for people'*; *'it is not actually good for you'*; and *'the name 'soy' is off-putting'*. Participants expressed concerns that the oestrogen in soy could lead to weight gain, that soy is mass-produced and may be genetically modified and therefore indicated that it should be avoided, or its consumption limited. Several participants indicated that they were *'very much against using soy'*; *'do not think it is good for my body'*; and *'I just do not think that soy is a very healthy product'*. Several participants indicated that they were allergic to soy, eliminating soy milk as a suitable alternative to cow milk. When it came to the evaluation of the sensory properties of soy milk, the majority of participants who have tasted or used soy milk in the past indicated that they *'would not use it again'*. The perceived sensory properties of soy milk were described in detail by participants.

Participants described the texture of soy milk as *'way too watery'*, *'grainy'*, *'grass-like'*, *'lacking creaminess'* and with a *'beany taste and mouthfeel'*. Several participants indicated that soy milk had an off-putting smell and beige colour. When added to hot beverages, participants indicated that it *'looks like sour milk'* and curdles, creating a *'plant-like'* taste and texture. While some participants indicated that soy milk has a *'powdered milk taste in tea'* and was not considered to be suitable for use in hot beverages or with cereal, others indicated that soy



Figure 6.7: Soy Milk (Clover S.A., 2022d; Clover S.A., 2022c; Clover S.A., 2022a; Clover S.A., 2022b; Lifestyle Foods, 2022e; Pick n Pay, 2022c; Pick n Pay, 2022a; SPAR, 2022e; SPAR, 2022f; Woolworths, 2022k; Woolworths, 2022g; Woolworths, 2022d; Woolworths, 2022m; Earth&Co, 2019d)

milk still tasted *'better ... in tea than when consumed as is'*. Soy was evaluated as having a *'baby porridge aftertaste'* and *'tasting like laboratory-created milk'*. Participants generally expressed highly unfavourable evaluations of soy milk, indicating that *'it tastes horrible'*; that they *'cannot imagine ... drinking soy milk'* and that they will never buy soy milk because they *'know it tastes bad'*. Not all participants expressed unfavourable evaluations of soy milk though. One participant indicated that it is a healthier product than cow milk and that it was recommended to the participant by medical practitioners during pregnancy. Among vegan participants, soy milk was considered useful for baking and food preparation and was particularly indicated as the preferred product for use in baking and in sauces. Participants interested in an active lifestyle indicated that soy could be useful as protein supplement for muscle recovery after workouts. Some participants using plant-based milk alternatives due to cow milk allergies considered soy more favourably, since it was usually enriched with vitamins and minerals. In comparison to other plant-based milk alternatives, these participants indicated that soy milk was *'a lot better than rice milk'* having *'less of an aftertaste'*, *'being smoother'* and considered *'the closest to normal [cow] milk'*.

6.2.5.5 Rice Milk

Unlike soy and almond milk, not many participants were familiar with the rice milk products found in the South African retail space (see Figure 6.8 for examples).



Figure 6.8: Rice Milk (Lifestyle Foods, 2022c; Woolworths, 2022j; Earth&Co, 2019b)

Rice milk was considered to be for individuals prone to allergies if *'they really couldn't use anything else'*. Consequently, many participants stated that they *'had no reason to try it'*. Some participants indicated that they expected rice milk to be *'just a lot of carbs'* with *'no nutritional value'*. Several participants indicated that rice milk was *'not in their frame of reference'*, or that they considered rice milk a *'strange'* concept since they associated rice with something that needs to be eaten and *'not ... with milk'*. Rice milk was also unfavourably considered a *'foreign'* product, associated with a *'Chinese origin'*. Participants who have used rice milk in the past described its texture as *'watery'* and *'grainy'*. Participants indicated that they found the texture and appearance of rice milk to be off-putting. It was frequently described as being *'bland'*, *'tasteless'* and *'neutral'*. Several participants indicated that it possessed a *'baby food taste'*, had an *'aftertaste'*, or *'does not taste like anything'*. Other participants indicated that it had a *'soapy taste'*, a *'brownish'* appearance and a *'clay-like'* aroma. Numerous participants stated that rice milk *'is not particularly appealing'* and that they associated rice milk with the water drained after washing or boiling rice. They indicated that *'it just was not milk'*. One participant indicated that the participant would like to try it out of curiosity, while another participant indicated that the participant enjoyed rice milk on the one occasion it was used. It was not well-defined where participants would use rice milk with some participants indicating that it is not suitable for use in hot beverages, with cereals or to drink per glass, while others indicated that it could be suitable with cereal.

6.2.5.6 Oat Milk

Many participants indicated that they *'never had any experience with oat milk'*. The lack of familiarity was further observed with some participants indicating that they wondered why



Figure 6.9: Oat Milk (Le Famished Cat, 2022; Lifestyle Foods, 2022b; SPAR, 2022b; Wellness Warehouse, 2022c; Wellness Warehouse, 2022a; Woolworths, 2022c; Woolworths, 2022b; Earth&Co, 2019c)

people would use oat milk (see Figure 6.9 for examples of products in the South African market) and that it would not attract their attention on the shelf.

One participant indicated an indifferent evaluation of oat milk in the following statement, *'I probably would have just passed it ... I probably would not have bought it'*. Another participant expressed the lack of a perceived need for the product, *'Why would I want to have oat milk?'* Among participants who have used or experimented with oat milk, both favourable and unfavourable evaluations of its sensory properties were indicated. Participants evaluating the sensory properties of oat milk unfavourably stated that oat milk was *'watery'* with an unpleasant *'grainy'* aroma and mouthfeel. It was described as having a *'malt-like'* taste with a mouthfeel as if *'it will turn thick in your mouth'*. Others described their sensory experiences of oat milk as *'drinking the milk left over in a bowl of [high-fibre cereal]'*, as drinking *'diluted oats'*, as *'something that one harvested and combined with water'*, or a similar experience as *'drinking water out of a glass after drinking milk out of the same glass'*. These participants stated that they *'do not like the taste at all'* and wouldn't associate oat milk with milk and that they *'did not understand the milk concept behind it'*. Participants without any experience with oat milk expected it to be *'creamy in colour'* and high in carbohydrates with an oat-like taste, smell and colour. Participants with gluten-intolerance indicated their concern for gluten

contamination in oat milk and indicated that they would not purchase oat milk unless it was clearly specified to be gluten-free. A few participants who used oat milk as part of a vegan diet stated that *'oat milk is very good'*. They used it as a substitute for cow milk over cereal, in baking and in cooking. Although adults in the household did not consume oat milk as a glass of milk, one participant indicated that the children in the household enjoyed oat milk and would drink it as a glass of milk. Oat milk piqued curiosity among some participants with some participants expressing the desire to experiment with oat milk *'just to try it'*, but not necessarily to use it regularly.

6.2.5.7 Coconut Milk

The majority of participants evaluated coconut milk (see Figure 6.10 for examples of products in the South African retail market) very favourably.



Figure 6.10: Coconut Milk (Lifestyle Foods, 2022a; Pulau Sambu, 2022b; Pulau Sambu, 2022a; Woolworths, 2022e; Woolworths, 2022i)

It was mostly associated with food preparation, rather than a milk substitute. Participants frequently indicated that they *'often use coconut milk'* in cooking. It was indicated that *'coconut milk makes dishes creamy'* and that it worked particularly well in protein dishes. The texture of coconut milk was considered *'much nicer than the texture of soy milk'*. It was evaluated favourably for the *'lovely taste and texture that it can give to ... meals'* and considered to be ideal for baking due to its inherent sweetness. Some participants particularly indicated the use of coconut milk in Indian dishes and curries to contribute a *'rich'* taste. While some participants often cooked meals with coconut milk, they noted that they *'never thought of it as a milk alternative'*, but rather as an *'ingredient'* in food preparation. Several participants indicated that they would use coconut milk for cooking, but not for drinking. When drinking coconut milk, participants described coconut milk as having *'no mouth feel'*, *'tasting thinner than water'*, *'tasting like sour yoghurt'*, having an overwhelming coconut taste and not considered very nice to drink as is. Other participants indicated that *'coconut milk on its own as sort of a beverage is quite nice'* but that they would be sceptical to try it in hot beverages. The appearance of

coconut milk in hot beverages was considered unattractive and *'watery'*. Coconut milk was not considered to be suitable for use with cereals since its flavour was considered too prominent to combine with breakfast cereal. Several participants mentioned that they were allergic to coconut milk and consequently could not use it. Other participants indicated a concern about the fat content of coconut milk, as well as its sweetness, which was not considered ideal for weight management. Some participants favourably associated coconut milk with exotic island cuisine, fruit smoothies, or a treat with positive childhood memories. The majority of participants evaluated coconut milk favourably, especially if used in food preparation. However, it was not necessarily considered to be a suitable substitute for cow milk.

6.2.5.8 Cashew Milk

The majority of participants were not familiar with cashew milk, even though it is available in the South African market (see Figure 6.11 for examples).



Figure 6.11: Cashew Milk (Waitrose & Partners, 2022; Wellness Warehouse, 2022b)

Participants indicated that their expectations of cashew milk would be that it is *'rich'*, *'nutty'*, *'too sweet'* and that it *'will not taste nice'*. Subjective evaluations of cashew milk were rather undecided, with participants believing it could be suitable for cooking, but not for drinking. Some participants were slightly suspicious of cashew milk with the concern that it could be similar to soy milk. One participant also indicated that cashew milk *'is ... basically ... the nuts or the actual plant material, but the diluted flavours'* and consequently considered it expensive for a diluted product. Participants did not believe that cashew milk presented value for money. The curiosity from participants regarding cashew milk varied from participants who wanted to experiment with cashew milk, to those who *'would not necessarily buy it'*.

6.2.5.9 UHT Dairy-based Milk Alternatives

While plant-based milk alternatives immediately came to mind for participants when mentioning *'milk alternatives'*, the product category also contains several dairy-based milk alternatives available in the South African retail market. Some participants mentioned

confusion regarding the positioning of dairy-based milk alternatives, since it is not considered suitable for individuals allergic to cow milk or following a vegan diet. Several participants indicated that they would always prefer dairy-based products, which were considered beneficial for their health and served as a source of calcium. Some participants questioned the value presented by UHT products *'because it is so heat-treated'*, leading to a perceived loss of nutrients during heat treatment and was considered *'less healthy than normal milk'*. UHT milk was often referred to as *'long-life milk'* due to its long shelf life. While participants with a preference for dairy milk indicated that they *'could switch easier'* to dairy-based milk alternatives since it was more familiar, participants with cow milk allergies and vegan lifestyles indicated that none of the dairy-based milk alternatives would be suitable for them to use. The following sections present more detailed findings on participants' evaluation of the dairy-based milk alternatives available in the South African market.

6.2.5.10 Lactose-Free Milk

Participants mostly evaluated lactose-free milk (see Figure 6.12 for examples of South African products) favourably but associated it with the specific purpose for individuals with lactose intolerance.



Figure 6.12: Lactose-Free Milk (Clover S.A., 2022e; Lactalis South Africa, 2022c; Lactalis South Africa, 2022d; Woolworths, 2022f)

Regardless of whether they evaluated lactose-free milk favourably or unfavourably, individuals who did not suffer from lactose intolerance indicated that they would not use it since it was *'unnecessary'*. Thus, reiterating the belief that it was only for individuals who would use it for medical reasons. Many participants considered it *'close enough to normal milk'* due to its dairy base. Lactose-free milk was indicated to work well as a substitute with no difference detected in hot beverages: *'I could not actually tell the difference between the coffee when having full cream or using this alternative'*; and *'If you did not know you put it in [hot beverages], you would not taste the difference'*. Several participants considered it to *'basically be normal milk'*

but having a space in the market to accommodate individuals with lactose intolerance. It was evaluated favourably if used for this purpose. Some participants noted their concern that consumers occasionally confuse milk allergies and lactose intolerance and that lactose-free milk was still dairy-based and should not be confused with plant-based products suitable for individuals allergic to cow milk. Several participants indicated that the lactose-free milk worked well for individuals in their household who had lactose intolerance and evaluated it favourably for its health benefits. The sensory characteristics of lactose-free milk were described as *'creamy'*, *'sweet'*, *'rich'*, *'smelling good'* and being *'similar to evaporated milk'*. While most participants evaluated lactose-free favourably, some found it *'too creamy'*, *'too sweet'*, or having an *'off-putting orange-brown colour'*. While lactose-free milk was considered expensive, participants indicated that they would use it, if it were affordable and closer to the price of normal cow milk. Lactose-free milk was indicated to work well in cereal and hot beverages, particularly in tea. The fat content of lactose-free milk impacted participant evaluations. Several participants indicated a preference for low-fat over full cream lactose-free milk, while a few expressed their desire for a fat-free lactose-free option to be introduced to the market.

6.2.5.11 *Functional, Enriched and Fortified Milk Alternatives*

Several UHT dairy-based milk alternatives are available in the South African retail market, ranging from fortified and enriched milk alternatives marketed as promoting growth and improved immunity in children, high-protein flavoured milk promoted for recovery after exercise and milk with additives such as caffeine, taurine and guarana considered to be functional to increase energy levels after consumption. Several participants indicated unfavourable evaluations of these types of UHT milk alternatives, describing it as *'unnecessary'* and *'gimmicks'*. Participants associated enriched and fortified milk available in the South African retail space (see Figure 6.13 for examples), also known as *'growth milk'*, with toddlers and children; while enriched milk was considered to be normal cow milk with minimal additions which *'just seem to be more expensive'*.

Participants indicated suspicion of the product content, leading to avoidance of this product category since they did not know *'what kind of weird things did they put in there'* and *'what is safe to give to children and what is in that growth milk?'* Participants indicated a mistrust of claims versus the real benefits derived from these products.

They described the sensory characteristics of enriched milk as *'too creamy'*; *'having a UHT taste'*; *'leaving a film in one's mouth'*; *'very sweet'*; *'brownish in colour'*; and warned against the expectation of finding a milk-like sensory experience. Participants who evaluated these products favourably usually had young children in the household and considered the products



Figure 6.13: Enriched and Fortified Milk (Checkers, 2022b; Lactalis South Africa, 2022b; Lactalis South Africa, 2022a; PriceCheck, 2022b; PriceCheck, 2022a)

great to support children’s growth and immune systems to prevent or recover from illness. These participants indicated that it ‘*tastes good*’ but was ‘*just normal milk*’. Its sensory properties were described as having a ‘*creamy*’ and ‘*velvety*’ texture, a ‘*sweet*’, ‘*rich*’ and ‘*evaporated milk-like taste*’; with a pleasant aroma and with a milk-like appearance which was not ‘*pale*’. It was considered to work well in hot beverages and for any purpose as milk replacement, but it was considered to be best to drink as a glass of milk. Participants expressed highly unfavourable evaluations of dairy-based energy drinks available in the South African market (see example in Figure 6.14), containing additives such as caffeine, guarana and taurine, with the indication that it is a gimmick, unnatural and with too many additives.



Figure 6.14: Functional Milk – Energy Drink (First Choice, 2020)

Participants did not favour the concept of a dairy-based energy beverage. In contrast, several participants expressed favourable evaluations of high-protein milk alternatives in the South African market (see Figure 6.15 for examples), which was considered to be a good recovery drink after strenuous exercise.

These participants did not consider it a product to be used regularly as a milk replacement, but rather as a functional product to be used occasionally for a specific purpose. While several flavours of high-protein milk were available in the South African market during the time of the



Figure 6.15: Functional Milk - High Protein Sports Recovery (First Choice Dairy, 2022)

research, the majority of participants associated chocolate-flavoured high-protein milk with the perceived benefits of a sports recovery beverage to reduce muscle cramps. As one participant mentioned, *'chocolate milk, or chocolate milk-like-products, are an excellent post-run or post-race recovery drink'*. Participants indicating unfavourable evaluations of high-protein milk alternatives considered the added sugar to be unhealthy and questioned whether the claimed benefits were actually researched, leading to scepticism of the actual value of the product and describing it as a *'notion'*. The sensory characteristics of high-protein milk were described as *'nice and creamy'*, *'rich'*, *'tasting like milkshake'*, *'having a pleasant aroma'* and *'very nice'*. However, some participants also described it as *'too creamy'*, *'too sweet'*, *'thick'*, *'having an artificial taste'*, *'sticky in mouth'*, *'tasting synthetic'* and having *'a very protein-like, thick taste'*. One participant indicated that it *'tasted like drinking yoghurt'* but was considered to be *'unpleasant as a milk'*. Few participants indicated indifferent evaluations of this product category of enriched, fortified or functional dairy-based milk alternatives. Participant attitudes were either very favourable towards a product which they considered useful in their personal circumstances or very unfavourable towards a category which they considered a fad and unnatural or highly processed.

6.2.5.12 Dairy Blend Milk

Very few participants evaluated dairy blend milk alternatives found in the South African market favourably (see example in Figure 6.16).

Many participants questioned why one would want to use a dairy blend, indicating scepticism and no perceived need for it. Others expressed curiosity about the use of a dairy blend and indicated that they assumed it could work in baking.



Figure 6.16: Dairy Blend Milk (Checkers, 2022a)

It was considered by several participants to be a low-cost product but lacking the properties it needed for a pleasant experience. It was considered to be unsuitable as milk replacement in hot beverages and described to *'lack creaminess in coffee'* and being *'too thin'* with the *'need to add more than normal milk to have a milk experience'*. One participant indicated that the *'ingredients puts [one] off completely'*, creating a *'bad expectation already'* prior to actual use. However, the participant also indicated that once used, *'it was not as bad'* as anticipated. The sensory characteristics of the dairy blend were described as *'too rich'*, having an unpleasant *'artificial taste'*, a *'cooked taste'*, a *'taste similar to powdered milk or curdled milk'* and *'not tasting like real milk'*. Due to the sensory properties, some participants indicated that they would rather pay more for milk than purchase a dairy blend, *'the milk blend just tasted like water ... I decided not to buy it anymore, even if it is cheaper'*. Other participants indicated that they did use it but discontinued its use due to the perceived high sugar content. A few participants evaluated dairy blend milk undecidedly to favourably describing it as *'not bad'*, *'having a similar appearance to milk'* and tasting *'like cream or evaporated milk'*.

6.2.6 Sub-theme 2f: Evaluation of Product Preferences

Various participants indicated a preference for dairy-based milk alternatives over plant-based milk alternatives due to the differing sensory properties of the two categories. As participants indicated, *'I did not enjoy plant-based UHT milk alternatives, but I like dairy-based UHT milk products'*; and:

[I] do kind of view them differently, ... maybe in a more negative sense towards the plant-based products whereas I might feel more open towards the dairy-based products.

Other participants indicated that due to availability and the sensory characteristics, they preferred cow milk over milk alternatives: *'cow milk is normally available'*; *'I still prefer my real milk'*; *'I will choose the normal milk'*; and *'I don't like the taste of the alternatives ... so ... I am*

on the normal cow milk'. Some participants with a desire for natural products indicated their preference for raw, unprocessed milk rather than any UHT processed milk alternatives, '*I prefer my milk as natural as possible*'. Others indicated a preference for fresh milk and milk alternatives, with UHT products only kept for situations when they run out of fresh milk or milk alternatives. Some participants even went as far as to make their own nut or almond milk due to their preferences for fresh and natural products, leading to avoidance of UHT milk alternatives, which were considered to be expensive, too processed and containing too many unfamiliar additives.

6.2.7 Sub-theme 2g: Impact of Familiarity and Experience on Product Evaluation

An inductive approach during data analysis revealed frequent mention by participants of the impact of familiarity and previous use of milk alternatives on their evaluation of the product category. Initially during the data analysis the previous use of and familiarity with UHT milk alternatives were kept separately from participant product evaluation criteria as its own initial emerging code to determine if it would develop into a theme of its own. However, after reflection and several revisions of the expanded codes and code categories, it was found to shape participants' evaluation of products substantially. Consequently, the category of codes was included as a subtheme of product evaluation, rather than a theme on its own.

6.2.7.1 Limited or No Familiarity

Familiarity and previous use were considered important in both participant evaluation of products and their purchase intentions and were thus considered important for inclusion in the research findings. Familiarity with milk alternatives among participants ranged from being unaware of milk alternatives, being aware but never having used milk alternatives, experimenting occasionally with milk alternatives, regular use of milk alternatives, to the exclusive use of milk alternatives. A few participants indicated that they were '*not familiar with most of these 'new' types of milks*', that they '*did not know much about it*' and with some types of milk alternatives, such as the dairy blend, cashew milk, rice milk and oat milk, that they '*have no idea what that is*', indicating a high level of unfamiliarity, combined with the belief that some milk alternatives are considered novel. Some participants were aware of milk alternatives but haven't used them before and often indicated that they are '*only familiar with a few*' such as almond milk, rice milk and soy milk but '*have not tried it*'. This familiarity did not necessarily apply to all products in the category as one participant indicated, '*the only one I was more familiar with was the almond milk ... I did not really know any of the other alternatives*'. Some participants indicated that they '*have noticed them*' or are '*definitely aware of it ... but never purchased it*'.

6.2.7.2 *Experimental or Occasional Purposeful Use*

Various participants indicated that they have tried some of the milk alternatives. However, their use of milk alternatives was only of experimental nature and was consequently only occasional. Participants often stated that they *'did try'* or *'have tasted'* some of the milk alternatives, such as the dairy blend, soy milk, lactose-free milk, rice, milk, oat milk, almond milk and coconut milk, *'but do not use it often'* or have *'tried it just to see what it tastes like'*. Some participants were familiar with and regularly used milk alternatives, but not to the complete exclusion of cow milk. This was often associated with milk alternatives used for a specific purpose, as in food preparation, or for a period of time when following a specific diet or for health benefits. Both almond milk and coconut milk were specifically related to food preparation ingredients with participants indicating that they *'used it in cooking'*, *'used it often'* and *'use it in specific things like making some curry dishes'*. Regular use, but only for a certain period of time was indicated when used for weight loss diets, or for perceived health benefits as one participant indicated, *'I used it for about six months while I was pregnant'*.

6.2.7.3 *High Familiarity and Exclusive Use*

A high level of familiarity and frequent use of milk alternatives were often indicated among participants with cow milk allergies, lactose intolerance and vegan lifestyles, necessitating the exclusive use of milk alternatives to the complete exclusion of cow milk. Participants with vegan lifestyles only purchased plant-based milk alternatives, indicating that since they are vegan, they *'do not use the normal milk'* but *'use the alternatives'* and often that they *'have stopped using [cow] milk completely'*. These participants indicated that they *'normally use soy milk and almond milk'* or that they tried a variety of plant-based milk alternatives as milk replacement and coconut milk was used often. Similarly, individuals with cow milk allergies indicated that they had to completely discontinue the use of cow milk due to health reasons and that milk alternatives support them in milk avoidance diets by presenting other options. One participant indicated that it helps and allows the participant to *'make any type of food with it that [the participant] used to make with normal milk'*. Another participant indicated that milk alternatives presented *'a solution in terms of what [the participant] can use'*.

6.2.7.4 *Familiarity, Past Experience and Future Purchase Intentions*

Familiarity and past experiences had an impact on participants' evaluation of milk alternatives and future purchase intentions. Participants indicated a tendency to purchase the familiar:

If you go past the milk aisle and you see there is all these loads of milk and then there are just a few other boxes of alternatives you will grab the familiar.

While positive past experiences with a specific milk alternative product were indicated to lead to continued use, the opposite was also found. Disagreeable past experiences with milk

alternatives led to unfavourable product evaluation and discontinued use, sometimes of specific products, but sometimes also of the entire product category. As some participants indicated regarding specific products, *'I have tasted soy milk and it was not pleasant at all'*; *'I tasted rice milk once and did not like the taste'*; *'I tasted oat milk ... it is not very nice'*; and *'almond milk was not very nice'* leading to statements such as *'so I did not do it again'* and *'I have preferred to go without it'*. Some participants with disagreeable past experiences of milk alternatives preferred to rather go without milk than to use milk alternatives, *'I have used some of the products, but I choose not to use them'*, eliminating the use of the entire product category. As mentioned earlier, none of the themes in isolation can inform the research enquiry about the participant's attitude and intentions to UHT milk alternatives. These themes need to be interpreted collectively to arrive at a deeper meaning within which the research questions can be supported. The next section provides the findings linking consumer product beliefs and evaluation of products, shaping their attitudes toward UHT milk alternative products.

6.3 CONSUMER ATTITUDES

Attitudes toward UHT milk alternatives were found to be more complex than just an evaluation of whether the participant favours the product or not. Participants' attitudes toward UHT milk alternative products were found to be based on their beliefs of the product's attributes, as well as how favourably or unfavourably and how important the participant perceived these attributes to be to the individual. Potential linkages between consumer product beliefs and the evaluation of a product were noted in the findings, as similar sub-themes were identified under beliefs and evaluation. Together, this was found to lead to participants' overall attitude towards UHT milk alternatives, impacting their decisions to purchase the products. While the beliefs and evaluation of products were presented in the relevant sections above, the aim of this section is to interpret the findings related to the overall attitude participants displayed towards UHT milk alternatives. Since most participants distinguished clearly between plant-based and dairy-based milk alternatives and products within these categories shared many attributes, findings are presented within this structure.

6.3.1 Attitude toward Plant-based UHT Milk Alternatives

Participant attitudes in general toward the available plant-based UHT milk alternatives were mostly linked to their expected utility for use in food preparation and baking, for specific diets, plant-based lifestyles and potential health benefits. As seen from the following statements, *'I will buy the others only if it is part of a recipe'*; and *'I think maybe some of the plant-based alternatives I could use for cooking but not really for just drinking'*, attitudes toward plant-based milk alternatives were mostly favourable for use in food preparation and baking, but unfavourable toward plant-based milk alternatives for drinking as a glass of milk. Some

scepticism was mentioned toward the perceived health benefits of plant-based alternatives, *'I am not really convinced that it is more healthy'*. Participants preferring to consume a plant-based diet displayed favourable attitudes toward plant-based milk alternatives and indicated their willingness to experiment with all plant-based options.

Participant attitudes toward soy milk were often found to be unfavourable. Some participants indicated that soy used to be the only alternative available for individuals with cow milk allergies, leading to an aversion to soy milk based on past experiences of products with poor sensory properties and a lack of other alternative options. Various participants linked the sensory properties of soy milk to an unwillingness to purchase or use it again: *'Soy milk, no. Because I know it tastes bad'*; *'I did taste soy milk, I will not use it again'*; *'Soy ... it will not happen again'*; and *'soy milk ... I do not think I would buy that one'*.

Favourable attitudes toward almond milk were often based on its utility in baking and food preparation: *'almond milk I have also used in cakes'*; *'I will purchase almond milk again'*; and as potential milk alternative for individuals allergic to cow milk or individuals following low-carbohydrate weight loss diets: *'looking at almond milk ... especially if you look at the different dieting crazes where they try to reduce your overall carbohydrate intake'*. Unfavourable attitudes toward almond milk were indicated mainly because participants *'did not like the taste'*, or because of nut allergies which rendered it an unsuitable product for the participant.

The majority of participants were not familiar with cashew milk, linking their attitudes more to subjective beliefs than to objective evaluations. Some participants indicated favourable attitudes toward and an interest in experimenting with cashew milk based on their enjoyment of cashew nuts through statements such as: *'I think the cashew milk is interesting. I certainly would like to try it because I am very fond of cashews ...'*; and *'I love cashews'*. Other participants indicated a sceptical attitude toward cashew milk based on a perceived lack of a need for such a product, expectations of poor taste and the concept of producing a milk-like product from nuts:

Cashews I would be a little bit suspicious of because I like cashew nuts but I do not see why you would need to make milk out of them or how you could even make milk out of them.

Participants showed varying attitudes toward oat milk, ranging from very favourable attitudes based on expectations of the taste, *'I would be very tempted by the oat drink ... I love oats'*, to rather unfavourable attitudes indicating a lack of a perceived need for oat milk, *'[I] see no need for [oat milk]'* and *'Oats milk, no'*. The concept of oat milk seemed to be considered unnecessary or strange.

Rice milk did not seem to be particularly popular among participants. Various participants indicated that rice milk was *'not in their frame of reference'* and had poor taste and off-putting visual and texture properties. This led to unfavourable attitudes toward rice milk and statements such as, *'a last resort if there's nothing else'*.

Participants' attitudes toward coconut milk were found to be rather favourable. This favourable attitude toward coconut milk was linked to its perceived utility to *'use it in cooking and baking'* to provide a *'rich taste'* in *'genuinely tasty Asian cuisine'*. It was considered by some as a *'treat in food'*. Coconut milk was more often perceived as an ingredient in food preparation than it was as a substitute for cow milk in the diet.

6.3.2 Attitude toward Dairy-based UHT Milk Alternatives

Prior to the commencement of each mini-focus group or semi-structured interview, the researcher presented participants with a short description of the products studied, as defined in the Terminology List. Participants were further also presented with a brief description and examples of the difference between plant- and dairy-based UHT milk alternatives. Dairy-based UHT milk alternatives, such as lactose-free milk, enriched and functional milk and blends were defined at the onset of the study, but also explained again during the course of sessions, as needed, to clarify the different products for participants if they had no prior knowledge of the product. The concept of *'growth milk'* was coined by participants for enriched and fortified products developed for the specific function to provide children with additional vitamins, minerals and nutrients to support healthy growth. The concept may have been derived from a specific South African brand which positioned such products as *'growth milk'* in the South African market. Attitudes toward the dairy-based milk alternative category, in general, were polarised, ranging from favourable to unfavourable. Favourable participant statements toward dairy-based milk alternatives included *'I will stick with the dairy-based'*; *'dairy-based ones were nice, I would buy them'*; and *'if I had the choice I would still be using dairy-based'*, indicating a favourable attitude towards dairy-based options. This favourable attitude can possibly be ascribed to the fact that dairy-based milk alternatives still maintain the majority of sensory characteristics of cow milk to which participants are accustomed and like. While it is considered to be unique from standard milk, participants still associate these products with milk familiar to them, as seen from the statement, *'It is a milk alternative, but it is still a milk'*. In contrast, unfavourable attitudes toward dairy-based alternatives were found precisely because of the milk base among participants with milk allergies and vegan lifestyles who are focused on dairy avoidance. These participants indicated that they *'will not want to use the dairy ones'*; and were *'not going to buy the dairy-based alternatives'*.

Attitudes toward lactose-free milk indicated that participants viewed it as a functional dairy-based milk alternative for individuals with lactose intolerance. Favourable attitudes were associated with the fact that it was fit for a specific purpose, *'lactose-free ... definitely has its place in the sense of lactose intolerance'*, with participants in need of it indicating that they *'will continue to purchase lactose-free milk'*. In context of lactose intolerance, participants were optimistic about the fact that it was branded in a simple manner without creating the perception of a marketing stunt:

I like the look of the simple-looking lactose-free milk because it does not sound gimmicky at all ... It just says it is lactose-free milk. ... I would go for that one.

Indifferent to unfavourable attitudes toward lactose-free milk was found to be linked to the lack of a perceived personal need for the product. This can be observed from participants' statements such as: *'Lactose-free, no I do not have a problem with lactose'*; *'Lactose-free milk ... I am indifferent to it'*; and *'I don't have a problem with lactose, so I am not going to drink lactose-free'*.

A general attitude of suspicion toward the ingredients and true benefit presented by enriched or fortified UHT milk products branded as 'growth milk' was observed. Participants associated it as a product for children, *'growth milk ... it is probably for toddlers'*; and *'I think it is for young growing individuals'*, but indicated that they *'would not purchase it'* because *'it is unnecessary'* and they were *'a bit suspicious of what is in that growth milk?'* Attitudes toward other enriched or fortified UHT milk products were mildly unfavourable, with participants considering it to be *'unnecessary'* and *'a gimmick'*. However, participants indicated that they would purchase it if normal UHT milk was unavailable. An exception to this was seen in attitudes toward UHT milk products enriched with guarana and vitamins, branded as a performance-enhancing beverage, toward which highly unfavourable attitudes were observed. Participants indicated that they *'would not associate that with milk'* and were *'not too keen to buy that'*. Similarly, attitudes toward flavoured UHT milk products were unfavourable due to the addition of flavours and sweeteners. Additives in the product created an attitude of distrust toward these products among participants who indicated a preference for real products without unnecessary additives and sweeteners.

However, this attitude did not seem to extend to all UHT dairy-based alternatives. Attitudes toward protein-enriched chocolate-flavoured UHT milk products, branded as sports recovery beverages, ranged from very favourable among active participants indicating that they *'would try it'* after workouts, to suspicious of the real value it presents, *'protein-enriched sports recovery ... is that a lot of nonsense they are talking?'*

There was also one UHT dairy blend available in the South African retail market during the course of the research. While the majority of participants were not familiar with the product, attitudes toward the product were cautiously curious: *'dairy-blend ... I am quite curious ... I will try it'*, but it was not highly favourable. Participants who were familiar with it considered it tolerable, but did not present a highly favourable attitude towards it: *'Milk blend ... I know and it is not bad'*. Other participants indicated that they considered it a low-quality, cheap substitute to milk with an off-putting combination of ingredients.

Some participants displayed unfavourable attitudes to all UHT milk alternatives with a preference for 'normal' cow milk. These participants displayed a strong affinity for what they referred to as 'real milk', as seen from statements such as: *'I still prefer my real milk'*; *'I am used to normal milk'*; *'I like too much dairy'*; *'you will always use the basic milk'*; and *'If I am buying milk I will try to keep to the real product'*. Their attitudes toward milk alternatives indicated that they would not be replacing their normal milk with any milk alternatives, especially if ingredients were added to something which they prefer to be 'real' and natural:

[From] what is currently available, nothing has impressed me so much that I can say 'Yes! I am going to sacrifice the milk that I am currently using and replace it completely by one of these products;

'I do not think I will move on to something like this on a permanent basis'; 'I would not try to buy a substitute or a sweetened thing'; and 'I just want to know that it is milk'.

Participants' attitudes toward UHT milk alternatives, whether toward individual products or the product category, were found to be strongly linked to their intention to purchase or consume the product. Participants frequently mentioned that they would or would not use the milk alternatives based on their attitudes toward the product or product category itself. As indicated earlier, a consumer's attitude toward a product includes the beliefs the consumer holds about the product, their evaluation of its attributes and the importance of these attributes to the consumer (Solomon, 2019). Since a consumer's overall attitude towards a product impact on the individual's decision to utilise a product or product category (McDaniel & Gates, 2020), the importance of participants' attitudes toward UHT milk alternative products should not be underestimated in their purchase decisions. Participants often linked their attitudes toward UHT milk alternatives directly to their purchase intentions as discussed in Chapter 8.

6.4 AFFECTIVE COMPONENT

Participants' evaluation of products dynamically shaped the meaning that they ascribed to UHT milk alternative products. This chapter presented the findings related to participants'

evaluation of products (Theme 2) from their multiple perspectives to reach the second research objective.

Objective 2: To describe the meaning consumers ascribe to their product evaluation criteria of UHT milk alternatives (*affective component of attitudes*)

Participants found intrinsic product properties (2a), functionality (2b), acquired product properties (2c) and promotion (2d) to be important in their evaluation criteria of products and product categories (2e) and their product preferences (2f). Their evaluation of products was also impacted by familiarity and past experiences (2g). Collectively, these sub-themes were found to be shaping their affective perspective of UHT milk alternatives.



Figure 6.17: Evaluation of Products – Affective Component

The evaluation of products, or *affective component*, was indicated to potentially impact participants' purchase intentions (Figure 6.17). These potential linkages are presented in more detail in Chapter 8.

6.5 CONCLUSION

This chapter presented findings related to the participants' evaluation of products. Important intrinsic product properties included food safety, naturalness, added sugar, nutritional content, sensory characteristics and the percentage contained of the main ingredient. Functionality for the participant perspective included whether the product was evaluated to be suitable for individuals with a vegan or vegetarian lifestyle, or individuals with food allergies or weight and fitness goals. Participants found the suitability of a product for their intended purpose to be important evaluation criteria. Acquired product properties which supported participant product evaluation criteria were price, availability, sampling, pack size, packaging and labelling. Marketing, recommendations, in-store location of products, familiarity, label claims, sustainability, animal welfare and product origin were found to be important promotional factors for the product category. The chapter also provided detailed descriptions of participants' evaluation of the UHT milk alternative product category, as well as various UHT plant-based and dairy-based milk alternative products available in the South African market and their product preferences. Finally, the chapter presented the impact which participants ascribed to familiarity and past experiences of products on their evaluation of products and consequently their future intentions to purchase UHT milk alternative products. Together with the beliefs participants held about products, their evaluation criteria of products were found to shape the specific product-related factors which supported their intentions to purchase UHT milk alternatives.

CHAPTER 7

FINDINGS – NON-PRODUCT INFLUENCES ON CONSUMER INTENTIONS

Presents the research findings on non-product-related factors influencing participants' purchase intentions of UHT milk alternatives in support of the third research sub-question and objective.

7.1 INTRODUCTION

The previous two chapters presented findings specifically related to UHT milk alternative products which shaped participants' attitudes, experiences and meanings ascribed to the product category. However, it was found that other factors that were not specifically related to the product itself, but related to the participant, or their environment, also impacted their purchase intentions. This chapter combines these non-product-related themes that emerged to establish a detailed description to support the third research sub-question to achieve the third objective.

Sub-question 3: Which factors impact consumer purchase intentions of UHT milk alternatives?

During the coding process of the data analysis phase, data revealed three initial emerging codes (expectations, norms and control) related to participants' purchase intentions of UHT milk alternatives. These initial emerging codes led to the creation of 25 expanded codes (six expectations, seven norms and twelve controls). The expanded codes were categorised into ten subthemes and thereafter clustered into three main themes named *expected outcome*, the *social norm* and *control*. For the purpose of the research, *expected outcome* refer to the value ascribed to a product by an individual based on the expected outcome of its use. The *social norm* refers to the individual's perception of how significant others are going to judge a behaviour and the individual's motivation to comply with this social pressure. Finally, control refers to the individual's confidence whether it is within the individual's own control to perform the behaviour successfully. This first section of the chapter provides a description of how expected outcomes from product utilisation impact their purchase intentions. Thereafter, the impact of the perceived social norm and control is presented.

7.2 THEME 3: EXPECTED OUTCOME

Participants' intentions to purchase UHT milk alternatives and the specific product selected, were found to be closely linked to participant beliefs whether a product is suited to meet the participant's expected outcome from product use. For this research, *expected outcomes* were defined as the participant's confidence in whether a product was suitable to meet the participant's specific needs and expectations. These intentions were sometimes explicitly

stated or noticed from product usage or usage avoidance, but it was also noted from participants' willingness to recommend a product to others based on its purpose and their experience of the outcome. Participants often alluded to milk alternatives as '*other milks*' and consumers using the alternatives as '*those people*' and '*people like that*', indicating that they do not consider milk alternatives to be a normal, staple product to consume. The use of the product category was considered suitable for specific purposes, with various expectations of the category to meet these consumer needs. The purchase and use of milk alternatives were linked to various *expected outcomes* (Theme 3) based on the six sub-themes (presented with a number linking it to Theme 3 and a letter to distinguish among the different sub-themes): *health needs* (3a), *vegan or vegetarian lifestyle* (3b), *weight control* (3c), *lifestyle* (3d), *experimental* (3e) and *purist dairy* (3f), as identified below (Figure 7.1).



Figure 7.1: Theme 3 - Expected Outcome

7.2.1 Sub-theme 3a: Health Needs

The most frequently indicated expected outcome for milk alternatives was the potential suitability of milk alternatives to support individuals' health needs. Participant statements, such as '*some people cannot drink ... cow milk*'; '*they use it for medical reasons*'; '*I cannot use dairy products ... I'm allergic to milk*'; '*the doctor suggested milk alternatives*'; '*it will obviously be*

because of some or other medical reason’; and *‘trying alternative milk products because of allergies*’, underlies the finding that the use of milk alternatives is strongly associated with health concerns such as cow milk allergies. Plant-based milk alternatives are expected to serve as good alternatives for individuals with milk allergies, as seen from the participant’s statement: *‘there are definitely people who are allergic to milk ... a plant-based product ... might work for them*’. Where milk alternatives were identified as suitable to meet milk allergy-related health needs, it was often described as a regularly used product, completely replacing the use of normal cow milk. The expectation was often indicated that *‘if somebody [use milk alternatives] because of health needs ... they will totally replace milk [with] these other products*’. It would be to the exclusion of cow milk use as seen from participant statements such as: *‘there are definitely people who are allergic to milk they might replace it totally with ... a plant-based product which might work for them*’; *‘everything will be replaced by such people*’; *‘I have given up drinking milk*’; and *‘[milk alternatives] is all I can use now*’.

However, several participants raised concerns that common allergens such as soy, nuts and preservatives found in some milk alternatives could render it unsuitable to individuals prone to food allergies. Concerns regarding food allergens can be observed from the following typical participant comments: *‘most people who are lactose-intolerant cannot handle soy either*’; *‘I would never purchase nutty alternatives or coconut, because I am allergic to it*’; *‘[I’m] also allergic to nuts, consequently almond [milk] does not work at all*’.

Lactose-free dairy-based milk alternatives were expected to be a suitable alternative for individuals who experience lactose intolerance. This was supported by statements such as *‘[milk alternatives are] for people who are lactose-intolerant*’; *‘it is a genuine concern that there are so many lactose-intolerant people*’; *‘people who are lactose-intolerant might find these lactose-free milk alternatives ... useful*’; *‘many people are lactose-intolerant, especially in certain population groups*’; and *‘there are many more people than just my daughter who need [lactose-free alternatives]*’. Whilst lactose intolerance was not always considered to be a reason for the complete exclusion of dairy milk, as seen with cow milk allergies, milk alternatives were indicated repeatedly as products that could meet lactose-intolerant individuals’ needs and expectations.

Enriched or fortified dairy-based milk alternatives were expected to potentially contribute to the growth needs of children, as well as being potentially suitable to contribute to the nutritional requirements of adults and children recovering from illness or at risk of nutritional deficiency. Enriched or fortified dairy-based milk alternatives were especially associated with children and the expectation that it could support their nutritional requirements. This was often implied, but also observed through explicit participant statements, such as *‘I tried to get more enriched*

milk for ... the children'; and *'[I] would probably use the enriched milk especially when your children change from breastmilk, or from bottle milk to normal milk'*.

Milk alternative use was often linked specifically to the individual in the household who consumes it due to health needs, as mentioned by participants: *'my daughter has lactose sensitivity ... she does use the lactose-free milk products'*; *'my son is lactose-intolerant and uses rice milk'*; *'My husband drinks normal milk ... I use lactose-free to avoid sinus ... [the] children use various plant-based milks for health reasons'*; and *'my eldest daughter and sister-in-law is lactose-intolerant'*. Where participants did not have individuals in the household using milk alternatives due to health conditions, a clear distinction was made between people who can or cannot, consume cow milk. Statements such as *'it is for specific people'* and *'when someone really cannot drink milk'* portray this distinction. Individuals who are unable to consume cow milk and use alternatives were often referred to as *'those people'*; *'some people'*; and *'people like that'*, again supporting the idea that milk alternatives are expected to be suitable for individuals with special health needs, rather than perceived to be suitable for the consumer in general. Under the expected outcome of suitability for health needs, the reference to milk alternatives as *'other milks'* and *'for those people'* summarize the perception that milk alternatives are not considered to be a staple, normal product for general use, but rather the impression that it is different and made for a niche market to support specific health needs. The use of milk alternatives was justified by participants and expected to be supported by significant others as indicated by one participant: *'if it is for health ... they will support it'*.

7.2.2 Sub-theme 3b: Vegan or Vegetarian Lifestyle

Plant-based milk alternatives were also indicated by various participants to be suitable for individuals following vegan or plant-based lifestyles with statements such as *'[we] use plant-based ... [we are a] vegan household'*; *'alternatives are useful ... for a vegan lifestyle'*; and *'she uses this because of her being vegan'*. Plant-based milk alternatives were expected to be suitable options where consumers were concerned about the use of animal-derived products, either due to health, animal welfare or environmental concerns. *'I read ... milk can cause cancer'*; *'my reasoning is just that I do not want to support animal agriculture'*; *'the poor cows that continually produce milk'*; *'[I] consider environment, animal welfare, health'*; *'more and more people use milk alternatives ... the reason ... is being sensitive to the environment – in other words, the so-called green issues'*; *'definitely more environmentally friendly'*; and *'stewardship is important'*. A lifestyle limiting or completely avoiding, the use of animal-derived products was linked to the desire to apply good stewardship principles in consumption behaviour and the use of plant-based milk alternatives was expected to support this desire. However, the link between a vegan or vegetarian lifestyle and plant-based milk alternatives were also faced with scepticism by some participants, considering it a status lifestyle, only

affordable to an elite few in South Africa, with statements such as: *'I think there is some sort of status in well-off social circles that drinking plant-based milk alternatives is better'*; *'some people do it for the status of using plant-based milk alternatives'*; and *'the products might be available, but it will still be a small group who can actually afford to buy these products'*. In vegan or vegetarian lifestyles, the use of plant-based milk alternatives was expected to be exclusive, with no dairy-based alternatives, or cow milk, expected to be suitable for use. Participants indicated that *they 'discern very specifically between what is plant-based and what is animal-based'*; *'there's no need to use dairy'*; and *'I am vegan so I do not use the normal milk, I use the alternatives'*.

7.2.3 Sub-theme 3c: Weight Control

Various participants mentioned the expectation that milk alternatives would contribute favourably to weight control or weight loss: *'I would not use it purely for drinking - except if I wanted to do it as part of a weight-loss diet'*; *'if you do Keto or Banting type of diets ... [one] would use it'*; and *'use it for a specific diet'*. This group of participants who associated milk alternatives with weight control appeared to be actively searching for information on food and beverages consumed, as several mentioned that they *'read quite a lot about the different products'*. The expectation for weight control or weight loss among participants is based on recommendations of various diets to avoid cow milk and use low-carbohydrate milk replacements. This can be observed from several participant statements indicating their focus on low-carbohydrate products for dieting purposes:

If you look at the different dieting crazes where they try to reduce your overall carbohydrate intake ... if it is less kilojoules or something then you want to try it when you are on a diet;

'I turn around the box to check the carbs ... then I compare'; and *'carbs-wise ... it's why I use almond milk'*. Participants indicated that recipe recommendations from popular diet trends often recommended plant-based milk alternatives or cream, contributing to the expectation that its use will support weight loss or weight control and the expectation that the use of cow milk would contribute to weight gain. Statements like: *'there are different ways of eating - like the Paleo and Banting and all of these different diet types ... certain diet types promote these alternatives'*; *'[there are] different views of the perfect diet'*; *'those against dairy say that almond milk is a much better option'*; *'many diets condemn cow milk'*; *'I used soy milk ... they said normal milk leads to weight gain'*; and *'[one needs to] find something that fits into your diet'* demonstrate the strong influence that weight considerations have on consumer expectations ascribed to milk alternatives. The use of milk alternatives for this purpose was often expected by participants to be temporary for a specific purpose until the desired weight

outcome was obtained: *'if you are on a diet, you might decide for that period of time, to use ... almond milk'*; *'if you are on a specific diet ... not on a permanent basis'*. Participants who expected weight benefits from milk alternative use did not consider it to be a staple product for the entire household, indicating *'[I] will not buy it for the whole family ... just add on what I need'*. Instead, it is viewed as something to be purchased and used separately to achieve the weight goals of the individual.

7.2.4 Sub-theme 3d: Lifestyle

Other participants pointed out an expectation that milk alternatives would be suitable for individuals pursuing an active lifestyle. Some participants indicated that milk alternatives were consumed by *'fitness fanatics'* whom they see often at the gym as well as by health-conscious friends, thus creating the perception that milk alternatives can support an active, healthy lifestyle. Phrases from the discussions, such as *'[I] think of a ...healthier, safer product to consume'*; *'it is a trade-off between going to see a doctor or putting something that is safer for your body ... into your system'*; *'your health matters'*; *'use it for health'*; *'people are much more health-conscious'* demonstrates the strong association made between health and milk alternatives by some participants. One popular milk alternative particularly associated with fitness was the dairy-based protein-enriched chocolate-flavoured milk, which was perceived as the ideal recovery drink after workouts. Participants indicated that *'people drink it to increase their protein intake'* and *'a chocolate beverage after running works really well ... one wants the protein and sugar after exercising'*. Various participants indicated an expectation that milk alternatives would serve the needs of fitness enthusiasts and that there would be a market for the products among individuals pursuing a lifestyle where health and fitness are prioritised. Since these health expectations from participants were more general and not due to specific health needs such as milk allergies, which would warrant complete cow milk exclusion, the use of milk alternatives is considered for a specific purpose, such as protein-intake, or maintaining an active lifestyle. Consequently, its use was considered beneficial, or supplementary, to cow milk consumption and not with the expectation of strict exclusion of cow milk.

7.2.5 Sub-theme 3e: Experimental

Both plant- and dairy-based alternatives were often alluded to as suitable for use in recipes and baking. Statements such as: *'milk alternatives can be used in baking'*; *'almond milk ... will probably be for cooking'*; *'[I] definitely have used almond milk ..., even the coconut milk, in recipes'*; *'[I] used coconut milk in Indian cuisine'*; and *'[I] use it for certain dishes'*, by participants indicate the expectation that milk alternatives are suitable for use as an ingredient in food preparation. This was often linked to the participants' desire to experiment with milk alternatives, with the expectation that milk alternatives would contribute unique sensory

characteristics to the food or beverage. This desire for experimental use of milk alternatives was noted from participant statements such as *'I will definitely buy [milk alternatives] ... it is good to try new things'*; *'[I'm] willing to explore with it for baking'*; *'[I'm] willing to try it in different situations'*; *'something like coconut milk tastes good in cooking'*; *'almond milk is very nice in your breakfast or in a smoothie'*; *'coconut milk ... is perfect in curry dishes'*; *'some restaurants make cappuccino with almond milk which is tasty'*; *'it can quite enhance your cooking'*; and *'[milk alternatives] are wonderful for cooking and baking'*. Milk alternatives were often associated in this context as suitable for cooking, baking and in beverages. However, it was clear from various participants' expressions that the use of milk alternatives in this context was only viewed as a product to try something novel or different and its use would be occasional without excluding cow milk from their diet: *'[I] might use some of these products ... as add-on to milk'*; *'I will not necessarily ditch normal milk'*; *'I think I would try it'*; *'[I] use it mostly in baking ... but would not use it in daily life'*. However, some participants expressed scepticism towards the experimental use of milk alternatives describing it as *'just a curiosity that some people want to try out'* questioning its value or any real favourable outcome in relation to expectations of the product category.

7.2.6 Sub-theme 3f: Purist Dairy Milk Only

Some participants portrayed scepticism towards all milk alternatives and mentioned that they only drink cow milk. Reasons given include beliefs that milk alternatives are a *'fad'*, expectations that milk alternatives possess undesirable sensory properties, or because they grew up with cow milk, liked it and saw no reason for change. The following statements demonstrate the purist dairy concept found from participant statements: *'I will be a bit sceptical. I will not try it easily'*; *'you start wondering if all of these are really needed or are some of them being marketed as ... gimmicky stuff?'*; *'I will not drink it'*; *'there is always a bit of a funny taste ... an artificial taste that I do not like'*; *'I will not cut out dairy. I love dairy and I think it is quite healthy, so I consume milk'*; *'most of my family do not have a good perception of alternative milk'*; *'I think the typical South African, most of them, think it's nonsense'*; *'[I] like normal milk'*; *'I'm not a big fan of all the alternatives'*; *'I like too much dairy'*; *'that is such a gimmick'*; *'milk is such a staple food'*; *'it is something you use a lot ... you will always use basic milk'*; and *'[society] sometimes think it is a fad – especially if they do not have health issues or kids with health issues'*. Further, various participants expected that the use of milk alternatives would lead to the use of highly processed, unnatural products with undesired ingredients which would impact unfavourable on their health: *'I want to know that this is a pure product'*; *'I want to know ... that the product is really the real thing not added ... other stuff'*; *'I actually read the labels ... I want to see what is added and why it is added ... I do not like a lot of stuff that is added to make it last longer'*; and *'the more natural, the happier I will be with the product'*.

These participants displayed confidence in the value of cow milk, considering it to be ‘normal’ or ‘real’: ‘[I] firmly believe in the benefits of normal dairy milk’; ‘I use real milk. I use full cream milk and I use cream. I use dairy products’. This was linked to their desire to use fresh, unprocessed cow milk with no additives and was often linked to the indication that UHT milk was considered too processed to meet their expectations of a pure and natural product. Participant statements, such as ‘knowing where your food is coming from ... is very important’; ‘I actually prefer milk from the farm’; ‘I am one of those people that ... will take the product as straight as possible from the cow’; ‘I use raw milk ... and prefer something that is unprocessed’; and ‘[I] always want to know where the product came from’, portray this strong desire for a return to natural, minimally processed products.

7.3 THEME 4: SOCIAL NORM

The social norm is comprised of what the individual perceives significant others are purchasing and whether they are going to approve or disprove of the products the individual selects for purchase. It also involves the individual’s motivation to comply with pressure to conform to socially acceptable purchase patterns. For this research, *social norm (Theme 4)* was defined as the individual’s perceived *support from significant others* to purchase the products preferred by the individual and how *important compliance to the opinions of significant others* were to the individual (Figure 7.2). Statements related to the social norm were identified frequently from the data, indicating a rather profound impact of the social norm on participants’ intention to purchase UHT milk alternatives. *Social norm (Theme 4)* was comprised of the following two subthemes (presented with a number linking it to Theme 4 and a letter to distinguish among the two sub-themes): *support from significant others (4a)* and *importance ascribed to opinions of significant others (4b)*.

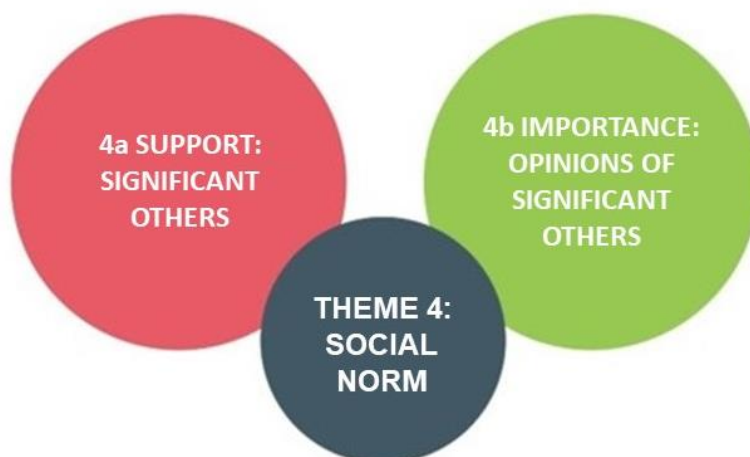


Figure 7.2: Theme 4 - Social Norm

7.3.1 Sub-theme 4a: Support from Significant Others

Participants mentioned a wide range of opinions from direct significant others and society in general. Support from significant others ranged from highly supportive and participating in the behaviour to unsupportive and even critical of milk alternative consumption, as seen from the following statements: *'from friends that are the same age as me, there is a lot of support ... a lot of them are doing the same thing'*; or *'when we talk about dairy-free products they are not very positive ... in the circles that I go about, they do not have a positive connection to it'*.

Several participants indicated that South African consumers are generally traditional in their consumption behaviour of cow milk and would not approve of the use of milk alternatives unless it is for health needs, such as milk allergies. The following examples were observed from participant statements, *'milk alternatives are not generally used in South Africa'*; *'a lot of people are quite conservative ... [they] stick with the dairy side because that is what they grew up with'*; *'the typical South African ... think it is nonsense'*; *'many people ... will not really go for these things'*; *'people ... are set in their ways'*; *'[South Africans are a] traditional nation ... they grew up with cow milk'*; and *'If it is for health benefits, I think they will support it'*. However, various participants mentioned that a *'lack of knowledge'* regarding milk allergies and a lack of awareness of milk-containing products led to supportive, but often ill-advised opinions of significant others: *'people don't always understand milk alternatives'*; *'if you don't have a problem [with milk] then you wonder who drinks all these thousands of [alternative] boxes'*. Some participants indicated an indifferent attitude experienced from significant others if they chose to use milk alternatives with statements such as *'I would not say there was support, but there was also not really any negative feedback from them'*; *'the rest of my family will not even say anything about it'*; and *'my family is very open to things like that, it will not matter'*. Others indicated that there is *'definitely a turn in attitudes to be more positive towards milk alternatives'*, indicating a change in the traditional attitudes with more and more South African consumers being open to consider using alternatives, especially if it could be of benefit to their health. Such approval of milk alternatives would be selective and often experimental at first, according to the individual's beliefs regarding which products are healthier than others.

The approval or disapproval of behaviour from the social norm often seemed to be related to the expected outcome of milk alternative use, indicating potential strong relations between these two themes. When participants use milk alternatives for a specific purpose, such as health concerns, weight control, or due to milk allergies, significant others seemed to approve more readily of the use of milk alternatives. The following typical participant statements displayed this support: *'Yes, I think so. If I ... I am doing this because I radically have to lose weight or something, they will support me'*; *'[due to] medical reasons ... [they are] very supportive'*; *'friends and people around you are relatively supportive'*; and *'[they are] very*

supportive and understanding'. While some significant others would actively participate in the use of milk alternatives, others would be supportive, but use cow milk themselves: *'my mom kept it in the house for when I visit'*; and *'everyone was very supportive ... they just didn't want to drink it too'*. Some participants indicated that *'everyone was highly supportive and understood'*, indicating a high level of approval and support from significant others. This high level of support included practical consideration from family and friends to the extent that they would purchase suitable milk alternatives and check suitable dishes prior to gatherings and mutual visits. This type of support from significant others was mostly observed when milk alternatives were used due to milk allergies and other health reasons. The use of milk alternatives, particularly almond milk and protein-enriched chocolate-flavoured dairy milk alternatives, was also considered widely acceptable among social groups who aimed to live active lifestyles, with mutual support found at gyms, fitness centres and among individuals practising similar sports. Participants indicated that *'people that gym and are engaged in an active lifestyle, are definitely more aware of the milk alternatives'*. This again seemed to be linked to the expected outcome in the search for appropriate low-calorie or sports recovery products after workouts, as one participant summarised, *'quite a few runners are aware now that chocolate milk or chocolate milk-like-products are an excellent post-run or post-race recovery drink'*.

The same amount of support from significant others did not necessarily appear so readily given when participants used milk alternatives due to lifestyle choices such as vegan, vegetarian, flexitarian, or perceived environmentally friendly lifestyles. These participants mentioned that *'people are very critical'* and *'[it] is not well accepted'*. Participants who used milk alternatives based on these beliefs or values occasionally faced *'scepticism'*, *'lack of understanding from friends'*, open disagreement, or ridicule and were regarded as being *'strange'*. Where significant others disapproved of these lifestyle choices, the participant's use of milk alternatives was referred to as a luxury, a pretentious lifestyle that is unaffordable to the average South African, or a fad with little scientific support. The following participant statements displayed these attitudes to some extent: *'milk alternatives are becoming ... a more upmarket product and it is expensive'*; *'they think you are stuck-up'*; *'[they] do it for the status of using plant-based milk alternatives'* and *'people cannot understand it'*. Various participants indicated that they would actively search on social media for groups or individuals with similar lifestyle choices, allergies, health needs or weight control approaches for mutual support if they felt unsupported by direct significant others: *'in my direct environment, my friends and family, it is not very accepting'*; *'[I] surround myself with people whose opinions I value'*; and *'[I] try to find support in similar groups on social media'*. In contrast, participants whose significant others had similar beliefs and lifestyles expressed strong support and found

it easier to sustain their decision to use milk alternatives: *'[They are] very interested, or they are doing it themselves as well'; 'many people around here also use milk alternatives themselves'*.

Where allergies, health or weight loss reasons were given as the motivation for milk alternative use, significant others were often supportive and separate meals were often prepared to meet all individuals' needs in the household. *'Our families are very supportive'; 'my mom ... takes exceptional effort to accommodate [his lactose intolerance]'*. Individuals with specific needs would use their own milk alternative, while the rest of the household was *'fine with it ... if each one use their own preference'* (often cow milk). These participants would ensure that various options are available in the household, or during visits, based on a desire for inclusion to accommodate the preferences of all significant others. On the contrary, some participants who experienced disapproval of, or disagreement with, their use of milk alternatives from significant others indicated that separate milk and milk alternative options were purchased in the household due to conflicting views, rather than from a desire to create an atmosphere of inclusion. In some exceptional cases, participants would not use each other's products and indicate that if significant others did not want to use the product they purchased *'they can purchase their own milk'* or *'prepare their own meals'*.

7.3.2 Sub-theme 4b: Importance Ascribed to Opinions of Significant Others

When questioned about the influence of the opinions of significant others in decision-making, three levels of impact emerged among responses ranging from important, indifferent, or not important or influential in their behaviour. The highest level of impact was observed if participants considered the opinions of significant others to be important. Participants revealed that they *'will try not to offend hosts'* at gatherings with family and friends. They indicated that they would *'decline foods with dairy, but not create issue around it'*. However, they still held that the importance of health, or personal beliefs, supersedes the importance of the opinions of significant others: *'conviction is more important than friends' approval'*; and *'health is more important'*. Valuing the opinions of significant others was found to contribute favourably to the selection and use of milk alternatives. Where significant others had similar health, dietary or lifestyle concerns, participants considered their recommendations for suitable products influential in their choices. One participant expressed the value ascribed to recommendations from significant others in the following way, *'if my friends were to give me their opinions based on my situation, then I think that it will really matter'*. On the contrary, many participants indicated a vague level of impact where the opinion of significant others would have little or no impact on their choice to consume or not to consume milk alternative products. They presented a rather indifferent stance through comments such as, *'their opinions would not really matter'*. Their choice of milk alternative consumption was regarded as their own with

limited influence from others: *'this is my choice'*; and *'it is my choice and I have got my reasons for doing it'*. The lowest level of impact on behaviour was observed, where significant others openly disagreed with the participant's use of milk alternatives in a manner that brought conflict and the participant irrespectively continued with their own product selection. The opinions of significant others were consciously regarded as unimportant and significant others were required to purchase their own products and prepare their own meals if they were not willing to use the same milk or milk alternatives as the participant. Some participants made statements, such as *'my biggest challenge is my husband who is very stuck in his ways ... we will end up having quite heated discussions'*; *'my mother-in-law ... thinks that I am just crazy'*; *'my husband looked at me like I'm crazy ... there is absolutely no support'*; in combination with statements, such as *'it will not have any influence on me'*; *'[I] will not really care about their opinions if I want to use milk alternative products'*; and *'these things don't bother me at all ... I'm doing it for my own good'*. The social norm also showed some relation to control as discussed in the next section, where the opinions of significant others may or may not have an impact on participants' perceived control to use milk alternatives as preferred.

7.4 THEME 5: CONTROL

Participants' perceived ability to purchase milk alternatives was found to be comprised of whether it is practically possible and within the individual's control to purchase UHT milk alternatives. *Control* in the research was defined as the feasibility of an individual to perform the intended behaviour based on their own preferred choices. Based on participants' overall indication of their perceived control to use milk alternatives, findings indicate that the majority of participants believed it would be possible or viable for them to purchase milk alternatives, should they wish to do so. However, some participants did not consider it viable for them to purchase milk alternatives. Reasons provided include a lack of a perceived need to use milk alternatives, such as *'I do not really see a need for myself to utilise them very much'* or simply statements that it *'would not be a good choice personally'* to use. Other participants indicated a willingness to experiment with milk alternatives, but an unwillingness to replace cow milk with milk alternatives, particularly plant-based milk alternatives: *'I would be willing to explore with it, ... I will not necessarily ditch normal milk'* and *'I would not exchange normal milk for plant-based alternatives – then I would rather go without'*. Some participants with a favourable outlook on their perceived ability to purchase milk alternatives indicated that it was considered to be a good choice for them personally, attributing it to the variety of available options which make dairy avoidance possible in a simple manner through product replacement. Participants' ability to purchase UHT milk alternatives and their *control (Theme 5)* over products selected were found to be impacted by the following sub-themes (presented with a number linking it to Theme 5 and a letter to distinguish among the different sub-themes): *practical limitations (5a)*,

product sensory limitations (5b), medical limitations (5c) and their household arrangements (5d) (Figure 7.3).



Figure 7.3: Theme 5 - Control

7.4.1 Sub-theme 5a: Practical Limitations

Affordability and availability were the most frequently referenced practical limitations to participants' ability to purchase milk alternatives. The perceived ability or inability to use milk alternatives within the participant's own personal circumstances were also occasionally indistinctly indicated as potential practical limitations to the use of milk alternatives: *'We tasted it, it is working and we adapted'* and *'I do not think I will be able to sustain it'*. While participants did not expand on individual personal circumstances impacting their ability to purchase milk alternatives long-term, this concept could possibly be closely linked to the individual's perceived control of product purchases, discussed in more detail below.

7.4.1.1 Affordability

As seen from the following quotes, *'the reason why [I] would not purchase milk alternatives is affordability'*; *'the price plays a big role'*; and *'price is a problem though'*, the perceived high price of milk alternatives served as limitation at the point of purchase. The price of milk

alternatives were often measured against the price of cow milk, which was referred to by most participants as *'normal milk'*. These comments indicated that cow milk set the benchmark as frame of reference for what participants were willing or able to pay for milk alternatives: *'what is the price when you compare it to something like normal dairy milk'*; *'is the price competitive compared to dairy milk, it needs to be competitive'*. The general perception among participants that milk alternatives are more expensive, niche products, was observed, as stated by a participant, *'some of the milks like almond milk ..., is quite expensive compared to other milk'*. In some cases, participants indicated that they did not even look at these products on the retail shelf but expected by default that it would be more expensive, as seen from the following statement:

Some of the milk is packed with the health products and not with the milk ... you do not always go to the health products aisle ... you automatically think it is more expensive, this is the expensive stuff we are passing by.

Other participants indicated that milk alternatives were expensive and considered to be a lifestyle product, only attainable by an elite few in society, *'the products might be available, but it will still be a small group who can actually afford to buy these products'*. This concept of a lifestyle product was presented in more detail under the expected outcome section. Affordability, as measured against the price of cow milk, was perceived as a limiting factor by several participants to product purchase as seen from the following participant statements: *'it is difficult to sustain the cost and find a suitable product within a budget'*; *'the most important consideration is affordability'*; *'it sounds terrible, but [the determining factor] is price'*; and *'is the price reasonable'*. However, the higher price of milk alternatives was not indicated in all cases to be a limitation. Some participants indicated that while milk alternatives are considered expensive, they considered it to be value for money due to the perceived health benefits derived from the use of milk alternatives in comparison to that of cow milk, *'It is expensive and we acknowledge that they are not cheap products, but we are still prepared to buy them ... because of health'*. This concept of value shifted the focus among regular users of milk alternatives from a specific price in relation to cow milk, to the value a specific product would bring about for the participant to meet their personal needs and expectations.

7.4.1.2 Availability

Availability seemed to be more problematic to participants residing in towns and rural areas, *'sometimes we find it a little difficult to get hold of [milk alternatives]'*; *'[we] need to travel to the city to find it'*; and *'sometimes you do not get hold of it'*. Individuals in towns and rural areas indicated that they could only access products in high demand in the area since retail shelf space is allocated to products with the highest local demand. The concept of availability

appeared to encompass more in participants' perception than just the mere physical availability of a product in their area. Several participants in urban areas indicated that low availability of milk alternatives in the retail stores which they frequent served as a limitation to product purchases: *'we cannot simply buy what we want at our closest retailer, since all the options are not there'*; *'[I] used to purchase from a specific retailer and they had a big variety, it's a pity, they have removed it'*. While these participants mentioned that they were aware that products would be available at specialised health shops, they indicated that they could not shop separately for milk alternatives as seen from the following statements: *'if I do not find it at this shop, I am not going to drive to another shop to go and find it'*; *'it makes it hard, you have to drive to a specific retailer to find it'*; *'when on holiday, you are not guaranteed that you will find something suitable'*; and *'we have to drive rather far ... to purchase these things'*. The unavailability of milk alternatives at a convenient location frequented for grocery shopping, consequently, impacts on the products considered for purchase. Availability was also found to be linked to convenient packaging sizes, presented in more detail under the evaluation of products section. Participants indicated a desire to prevent wastage of excessive product and consequently money, with several participants indicating that they did not find convenient package sizes available in milk alternatives. The lack of availability of smaller pack sizes was indicated as a limiting factor in milk alternative usage due to participants' inability to use everything in the container timeously, before it became unfit for consumption, combined with the inability to freeze milk alternatives and the consequent product wastage. This can be observed from the following participant statements: *'I don't use it fast enough ... then it goes off'*; *'I will move away from the milk alternative and not purchase it, if I can't find a small pack size'*; and:

I tried to freeze it. I know it says on the box not to freeze it, but I tested it because I could not get it in smaller containers and it did not work at all.

Consequently, it was deduced that participants did not only consider the physical availability of a product, but also the convenience of shopping locations, as well as product package sizes under the concept of availability.

7.4.2 Sub-theme 5b: Product Sensory Limitations

The acceptability of product sensory and quality properties was also found to be limitations of participants' ability to use milk alternatives. While the full extent of participants' evaluation of products related to sensory properties is presented in Chapter 6, its relation to participants' perceived ability to use UHT milk alternatives needs to be briefly presented in this section. The product sensory and quality characteristics were often found to determine whether a participant could see themselves sustaining the use of the product for a longer period of time

than initial experimentation and whether participants would re-purchase the product. Several participants mentioned that milk alternatives do not have the same taste and texture as cow milk, creating a challenge to become accustomed, if possible, to the sensory properties of milk alternatives. Participants indicated that *'the hardest ... is the taste and texture'*; *'it is something completely new to which one needs to become accustomed to'*; *'it just tastes different'*; and *'it is a taste to which you need to become accustomed to'*. Taking this into consideration, participants considered it a potential financial risk to purchase unfamiliar milk alternatives if the sensory properties of the product turned out to be unacceptable for its intended use after purchase. The quality and sensory properties of baked goods and beverages are perceived to be affected when milk alternatives are used in recipes or hot beverages, as participants indicated *'It is simply different'* and *'the most important consideration is its taste in tea'*, thus further impacting on participant's perceived ability to purchase milk alternatives as a replacement for milk. Product sensory properties were considered a determining factor in participants' perceived ability to purchase milk alternatives as replacement for cow milk, with poor sensory properties perceived as a barrier to product use and its desirability for purchase. It was also considered a valid reason for discontinued use, or a need to change to a different product with future purchases: *'If I find a product not good, I will change it for something else'*. Regular users of milk alternatives made distinct mention of the need to purposefully manage expectations of product quality and sensory properties if the perception of these two factors as a barrier to purchase were to be overcome: *'I know it is a plant milk ... so my expectation is what it is'*.

7.4.3 Sub-theme 5c: Medical Limitations

While health needs such as allergies were one of the drivers for consumption of milk alternatives, as described in the expected outcome section, medical limitations, in particular food allergies, were also occasionally found to be a barrier to milk alternative use and consequently the purchase thereof. Milk allergies were one of the barriers observed to the use of dairy-based milk alternatives: *'she's allergic to milk'*; *'some people cannot drink cow milk'*; and *'we did not have a choice, he was very ill and we had to make drastic dietary changes'*. However, various participants indicated that *'a milk allergy is not so difficult to manage, since there are many alternatives available to replace milk in the diet'*, illustrating the perceived usefulness of milk alternatives as replacement products in milk exclusion diets. Some participants expressed frustration that perceived milk alternatives often still included allergens, *'I read the label ... then I find whey or soy included'* and *'[there are] lots of banting options, [but it's not suitable] for other needs, allergens are still included'*. Individuals with nut, soy or coconut allergies indicated its adverse impact on their ability to use milk alternatives, *'I have an allergy of soy'*; *'many people allergic to milk are also allergic to soy'*; *'[I am] allergic to*

coconut and almond milk'; and *'[I am] allergic to nuts, consequently almond milk does not work at all'*. Although considered to be less severe than allergies, other medical conditions such as gluten- and lactose-intolerance created concern among participants for using oat- and lactose-containing dairy-based milk alternatives. As seen from the sections above, participants indicated that practical, sensory, quality and medical limitations were found to impact their UHT milk alternative purchase decisions.

7.4.4 Sub-theme 5d: Household Arrangement

Research findings revealed that participants also linked the level of control over the purchase of UHT milk alternatives to their household arrangement and the level of control the participant experiences in personal food consumption choices. Five types of living arrangements were identified based on patterns of participants' perceived individual control. Participants were asked various questions related to the personal control they believed they had in their food consumption choices and more specifically their choice to use milk alternatives. These questions developed further to gather data on who does the household shopping, who decides about the products purchased, who influence these decisions and whose preferences carry the most weight in product selection.

7.4.4.1 Solitary Living Arrangement with Complete Own Control

Where individuals have a solitary living arrangement, they live alone with no other influences in the household. It was considered easy to have complete control over product selection, as seen from the following statements: *'I am just on my own'*; *'I am the one deciding'*; *'[I] have total control of the products chosen'*; *'No one else influences the decisions'*; *'luckily, I can make my own ... decision as to what type of food or drinks I want to consume'*; *'[I] would be able to use milk alternative products, if [I] wish to do so'*; *'[I] have the final say and ... responsibility of picking anything'*; and *'since I live alone, I can do as I please'*. Individuals with solitary living arrangements considered themselves to be in complete control of their purchases and food preparation, which was perceived as a high level of control to match their consumption with their personal preferences.

7.4.4.2 Shared Living Arrangement with Overriding Control

Whilst some participants indicated that they share a household with others, they still indicated a high level of control over the products purchased. Participants often linked the choice of product selection to the preferences of the individual who made the household grocery purchases. This can be observed from participant statements, such as: *'I normally do the groceries, so whatever I decide they have got to fall in with'*; *'I would be the one buying, so they would just have to take what they get'*; *'Complete control, I make the purchases'*; *'I do all the shopping, basically, [he] does not really have a say ... he just has to eat and drink whatever*

I have in the house’; and *‘I am definitely in control of what products I choose to purchase’*. Some participants specifically indicated that their own preferences were considered to be most important in the household with statements such as:

[I] believe very strongly in vegan food ... if he wants his own milk then he has got to buy his own milk ... If he does not want to eat my food, that is not my problem! That is what we have in the house;

and *‘my opinion carries the most weight ... I purchase what I like’*. Even where a partner made grocery purchases, the participant’s preferences could in some instances still carry meaningful weight at the point of purchase, as seen by the following statements: *‘my husband will only purchase exactly what I tell him to purchase’* and *‘I’m luckily married to a husband who listens’*. Other participants indicated that whilst they had overriding control in products selected for purchase during grocery shopping, they would consider household members’ requests: *‘[I] make most of the decisions but ... I consider what they want’*; *‘I am the one who does most of the shopping but members of the family ... can make requests’*. In some instances, participants’ responsibility for grocery purchases gave them a fair amount of control of the products purchased, *‘I am the one who does the groceries most of the time’*, with other household members not being highly involved or influential in product selection, *‘they do not really give too much comment on the milk I buy’*. As seen from the statements above, certain participants in shared living arrangements consider themselves to have overriding control of products purchased and consumed. These participants often purchased the household groceries or indicated what should be purchased for the household. Other household members seemed to accept the products selected and were not involved in the purchase decisions. With overriding control, a participant often purchases household groceries and consequently strongly influences the selection of products available for consumption in the household.

7.4.4.3 Shared Living Arrangement with Shared Influence and Control

Many participants indicated that they shared a household with others and that individuals in the household shared responsibility for grocery purchases and food preparation. This group of participants indicated shared control of product selection based on the fact that the preferences of various household members were considered and influenced the products selected for purchase. Some participants indicated that household members had similar preferences and that decision-making was mutual: *‘We are all very much on the same page’*; *‘In my home we both have the same vision so in terms of shopping we are both in control of what products we are using’*; *‘both ... have equal control more or less about the decisions’*; *‘it is normally mutual’*; *‘There is only the two of us and no children or anything like that, so it*

definitely gives you the freedom to know what you want and that is what you get; *'We all contribute to the shopping list*'; *'I actually try to accommodate preferences but we do not differ on the milk*'; and *'we will make sure that we purchase something everyone likes*'. Some participants also indicated mutual trust, habitual choices and freedom of choice between household members through statements such as *'whoever goes on the day has the freedom to choose*'; and *'if [husband] shops, he purchases what we normally use ... which is actually something your parents used ... because you know it works*'. Where individuals had different needs or preferences in shared living arrangements with shared influence and control, the needs of all individuals were considered to be met. The individual who purchases groceries on the day ensures that different products are purchased to meet everyone's needs, *'I do the shopping, but will consider the other people's preferences*'; *'we are at least now in a space where we all know what must be purchased and what not*'; *'everyone's needs will be considered when we are shopping ... the alternative is only used for me*'; *'We all contribute and if somebody wants to try something different it is not difficult ... we will do that*'; *'since our diets are so diverse, everyone has a say*'; *'[I] do purchases myself and purchase different products for household*'; and *'My husband buys his dairy milk and I buy my plant-based milk ... whoever buys the groceries will buy for both ... we have got an understanding*'. In households with shared influence and control between household members, it is often considered possible to use alternatives if desired, even if the entire household does not use alternative milk products. Individuals who normally do household shopping consider the needs or preferences of the household. This is considered simpler when household members have similar views and preferences. The partner that does the shopping considers the needs of both and since their preferences are quite similar, both consider it a good and convenient arrangement. However, there are also households where different preferences or needs will be accommodated with the purchase and preparation of separate products and meals. To this group of participants, sharing influence and control often meant that whoever does the shopping on a specific day makes the decision, but purchases suitable products for all household members and partners felt that they have equal control of product selection.

7.4.4.4 Shared Living Arrangement with Minimal Own Control

In some shared living arrangements, participants considered themselves to have very limited control of the products selected for purchase and consumption. They indicated that their choices were limited by the influence of specific household members, whose preferences determined products consumed in the household: *'it is not my personal choice*'; *'I am residing with family members*'; and *'my sister's choices will carry the most weight, she is quite influential*'. Being in a shared living arrangement with minimum perceived own control, one dominant household member can considerably impact the potential use of alternatives, as

seen from statements such as *'my husband always makes it difficult'* and *'I do not have all that much choice'*. Some participants whose family members feel strongly against milk alternatives decided that interpersonal relationships are more important than their own consumption preferences, *'my current close family with whom I reside, do not agree ... it is better to come to some agreement ... they feel rather strongly against it'*. Differing opinions between individuals in shared living arrangements were found to potentially create various challenges to using milk alternatives, with one participant indicating *'if I had stayed all alone by myself, my choices would definitely have been different'*. In a shared living arrangement where some individuals have minimal control, someone else in the household's preferences will often be very influential and carry the most weight during purchase selection. Even though these participants indicated that their choices would have been different if they had more control, they either did not have the means to determine their own product selection or decided to comply with the preferences of other household members to avoid conflict.

7.4.4.5 Household with Children

In households with children, participants indicated that children have a strong influence on purchase and consumption choices, *'My son's and my daughter's opinions matter a lot ... it will influence my choices'*. In households with children, using milk alternatives was often associated with children's health needs such as milk allergies. Children's needs and allergies often took precedence as participants indicated, *'the children are the reason for our shift to plant-based'*; and *'I was buying soy milk for my child'*. Where a child cannot use cow milk, both parents will be practically involved in the decision-making and suitable product selection at the point of purchase. When asked who decides on products selected for a child allergic to milk, one participant responded: *'normally I do, but my husband came forward with almond milk and suggested that we try it'*. The needs of children took precedence, even in situations where partners did not agree on milk alternatives, *'there is an ongoing fight with my husband, but we do win, especially now with my one daughter as well'*. Both parents would buy milk alternatives when their children have a need for it, or when their adult children were visiting. Children using milk alternatives due to health reasons are usually educated very well on suitable products and involved in the decision-making process from an early age to determine likes and dislikes as seen from the following participant statements: *'[we] teach our daughter to know by herself what products contain'* and *'occasionally we buy something new for her to taste ... then she can find out what she likes'*. Various participants noted that the needs or preferences of children influence parents' choices during product purchases and consequently household product consumption. Although the likes and dislikes of the children are considered, some participants still consider the health benefits, ingredients and product claims above the children's preferences.

7.5 CONATIVE COMPONENT

Apart from participants' beliefs and evaluation criteria focused directly on UHT milk alternative products, the research enquiry also found several subthemes and themes that were not specifically related to the product but contributed to their intentions to purchase UHT milk alternatives. Findings related to these non-product-related influences were presented in this chapter, achieving the third research objective.

Objective 3: To establish the factors that initiate consumers' purchase intentions of UHT milk alternatives (*conative component of attitudes*)

Factors found which had the potential to drive or deter participants' purchase intentions (impacting their conative perspective) included the expected outcomes they had if they were to use the product, the social norm and their perceived control over product purchases and consumption.

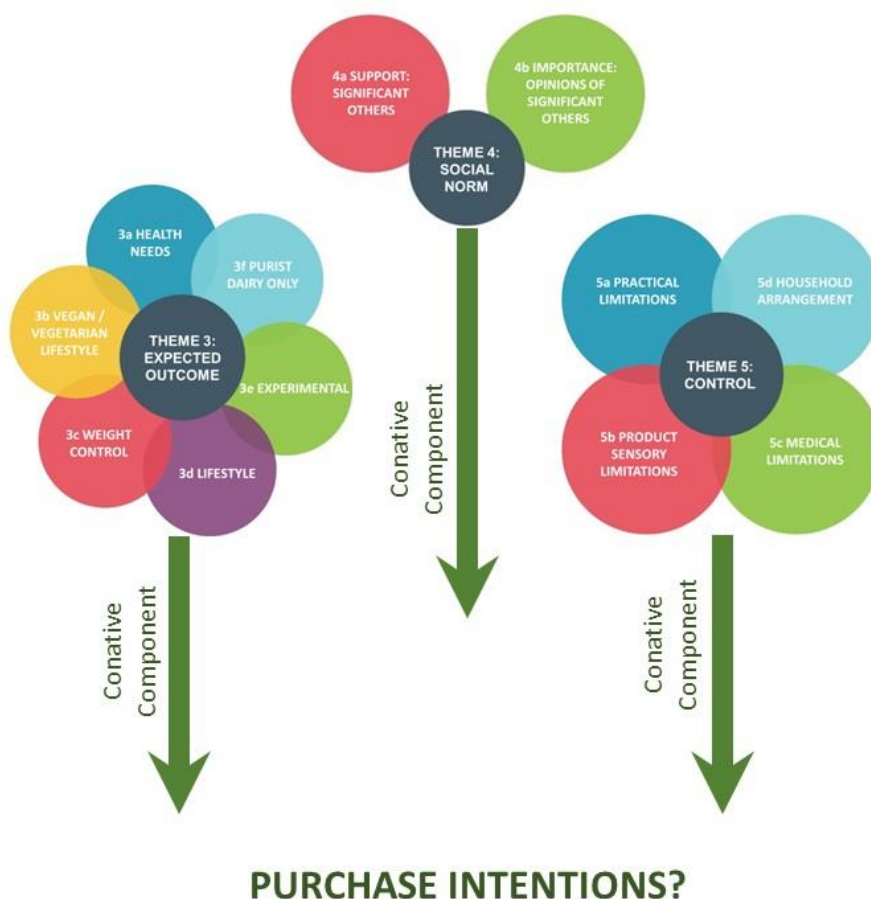


Figure 7.4: Expected Outcome, Social Norm and Control - Conative Component

Together the expected outcome, social norm and control, or the *conative component*, could potentially influence participant purchase intentions (Figure 7.4). These potential links are described in the next chapter.

7.6 CONCLUSION

This chapter presented the findings on the three non-product-related themes that were found to comprise the conative component of consumer attitudes. Participants described six distinct expected outcomes to impact their intentions, namely, the way in which a product could meet their health needs, whether it could support a vegan or vegetarian lifestyle, whether it could support them to reach weight goals, or to live a healthy lifestyle and whether it would work well to experiment with in baking and food preparation. In some cases, unfavourable intentions were identified due to the participants' desire for pure, whole cow milk, in which case milk alternatives could not meet their expectations. The social norm impacting participants' intentions included the perceived amount of support they received from significant others as well as the importance the participant ascribed to the opinions of significant others. Finally, participants' intentions to purchase UHT milk alternatives were influenced by the perceived amount of control they had over product purchases. Their control was found to be potentially limited by practical limitations, such as product cost and availability; the product sensory characteristics and their ability to adapt to unfamiliar products and sustain its use long-term; medical limitations, such as cow milk, soy, nut or coconut allergies; and their personal living arrangement which would impact whether their personal preferences was attainable in the household.

CHAPTER 8

DISCUSSION – CONSUMER INTENTIONS

Includes a discussion of the research findings, linking participant intentions specifically to the five themes of the findings, in conjunction with findings from literature.

8.1 INTRODUCTION

Collectively, the three findings chapters presented a comprehensive description of participants' attitudes and purchase intentions toward UHT milk alternative products. These chapters contributed considerable depth to the understanding of the research phenomenon. The research found that the themes and subthemes identified and presented in the previous chapters have a meaningful impact on consumers' attitudes and their intention to purchase UHT milk alternatives. None of these themes was considered sufficient in isolation to indicate consumer purchase intentions, consequently, the researcher took the analysis and interpretation further to create a more comprehensive view of how these themes could answer the fourth research sub-question in part to attain the fourth objective:

Sub-question 4: How can the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions be holistically described and interpreted?

This chapter specifically provides holistic findings on how the research themes from the previous chapters relate to shaping the essence of consumer purchase intentions toward the UHT milk alternative product category. These findings are discussed in context of findings from literature to establish a comprehensive understanding of the meaning participants ascribed to the phenomenon under study. This answers the first part of the fourth research sub-question, calling for a description of consumer attitudes and intentions. In the final chapter, the remainder of the fourth research sub-question, requiring an interpretation of the findings is answered. The research findings are discussed and interpreted within the conceptual framework of the study to arrive at the proposed integrated attitude-intention model within which consumer attitudes and their purchase intentions toward UHT milk alternatives can be interpreted in the concluding chapter.

8.2 CONSUMER INTENTIONS TOWARD UHT MILK ALTERNATIVES

As mentioned by Paul *et al.* (2016) and Doane *et al.* (2014), the participant's behavioural intention in this study, or inclination to perform a specific behaviour, in this case, to purchase UHT milk alternative products, precede the actual purchase and consumption behaviour. While participants in the study mentioned their purchase intention specifically, findings indicated that purchase intention did not stand isolated in the participant's frame of reference.

Participants frequently indicated that their specific purchase intention toward UHT milk alternatives was based on, linked to, or strongly influenced by the multiple themes identified in the previous chapters, along with the relevant subthemes of which each of these themes is comprised. Thus, the study found that participants' purchase intentions could not stand in isolation but comprised the essence of the research phenomenon through the combination of the research themes identified. The findings on these concepts were already presented and discussed in detail in the relevant chapters. However, the way these concepts were found to relate to the participants' intentions to purchase UHT milk alternatives is discussed in this section in conjunction with supporting and contradictory findings from literature.

8.2.1 Theme 1: Intention and Consumer Product Beliefs (Cognitive Component)

Participants' beliefs of milk alternatives, translating to the cognitive component of their attitudes toward the product category, were often linked to their purchase intentions, as set out in this section. Many participants believed that plant-based milk alternatives were for the use of individuals with medical conditions, such as milk allergies, or vegan lifestyles. These beliefs were also indicated by the findings of other studies (Besir *et al.*, 2022; Cardello *et al.*, 2022; Wadyka, 2022; Reyes-Jurado *et al.*, 2021) which indicated that plant-based milk alternatives specifically were considered for the use of individuals with cow milk allergies or vegan lifestyles. Participants with milk allergies, or family members with milk allergies, or vegan lifestyles often mentioned their intention to use plant-based milk alternatives specifically for these reasons. Similarly, some participants believed that lactose-free milk would be suitable for individuals with lactose intolerance and that dairy-based enriched milk would be suitable for children to support growth and immunity. A vast number of studies were found that linked lactose intolerance to the belief that milk alternatives, whether plant-based or lactose-free dairy-based, were considered to provide a suitable alternative to milk for individuals experiencing lactose intolerance (Cardello *et al.*, 2022; Vallath *et al.*, 2022; Gorman *et al.*, 2021; Reyes-Jurado *et al.*, 2021; Rizzo *et al.*, 2020; Silva *et al.*, 2020; Kempen *et al.*, 2016). While no studies were found in literature related to dairy-based enriched or fortified milk alternatives, as available in the South African retail market, global studies were found indicating the belief that plant-based milk alternatives could support the immune health of consumers (Besir *et al.*, 2022; Moss *et al.*, 2022).

Participants who did not have milk allergies, lactose intolerance, vegan lifestyles, or children with additional nutritional needs indicated that they had no intention to purchase milk alternatives, since they believed it was '*not necessary for my health*' or was meant for other consumers, but not for them. Occasionally, some participants also indicated the belief that the milk alternative category was a '*luxury*', '*fad*', or '*gimmick*' with products believed to be '*expensive*' and consequently that they had no intention to purchase milk alternatives due to

these beliefs. The strongly worded emphasis placed on such beliefs was rather unexpected, indicating a rather unfavourable attitude toward products which were considered fads or luxuries by these participants. Kempen *et al.* (2016) similarly found that some South African consumers believed milk alternative products to be a luxury and expensive product, which put this type of product out of reach of the average consumer. Several participants mentioned that they believed milk alternatives have certain health benefits, such as healthy fats, less hormones, or no antibiotics and linked their favourable intentions to use milk alternatives to these beliefs. Several other studies also indicated the consumer perception that milk alternatives, in particular, plant-based milk alternatives possessed certain health benefits (Moss *et al.*, 2022; Vallath *et al.*, 2022; Reyes-Jurado *et al.*, 2021; Markham *et al.*, 2014). Nut milk products were particularly considered to contain healthy fats (Warren, 2019), while all plant-based milk alternatives, except soy milk, were favourably associated by the consumer with a lack of hormones and antibiotics (Besir *et al.*, 2022; Cardello *et al.*, 2022; Markham *et al.*, 2014). Similar to findings of this study, Kempen *et al.* (2016) indicated that consumers are concerned by the fact that soy milk contains oestrogen. The predominantly unfavourable attitudes held toward soy milk were unexpected since it has been one of the most commonly used milk alternatives in South Africa for decades for individuals with milk allergies. However, it might be exactly this perception that it was the “only” milk alternative available for many years which has also supported an aversion to the product, with many participants mentioning bad experiences with soy milk in the past limiting their willingness to try it again. Although product development has come a long way to meet consumer sensory preferences, many participants still seem to associate soy milk with unpleasant past experiences and mentioned a preference for other milk alternatives over soy milk. In contrast to the above-mentioned favourable beliefs of milk alternatives, some participants of this study believed milk alternatives to be ‘unnatural’, ‘highly processed’ and containing ‘too many additives’ or sugar, linking unfavourable intentions to purchase the product category to these beliefs. This was supported by other research in which consumers were found to be concerned about the unnatural and highly processed nature of milk alternative products considered to be synthetic (Moss *et al.*, 2022; Rizzo *et al.*, 2020; Markham *et al.*, 2014) with serious concerns noted that consumers perceived milk alternatives to contain unwanted, or unfamiliar additives and high levels of added sugar to improve product sensory acceptability (Reyes-Jurado *et al.*, 2021; Warren, 2019).

Participants often linked beliefs related to the utility of milk alternatives to their purchase intentions. Some plant-based milk alternatives, such as almond milk, coconut milk and soy milk, were believed to be suitable for use in cooking and baking, which would favourably impact participants’ intention to use it for the specific purpose. Some plant-based products,

such as almond milk, soy milk, coconut milk and oat milk, were believed to be unsuitable to use in hot beverages or to drink per glass and consequently, participants indicated that they would not purchase or use it for such purposes. It was also established from literature that participants had specific beliefs on the suitability of milk alternatives for specific purposes. Some studies found that consumers believed that milk alternatives were suited for cooking, baking and use with cereals and used it for these purposes (Consumer Reports, 2022; Moss *et al.*, 2022; Rizzo *et al.*, 2020; Kempen *et al.*, 2016). However, other studies also found indications that consumers did not always believe milk alternatives, particularly plant-based milk alternatives to be suitable in hot beverages due to the altered taste, texture and appearance of hot beverages with the addition of plant-based milk alternatives (Moss *et al.*, 2022; Gorman *et al.*, 2021).

Therefore, it is established from both the research findings and literature in this section that linkages do exist between *consumer product beliefs of health, utility, product category properties, associations and sensory characteristics* of UHT milk alternatives and *consumer purchase intentions* (Figure 8.1).

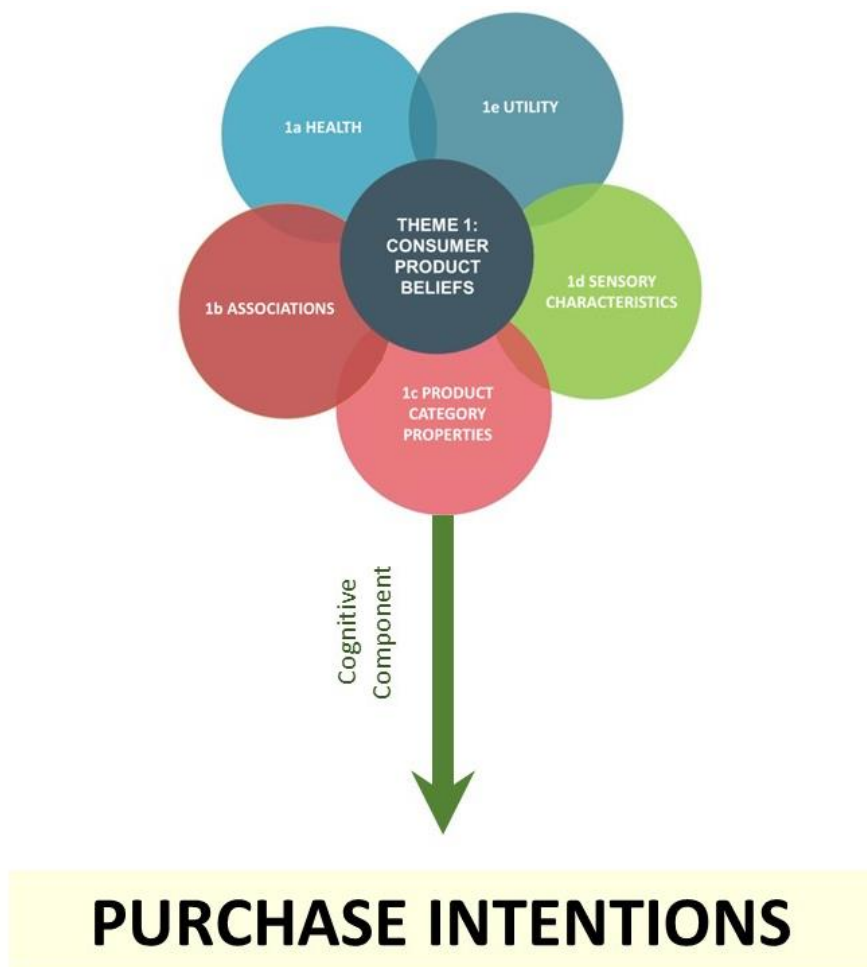


Figure 8.1: Intention and Consumer Product Beliefs

Apart from these linkages suggested between *consumer product beliefs* (Theme 1) and *purchase intentions* in this section, linkages were also suggested between participants' *purchase intentions* and their *evaluation of products* (Theme 2), as described in the next section.

8.2.2 Theme 2: Intention and Product Evaluation (Affective Component)

Participants' evaluation of individual milk alternative products or the entire product category was based on how favourably they evaluated the attributes of the product, as well as how important these attributes were in their product selection. Their evaluation of products shaped the affective component of their attitudes toward UHT milk alternatives. Various intrinsic product properties were indicated to influence participants' intentions to purchase UHT milk alternatives. Participants indicated that the safety of the product for consumption, including reference to its origin and shelf-life, was important in their decision to purchase milk alternatives. Some participants evaluated UHT products with a long shelf-life unfavourably, considering it '*too processed*', while others evaluated it favourably and useful in their lifestyle to have a product which could last a few months before opening. The product origin was also linked to product safety, with participants indicating a preference for local products and a lack of trust in the safety of imported products. A similar trend was seen in literature where consumers found food safety and knowledge of the origin of the product to be important in their purchase decisions (Kempen & Christie, 2022; Haas *et al.*, 2016; Markham *et al.*, 2014). As with this study, Kempen and Christie (2022) and Haas *et al.* (2016) recently found that consumers linked product safety with its origin, with a strong preference for products produced locally. Further, the nutritional value and ingredients of milk alternatives were considered an important factor in participants' intention to purchase products, with products containing too many additives, sugar, allergens such as nuts, soy or milk being evaluated unsuitable for consumption. As observed from literature (Besir *et al.*, 2022; Vallath *et al.*, 2022; Wadyka, 2022) and the research findings, for individuals following a plant-based lifestyle, it was important that all ingredients should be vegan-friendly, with animal-derived products or ingredients evaluated unfavourably and unsuitable for consumption. The functionality of a product for its intended purpose, whether for a weight-loss diet, as an ingredient in food preparation, or as a recovery drink after exercise was included in participants' evaluation of products, impacting on their selection of which products would meet their needs. Some participants evaluated familiar branding, or claims on the packaging, such as '*GMO-free*', '*preservative-free*', '*organic*', '*enriched*' or '*fair-trade*' to be important considerations in their evaluation of a product and favourably influencing their intention to purchase these products. Another interesting, unexpected finding was participants' concern for farmers who produce dairy-based milk alternatives, with several participants indicating that they would like

certification on the packaging that farmers received fair prices for their produce. This again links to their concern about the origin of a product, with a preference to support local producers and participants' desire to be able to relate to the origin of products contrary to merely consuming mass-produced products. In contrast, other participants indicated that brands and claims were not important in their decision, but rather led to cynicism about the legitimacy of such claims. Findings from literature on lactose-free milk indicated that while consumers may hold favourable attitudes toward claims on product packaging, it would only have a favourable impact on their product selection if its price was compared with other available lactose-free milk products (Rizzo *et al.*, 2020). While certain attributes were ascribed and evaluated to be important universally to the milk alternative product category, the evaluation of specific products was also linked to participants' intention to purchase the specific milk alternative product. Some participants indicated the intention to consume a variety of plant-based milk alternatives, but no dairy-based alternatives and vice versa. Findings on each product's specific evaluation as described in Chapter 6 was often linked to the participant's intention to purchase the specific product. For example, some participants indicated that they would consume high-protein milk alternatives as sports recovery drinks, or coconut and almond milk in recipes. Other participants indicated that they would never consume certain products since they were allergic to the ingredients. Participants also indicated that their evaluation of the price and packaging of available products would influence their intention to purchase a product. Several other studies also found price and product packaging to be a key factor in consumer selection of milk alternatives (Kempen & Christie, 2022; Moss *et al.*, 2022; Ohlau & Risius, 2022; Rizzo *et al.*, 2020; Yang & Dharmasena, 2020; Haas *et al.*, 2016; Utami, 2014). In contrast to participants of this study who often mentioned the need for smaller pack sizes for milk alternatives, Rizzo *et al.* (2020) found that American consumers had little interest in pack sizes smaller than half a gallon (1.9 litre), which was considered far too big for pack sizes among South African participants who indicated a preference for pack sizes smaller than the available one-litre packs. Participants' strong desire to reduce food wastage, driven by what they believed to be morally right, as a motive for smaller pack sizes was unanticipated before the study, indicating again that consumers consider a variety of aspects during purchase decisions. Several participants indicated that the past consumption and evaluation of milk alternatives had a meaningful impact on their future intentions to purchase or not purchase milk alternatives. Both Moss *et al.* (2022) and Cardello *et al.* (2022) found that increased familiarity with milk alternatives favourably influenced consumption. Unfamiliarity, particularly in the case of plant-based milk alternatives was indicated as a key reason for non-consumption (Cardello *et al.*, 2022). However, the most frequently mentioned concept in the findings that was indicated to impact the purchase intention of participants towards UHT milk alternatives was their evaluation of products' sensory characteristics. While the predominance of sensory

characteristics in the evaluation of products was not surprising, the strength of expressions in discussion when participants evaluated these attributes unfavourably were rather surprising. This emphasizes the importance of sensory characteristics of products, with limitations on other favourably evaluated product attributes such as health benefits to overcome any unfavourable sensory characteristics in purchase decisions. Many participants indicated that they would not use certain milk alternatives, since they did not like the sensory properties of the product, even if the product was considered healthy, or economical. Typical statements from the findings to this effect included: *'the stuff [milk alternatives] is too watery, so I will not purchase it again'*; *'it just tasted like water ... I decided not to buy it anymore'*; *'it has an off-putting colour'*; *'I tasted soy milk, I will not use it again'*; *'No, I know it tastes bad'*; *'if it is not nice, I will not use it again'*; *'[it] is not something I want to use because I did not like the taste'*; and *'it does not taste nice, I will not buy that'*. The opposite was also suggested that if a participant evaluated the sensory properties of a product favourably, it led to a favourable intention to purchase the product, as seen from the following typical participant statements: *'almond milk is nice, I would buy that probably'*; *'I would prefer coconut milk over almond milk just for the taste'*; *'I liked the taste very much. It was nice and creamy ... I would buy it again'*. The high frequency of the mention of sensory characteristics of products in the data could indicate that the sensory properties of milk alternatives and the evaluation thereof in the consumer mind may be one of the most important considerations in the consumer's intent to purchase milk alternatives. Since the vast number of descriptions consumers ascribed to the sensory properties of milk alternatives is extensive, it will not be detailed again in this section. However, it is imperative to note that the various studies similarly found that the sensory properties of milk alternatives play a key role in its consumption, with products evaluated unfavourably on sensory properties being consciously avoided by consumers (Moss *et al.*, 2022; Ohlau & Risius, 2022; Rizzo *et al.*, 2020; Haas *et al.*, 2016).

As established by the research findings and the literature in this section, it became clear that linkages do exist between the consumer's *evaluation of a product*, comprised of the *importance* ascribed to the product's *intrinsic* and *acquired properties*, its *functionality* and *promotions*, the *evaluation of products*, *product categories* and *product preferences*, as well as the *impact of familiarity* and *experience* (Figure 8.2),

While the participants' *product beliefs* (Theme 1) and *evaluation of a product* (Theme 2) were often found to be focused on the product attributes itself and shaped their *attitude toward the product*, other, non-product related elements, such as *expected outcomes* (Theme 3), *social norm* (Theme 4) and *control* (Theme 5), were also indicated to be linked to their *purchase intentions* as discussed in the next three sections.



Figure 8.2: Intention and Product Evaluation

8.2.3 Theme 3: Intention and Expected Outcome (Conative Component (a))

Themes 3 to 5 specifically depicted the non-product related influences impacting participants' intention to purchase UHT milk alternatives, thus presenting the conative component of their attitudes specifically toward purchase intentions, rather than toward the product itself. Participants' connotations, associated with the purchase and consumption of UHT milk alternatives, strongly impacted their purchase intentions of the product category. Participants' intention to purchase milk alternatives was closely linked to their *expected outcome* (conative component (a)) of the use of UHT milk alternatives, such as their expectations of how it could meet *health, weight control, experimental, lifestyle, vegan or vegetarian, or purist* needs (Figure 8.3).

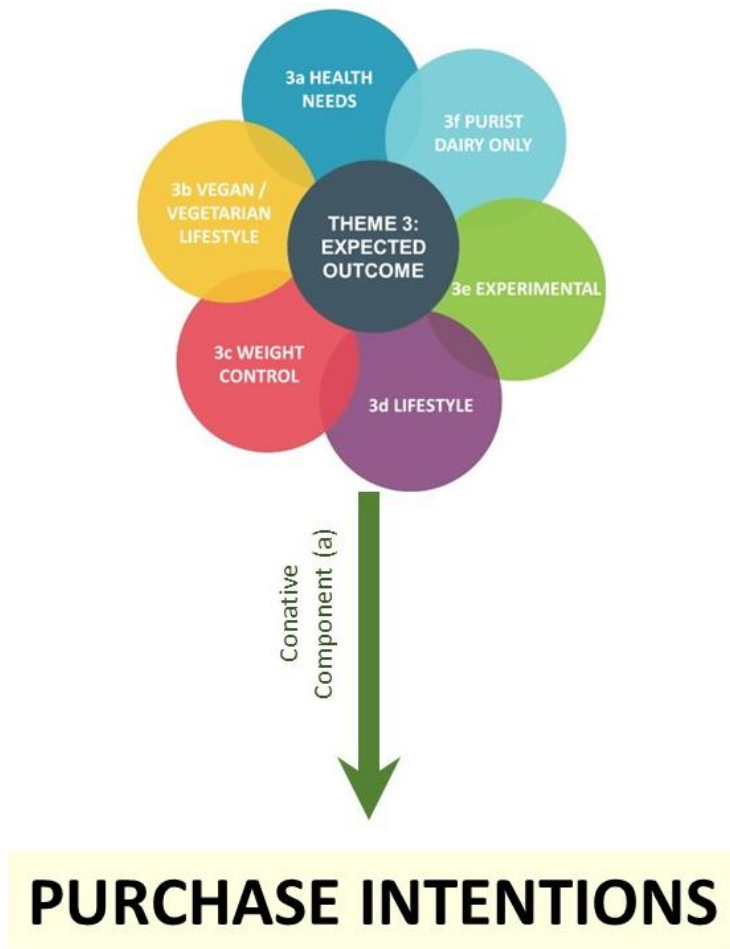


Figure 8.3: Intention and Expected Outcome

The expected outcome of a product's use was often evaluated in terms of the participant's need and its likelihood to meet the need. Some participants indicated that specific health needs, such as allergies or lactose intolerance, would drive their intention to purchase suitable milk alternatives or lead to the avoidance of milk alternatives which were not considered suitable. Other participants expressed their desire to follow a plant-based lifestyle, avoiding animal-derived products. Consequently, these participants did not consider cow milk or dairy-based milk alternatives to be suitable for their needs. Instead, they indicated that they only intended to purchase plant-based milk alternatives which could meet their desired outcome. Some participants indicated that certain milk alternatives, such as functional, high-protein milk, supported their desired outcome to lead an active lifestyle, or that certain alternatives, such as almond milk and coconut milk, supported their need for low-carbohydrate milk replacement products as part of a weight-loss diet. Several participants indicated that milk alternatives supported their need for different products to experiment with different ingredients during food preparation. These participants often indicated they intended to purchase a variety of milk alternative products for the purpose of experimentation. Finally, some participants also indicated that they had no intention to purchase any UHT milk alternatives, due to their desire

to use natural products and their expectation that only pure, fresh milk could meet this need. Typical participant statements which indicated the potential link between expected outcome and purchase intention in the UHT milk alternatives category include: *'I would have used it, if I were not allergic to it'*; *'you want to try it when you are on a diet'*; *'I do not support animal agriculture'*; *'I will use it as post-race recovery drink'*; and *'I prefer whole milk to the alternatives'*. Similar to sensory characteristics, the expected outcome was also frequently mentioned by participants to be a key consideration in their intention to purchase milk alternatives. The expected outcome did not necessarily directly lead to the participant's intention to avoid specific milk alternatives, instead, it mostly impacted participants' selection of products considered appropriate to use, thus indirectly eliminating products considered unsuitable. Consequently, the expected outcome impacted participants' intention to select certain products for purchase. The expected outcome that a consumer believes a specific behaviour will attain and whether that outcome is perceived as important and desirable was found to underlie the consumer's attitude toward a behaviour (Cooke *et al.*, 2016; Doane *et al.*, 2014; Mishra *et al.*, 2014). While consumer expectations can be deduced based on the purpose they claim to consume milk alternatives, only one recent study was found to link consumer expectations of a product specifically to their purchase intentions. Kempen *et al.* (2016) found that South African consumer acceptance and use of milk alternatives were strongly dependent on the outcomes they expected from product use. From the research findings and literature, it was established that consumer *purchase intentions* of UHT milk alternatives could be linked to their *expected outcomes* of product consumption, as the first part of the *conative component* of their attitudes toward the product category.

8.2.4 Theme 4: Intention and Social Norm (Conative Component (b))

A potential link between the social norm and purchase intentions was also found. Whilst consumers may have favourable attitudes toward a product, factors such as the social norm could influence their actual intention to consume the product. The *social norm* (Figure 8.4), comprising the second part (b) of the *conative component*, is encompassed by two important underlying factors. Firstly, the individual's perception of *how significant others are going to perceive and support the behaviour* and, secondly, *how important the individual considers it to comply with the views of significant others*.

While some level of influence of the social norm was expected on purchase intentions at the onset of the study, the extent to which a relatively small but frequently purchased product such as milk or milk alternatives could spark varying levels of support or debate among significant others was unanticipated. Participants indicated that their significant others' support of the consumption of milk alternatives ranged from being supportive and participating in similar behaviour, to being critical and ridiculing the consumption of milk alternatives. For participants

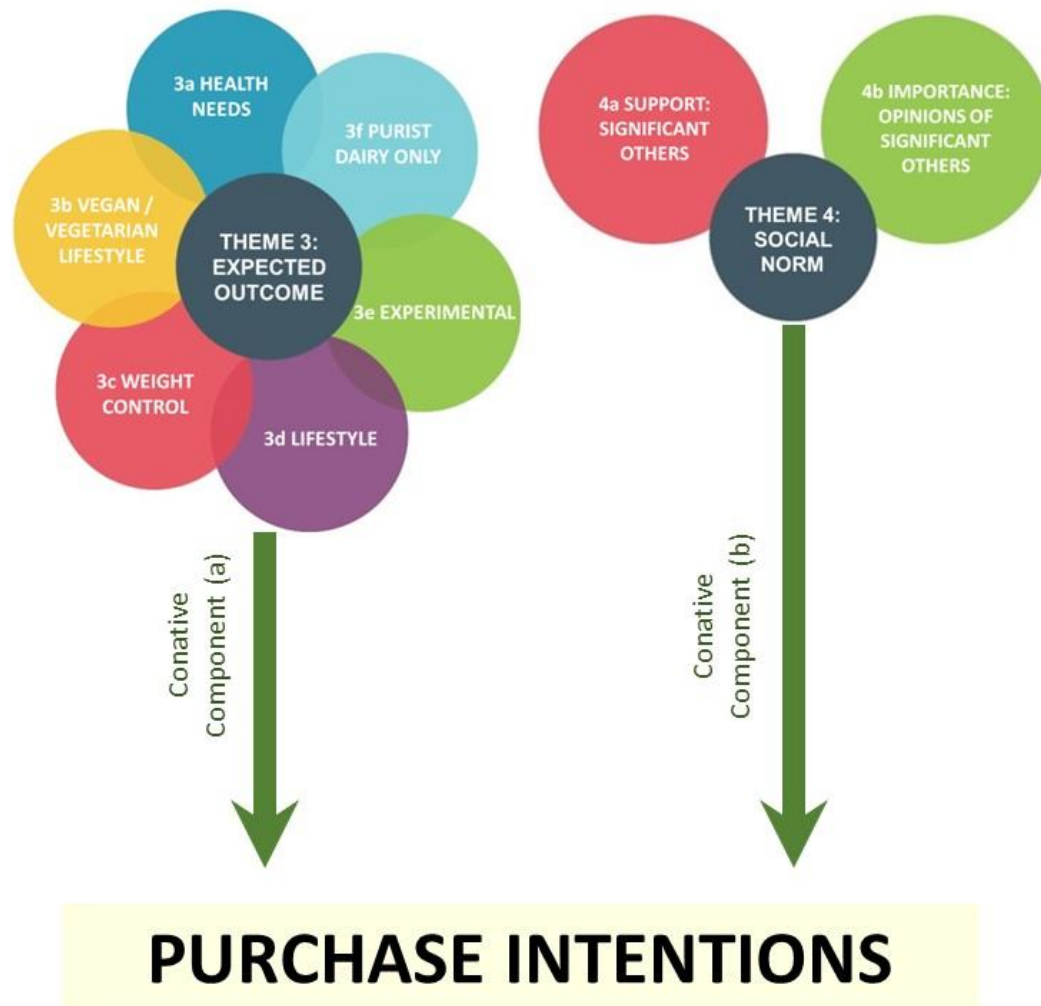


Figure 8.4: Intention and Social Norm

who felt supported by their significant others to consume milk alternatives, it was considered easy to purchase the products which they preferred. However, participants who felt unsupported and ridiculed in the consumption of milk alternatives by significant others considered it to be more challenging to simply purchase and consume their preferred products without conflict. While the opinions held by significant others could complicate the consumption of milk alternatives, or lead to conflict, the actual influence of significant others on purchase intentions was more strongly impacted by the importance participants themselves ascribed to compliance with the opinions of their significant others. Some participants considered the opinions of significant others to be important in their intended product selection and purchase. These participants often relinquished the purchase of their preferred milk alternatives, complying with the desired products of significant others, in the desire not to offend. Where participants indicated an indifferent attitude toward the importance of opinions of significant others, they frequently purchased multiple milk and milk alternative products to provide all household members with their desired products. In this way, participants and their

significant others had the freedom to determine their own purchase intentions for their preferred milk or milk alternatives. Few participants indicated that they considered the opinions of significant others unimportant in their selection of milk alternatives. These participants often indicated that they would purchase the milk alternatives which they preferred, regardless of opposition from, or conflict with, significant others. In such situations, each household member would purchase their own preferred milk or milk alternative, in some cases refusing to purchase the preferred products of other household members if it did not match their personal preferences. The social norm was particularly influential in the intention to purchase specific milk alternatives, such as dairy-free, lactose-free or nut-free milk alternatives, when household members of participants required milk alternatives due to health needs. Where household members were allergic to cow milk or milk alternatives such as soy milk, nut-based milk or coconut milk, or experienced lactose intolerance, the household purchase intentions were strongly influenced by the individual's needs to select suitable products. However, not all household members necessarily used the specifically selected products and some participants indicated that they '*used different products in the household*' to support all household members' preferences and health needs. Only one study was found that partially established a link between consumer use of milk alternative products and the social norm as described in this section. Boaithey and Minegishi (2020) found similarities between adult and youth consumption behaviour of milk alternatives, potentially indicating a link between the behaviour of significant others and the behaviour of an individual in a household. However, sources providing information on consumer decision-making have been found to link the judgements and opinions of significant others to influence consumer product purchase intentions related in general (Paul *et al.*, 2016). Although literature which links purchase intentions specifically to UHT milk alternative products was found to be limited, the findings of this study, as related to the social norm, are supported at a high level by literature and theory on behavioural intentions models which link the *social norm* to consumer *purchase intentions* (Cooke *et al.*, 2016; Hackman & Knowlden, 2014; Mishra *et al.*, 2014). While expected outcome (a) and social norm (b) were found to comprise the first two parts of the conative component of consumer attitudes toward UHT milk alternatives, the next section presents the discussion on the third part of the cognitive component (c) which was found to link consumer control to their purchase intentions.

8.2.5 Theme 5: Intention and Control (Conative Component (c))

Participants' perceived *control* over their purchase behaviour, as impacted by *practical, medical and sensory limitations and household arrangements*, was also indicated to influence their intention to purchase UHT milk alternatives, comprising the third part of the conative component (c) (Figure 8.5).

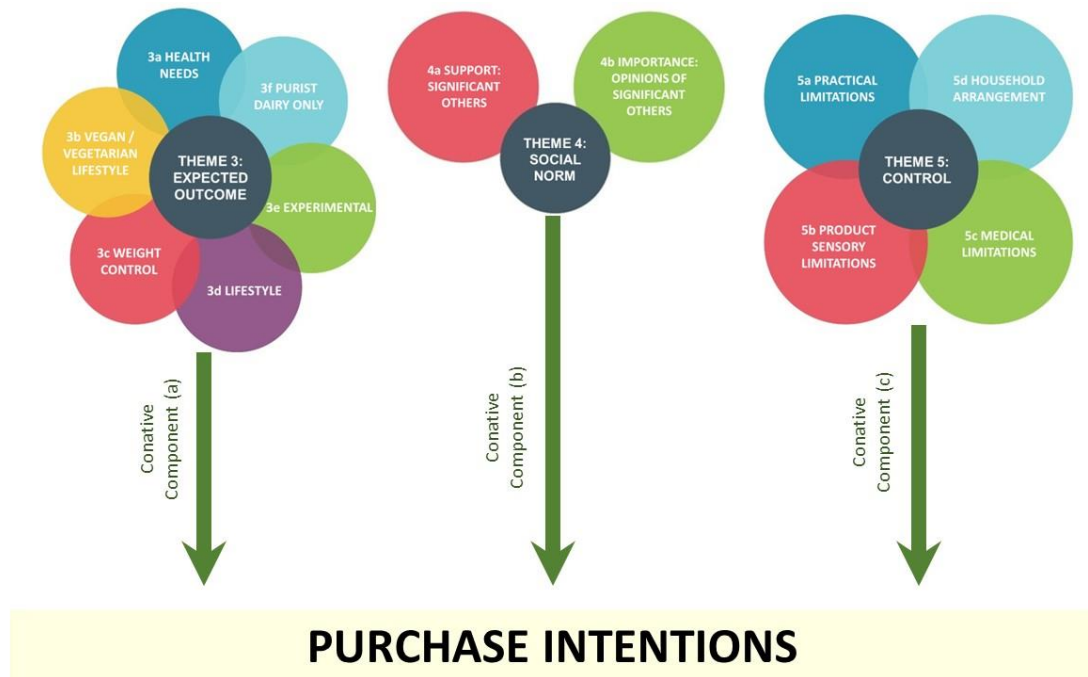


Figure 8.5: Intention and Control

Their perceived control to purchase milk alternatives was comprised of their belief whether it is within their personal ability and control to perform and maintain a behaviour successfully. Several participants mentioned that practical, sensory or medical limitations, impacted their ability to successfully purchase milk alternatives in the short- or long-term. Practical limitations such as affordability and availability of milk alternatives and medical limitations such as allergies in the participants' personal circumstances or location were linked to their intent and personal inability to purchase certain milk alternatives. Participants who considered milk alternatives to be unaffordable indicated that they could not successfully sustain its purchase long-term. Findings from several other studies supported this by indicating that a high price was considered to be a key barrier to purchase of milk alternatives by consumers (Moss *et al.*, 2022; Rizzo *et al.*, 2020; Haas *et al.*, 2016; Utami, 2014). Furthermore, participants who did not find suitable alternatives available in their retail environment indicated that their choices were limited by what was available to them. Utami (2014) and Markham *et al.* (2014) specifically linked the availability of milk alternatives to consumer product purchases, where products with limited availability or presenting inconveniences to the consumer to attain the product were unfavourably linked to product purchases. As one participant stated: *'if it is in the shop and it is reasonable, I would use it'*. Some participants also considered a personal dislike of product sensory and quality characteristics as a limitation to sustain the consumption of milk alternatives successfully long-term. This was especially visible among participants who purchased milk alternatives for weight loss purposes who indicated that they could reconcile themselves to the sensory characteristics of a milk alternative selected for this purpose over

a short period of time, but that they would not be able to continue its consumption long-term due to their dislike of the sensory properties. The sensory properties of milk alternatives in some cases also influenced the perceived ability of participants to consume such products unfavourably with a few participants indicating that they would rather be able to exclude all milk without any replacement products from their diet than to consume the available milk alternatives due to their sensory properties. Further, participants frequently linked the control of their purchase and selection of milk or milk alternatives to their personal household situation. Individuals who resided on their own indicated that they had complete control over their product selection, consequently, their intentions to purchase milk alternatives had a high likelihood to translate into their actual behaviour. Where participants lived in shared households, their control ranged from the participant having overriding control, shared influence and control, or minimal control over the products purchased in the household. In such situations, their attitude toward a product would be important, but their ability to actually purchase the product would depend on their level of influence and control in the household over product selection. In households with children, participants often indicated that they had control over the milk or milk alternatives purchased, but that their selection was influenced by the preferences and needs of the children in the household. The impact of living arrangements was also found in literature to impact the use of milk alternatives, particularly the use of lactose-free milk alternatives. Rizzo *et al.* (2020) found that the majority of their participants began to purchase lactose-free milk for an individual in the household. They did however find that the consumption of lactose-free milk varied among households where some consumers used lactose-free milk for all their household members after one member of the family was diagnosed with lactose intolerance and other consumers used lactose-free milk exclusively for the individual who needed it while the rest of the household used normal cow milk (Rizzo *et al.*, 2020). As seen from the discussions in these three sections, linkages between participants' *purchase intentions* and the *expected outcome* (Theme 3), *social norm* (Theme 4) and *control* (Theme 5) were suggested from both the research findings and from literature.

8.3 CONCLUSION

This penultimate chapter on purchase intention provided a detailed discussion of the links found between the themes of the study to support a deeper understanding of the meaning associated with the purchase of UHT milk alternatives, based on the multiple realities and experiences shaping the perspectives of the research participants and supported by findings from literature. This chapter presented the discussion of the findings to describe the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions in partial answer to research subquestion 4.

Sub-question 4: How can the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions be holistically described and interpreted?

To answer the remainder of this research sub-question, the next chapter concludes the research enquiry by presenting interpretation of the research findings. The essence of this phenomenon is visually depicted in the next chapter by the proposed integrated attitude-intention model which was developed based on the findings of the phenomenological enquiry and interpreted within the contextual framework of the study to attain the final objective of the research enquiry.

Objective 4: To propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted

The final concluding chapter also provides the conclusions, recommendations, contributions and limitations of the study, as well as recommendations for future research.

CHAPTER 9

PROPOSED MODEL, RECOMMENDATIONS AND CONCLUSION

The chapter concludes the research with a brief descriptive summary how the aim of the study was achieved. The essential, invariant structure of the phenomenon under study provides an interpretation of the research findings in context of the research objectives and how these findings unite to shape the essence of consumer purchase intentions toward the product category in support of the fourth research sub-question. The chapter presents the proposed integrated attitude-intention model within which the effect of consumer attitudes on their purchase intentions toward UHT milk alternatives can be holistically interpreted in support of the central research question. Finally, the contributions and limitations of the study are stated and recommendations for further research are presented.

9.1 INTRODUCTION

The previous chapter discussed the research findings in context of the links discovered between the themes identified, describing consumers' *attitudes* toward UHT milk alternatives as linked to their *purchase intentions*. This concluding chapter of the research is presented in three parts. The research approach followed is briefly described first. Thereafter, the essential, invariant structure of the research phenomenon presents the interpretation of research findings, as per each research sub-question and objective of the study. This interpretation leads to the presentation of the proposed integrated attitude-intention model in answer to the central research question:

What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?

Finally, this concludes the research by presenting recommendations to the UHT milk alternative industry, the contributions and limitations of the study and recommendations for future research.

9.2 RESEARCH APPROACH

The research utilised a postpositivist, qualitative approach to shape the perspective lens for this exploratory-descriptive phenomenological enquiry. The study intended to gather deeper insights to arrive at the essence of South African consumers' attitudes toward UHT milk alternatives and toward the purchase intentions thereof. The aim of the research was to depict a model within which the central research question could be interpreted. The study used two in-person mini-focus groups, eight online mini-focus groups and eleven semi-structured online interviews to collect data from 35 participants in total. A discussion guide was used to initiate

discussions and was flexible for adaptation to support the research's emergent design. Trustworthiness of the research findings was supported by credibility, transferability, dependability, confirmability, reflexivity and an epoché bracketing the researcher's past experiences and perspectives to support transparency. Data was analysed using an inductive-deductive thematic analysis approach. Findings were presented per theme, whereafter it was discussed and interpreted to arrive at the proposed integrated attitude-intention model, visualising the suggested links between the themes and subthemes which collectively shape consumer attitudes and purchase intentions toward UHT milk alternative products within the South African retail market. The progression of the research process from identification of the research problem to completion and submission for examination is presented in Figure 9.1.



Figure 9.1: Research Process

Once a potential research problem was identified, the researcher conducted a literature search to formulate a problem statement and establish the justification for research into the research problem. The research questions and related aim and objectives could be formulated from the problem statement. A research proposal was developed based on this information and expanded to recommend a research design and methodology to answer the research question. The research proposal was submitted to CAES for ethical approval prior to commencement of the research activities.

The initial literature search of the proposal was expanded to establish a comprehensive literature background and theoretical perspective to the study. This literature search was continuously expanded upon during the study. From the literature and theoretical perspective, a conceptual framework was formulated. The initially proposed research methodology was further refined to arrive at a post-positivist paradigm, qualitative approach, exploratory-descriptive design and phenomenological strategy to guide the research enquiry. The practical operationalisation of the study and the discussion guide for data-gathering activities were developed. A pilot study was conducted to determine the appropriateness of the discussion guide. Participant recruitment, as per the sampling strategy and geographic location of the study, commenced and was concluded once the point of saturation in data was reached. Data-gathering activities, including mini-focus groups and semi-structured interviews, were conducted and transcribed.

Thematic data analysis was conducted using an inductive-deductive approach. During the thematic data analysis, data was organised and meaningful participant statements were identified inductively through immersive reading and coded. Codes were categorised into sub-themes, from which research themes were generated. The inductive thematic analysis was deductively revised to verify that themes and sub-themes were supported sufficiently by the data and that any gaps or similarities were addressed.

Once saturation of data was established from the data analysis, findings were put in writing to present the research findings in an organised manner. A discussion was developed and presented on the research findings in context of literature, whereafter the research findings were interpreted. From the interpretation of the research findings, the proposed model was developed. The study was concluded by presenting recommendations to the UHT milk alternative industry, the contributions and limitations of the research and recommendations for future research, as identified from the research findings and interpretation. The thesis was submitted for language editing and put through Turnitin for similarity indication before submission for examination.

9.3 ESSENTIAL, INVARIANT STRUCTURE OF THE PHENOMENON

The research problem, presented in the first chapter, led to the central research question which framed the search for a greater depth of understanding of the phenomenon under study.

Central research question: What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?

This central research question uncovered four sub-questions, which were further formulated into tangible objectives to propose answers to each research sub-question. The interpretation of findings is presented per research objective in the following sections.

9.3.1 Interpretation of Findings: Objective 1

The research findings, described under **Theme 1: Consumer Product Beliefs**, were found to be related to the first research sub-question.

Sub-question 1: What do consumers believe about UHT milk alternative products in their own frame of reference?

The findings suggest that several sub-themes collectively construct *consumer product beliefs* within the participants' frame of reference (Figure 9.2). Since the theoretical background defines the *cognitive component* of attitudes as *beliefs of a product*, it is suggested that these *consumer product beliefs* constitute the *cognitive component* of the participant's attitudes. It is proposed that the research findings on *consumer product beliefs* contribute insight into the first research objective.

Objective 1: To gain a greater depth of understanding of consumers' beliefs related to UHT milk alternative products (*cognitive component of attitudes*).

Participant *beliefs* related to UHT milk alternatives vary according to the meaning that the individual participant ascribes to the products or product category, but the similarities uncovered from the data generated meaningful themes. The *consumer product beliefs*, or *cognitive component* of attitudes, are shaped by the participant's product-related beliefs on concepts such as health, utility, product category properties, associations with the product category and sensory characteristics (Figure 9.2).

While the findings (Chapter 5) provided the research enquiry with meaningful depth of understanding of consumers' beliefs related to UHT milk alternative products, the discussion (Chapter 8) suggested that consumer product beliefs were linked to their purchase intentions.

From the research findings, it is suggested that consumers view plant-based milk alternatives only as intended for individuals with medical conditions, such as milk allergies, or vegan

lifestyles. Similarly, findings point to the consumer perception that lactose-free milk is only intended for individuals with lactose intolerance and enriched or fortified milk is only for children with nutritional deficiencies. Consumers or family members with milk allergies, or vegan lifestyles link their intention to use plant-based milk alternatives specifically to these reasons. In contrast, it is further suggested that consumers who do not have milk allergies, lactose intolerance, vegan lifestyles, or children with additional nutritional needs have no intention to purchase milk alternatives, due to a lack of a perceived need for milk alternatives. It is proposed that purposeful marketing, through advertisements and marketing campaigns highlighting UHT milk alternatives as niche products specifically intended to support health needs or specific lifestyles, would be useful to the consumer in product selection by indicating which products are suitable for them. Literature and research findings suggest that little information is available to the South African consumer to support claims of the potential value of enriched or fortified dairy-based milk alternatives, or the potential immune support provided by plant-based milk alternatives. This lack of available information may lead to the consumer perception that claims cannot be supported sufficiently and the perception that these products are fads. It is proposed that the availability of credible information provided through consumer education will be needed to convince South African consumers of the value presented by these products. Similarly, the limited information on the processing of milk alternatives and any unfamiliar additives included to enhance the product properties seem to indicate consumer scepticism toward products. This could contribute to consumer perceptions that UHT milk alternatives are unnatural, highly processed products, with high levels of undesirable additives and sugar to mask the sensory properties, to the point that products are considered undesirable for consumption. It is proposed that these consumer perceptions of UHT milk alternatives be addressed as much as possible through careful consideration during product development and changed through consumer education.

The discussion indicates that certain consumer product beliefs concerning UHT milk alternatives can potentially determine the consumer belief whether a product is considered to be suitable for consumption. These beliefs include health (such as allergies, lactose intolerance and weight, or fitness goals), product properties (such as shelf-life, safety, environmental impact, animal welfare, processing, additives, novelty, cost and value), beliefs about product utility and product sensory characteristics. Consequently, it is suggested that these consumer beliefs potentially serve as driving or deterring factors in the decision to purchase specific UHT milk alternatives. Strong beliefs held by participants regarding the sensory characteristics, including the taste, texture, smell and appearance, of UHT milk alternatives, are interpreted to be particularly capable of determining product consumption.

Participants often link their beliefs, particularly beliefs related to the sensory characteristics of products, to their purchase intention. These beliefs are not necessarily based on experience, but rather on the participant's assumption that products will or will not be to their liking and consequently, they do or do not intend to purchase the products. This provides a meaningful indication that *consumer beliefs of a product*, referred to as the *cognitive component* of consumer attitudes, are indeed connected, or linked, to consumer *intentions to purchase* the product as indicated in Figure 9.2.

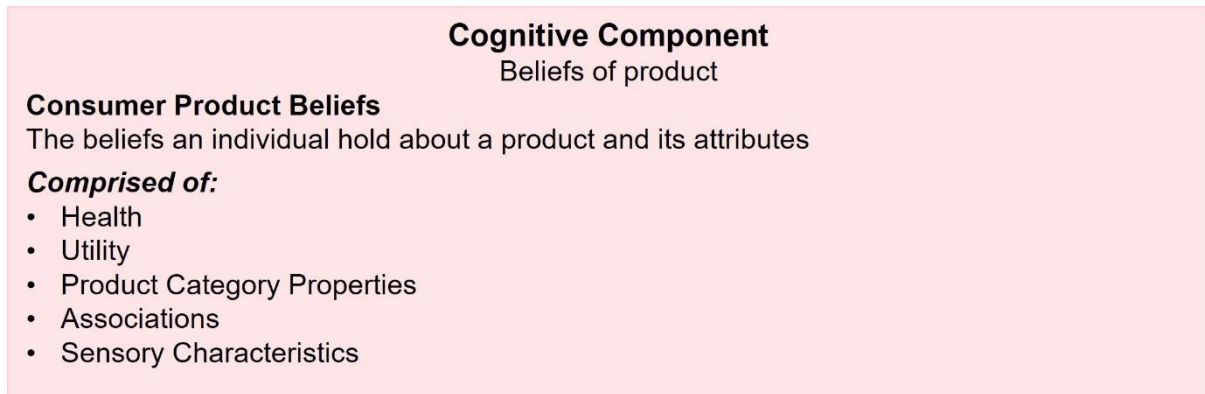


Figure 9.2: Consumer Product Beliefs – Cognitive Component

Based on this interpretation linking the *consumer product beliefs* to *purchase intentions*, the initially identified need to find an integrated model depicting the link between the *cognitive component* of consumer attitudes and *purchase intentions* is maintained. However, the research findings on *consumer product beliefs* alone are not considered sufficient to support a holistic depth of understanding of consumer *purchase intentions*. It is proposed that *consumer product beliefs* serve in conjunction with consumer *evaluation of products* to shape consumer *product-related attitudes*, as informed by the theoretical framework which links beliefs and evaluation to attitudes toward an object. The interpretation of findings related to participants' *evaluation of products* is provided in the next section.

9.3.2 Interpretation of Findings: Objective 2

The research findings presented under **Theme 2: Evaluation of Products** described the research findings related to participants' *evaluation of products* from their multiple perspectives to propose answers to the second research sub-question.

Sub-question 2: How do consumers evaluate UHT milk alternatives within their own context?

Based on the research findings, it is supposed that participants' *evaluation of products* dynamically shapes the meaning participants ascribe to UHT milk alternative products. Consequently, it is suggested, as similarly indicated by the theoretical framework, that the consumer's *evaluation of a product* and its attributes relate to the *affective component* of

consumer attitudes toward a product, thus providing greater a depth of understanding in support of the second objective.

Objective 2: To describe the meaning consumers ascribe to their product evaluation criteria of UHT milk alternatives (*affective component of attitudes*).

The *affective component* of participant attitudes toward UHT milk alternatives is proposed to be a combination of the importance participants ascribe to some product attributes, as well as the favourable or unfavourable evaluation of attributes, which could potentially be impacted by familiarity and past experience (Figure 9.3).

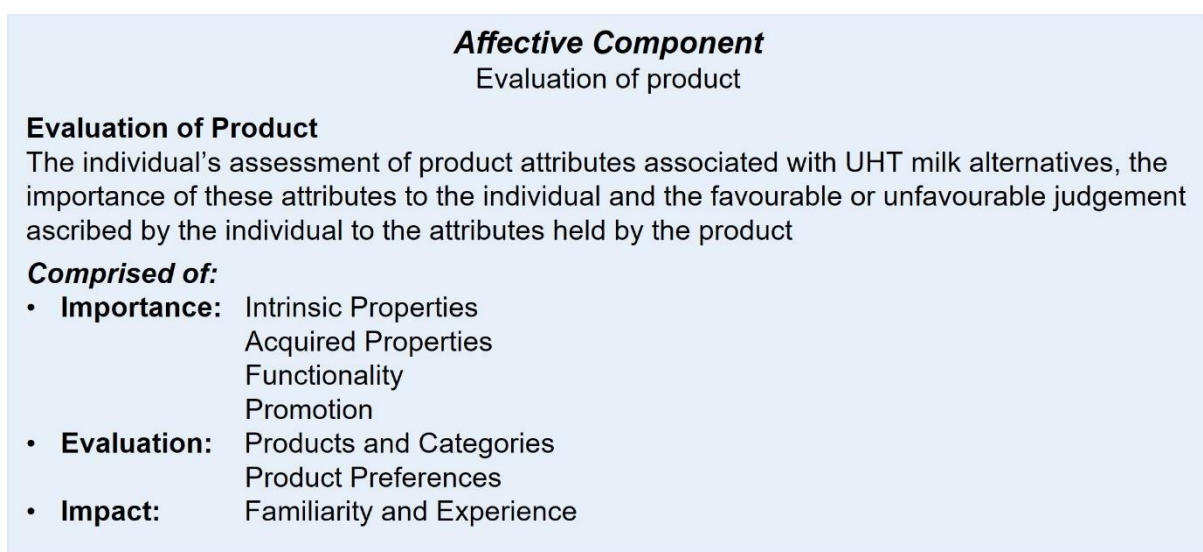


Figure 9.3: Evaluation of Product – Affective Component

Based on the research findings it is proposed that *intrinsic and acquired product properties, functionality* and the *promotion* of UHT milk alternatives are important product evaluation criteria for consumers. Therefore, it is assumed that unfavourable evaluations of these product attributes can deter product consumption, while favourable evaluations of these attributes can encourage product consumption.

Research findings indicate that consumers occasionally evaluate UHT products with a long shelf-life unfavourably as too highly processed, while others evaluate it favourably as a convenient, useful product since it can be stored at room temperature for a few months before opening. It is proposed that consumer education be conducted to highlight the need for product preservation and safety through processing and that the convenience of products with a longer shelf-life be purposefully marketed to the South African consumer. From the findings, it can also be suggested that consumers evaluate both the primary ingredient, as well as any additives, in context of the intended function which they ascribe to the product. Vegan

consumers find it important that all product ingredients are plant-based, while consumers with cow milk or nut allergies find it important that their selected product should not contain any traces of cow milk or nuts respectively. Similarly, it is suggested that a product's perceived functionality for its intended purpose, such as a weight-loss diet, as an ingredient in food preparation, or as a recovery drink after exercise impacts the consumer's selection of suitable products to meet their needs. It is proposed the suitability of each product for its respective function and claims such as dairy-free, nut-free, low in carbohydrates, or high in protein, be highlighted in marketing campaigns and on product labelling to support consumers in suitable product selection. As findings from this study and literature suggest, consumers link product origin to product safety, with a preference for local products. This indicates a potential lack of trust in the safety of imported products. It is proposed that products of local origin should be highlighted in marketing campaigns and on product labels. The research findings suggest that the currently available one-litre pack sizes of UHT milk alternatives are far too big for the South African consumer to use timeously without product wastage. This may limit the consumption of these milk alternatives, since consumers carefully consider whether they will be able to use the package content before it goes off. The desire to prevent wastage of what is considered an expensive product, combined with the consumer desire for good stewardship of resources is suggested to prevent consumers from opening containers if they are not confident that they can use it in time. It is proposed that smaller product packs may lead to more frequent consumption in the UHT milk alternative category. Findings suggest that the sensory properties of UHT milk alternative products can drive or deter product consumption. It is suggested that consumers who perceive the sensory properties of milk alternatives unfavourably will avoid these products, regardless of health claims or affordability. It is proposed that producers need to continuously explore ways to improve product sensory acceptability to the consumer. However, as suggested by the consumer stigma found related to soy milk, it is suggested that merely improving the product sensory properties would not be sufficient. Consumers also need to be made aware of improvements to motivate them to try improved products and potentially overcome the product associations created by unpleasant past experiences with the product or category.

The detailed descriptions of participants' *evaluation of the UHT milk alternative product products* available in the South African market at the time of the research (Sections 6.2.5 and 6.2.6) are not individually interpreted in this section but do inform the enquiry on the meaning which participants ascribed to product evaluation criteria, indicating that a conscious evaluation of alternatives is involved in the consumer decision-making process to purchase UHT milk alternatives. It is also put forward that participant *preferences*, as well as *familiarity*

and past experiences with UHT milk alternatives impact on their *evaluation of products* and their future intentions to purchase UHT milk alternative products.

A meaningful link between participants' *evaluation of products*, or the *affective component* of their attitudes and the *intention* to purchase, or not to purchase, UHT milk alternatives have been observed from the discussion section as depicted in Figure 9.3.

Product-Related Attitudes

Overall attitude towards a product based on product beliefs and evaluation of attributes

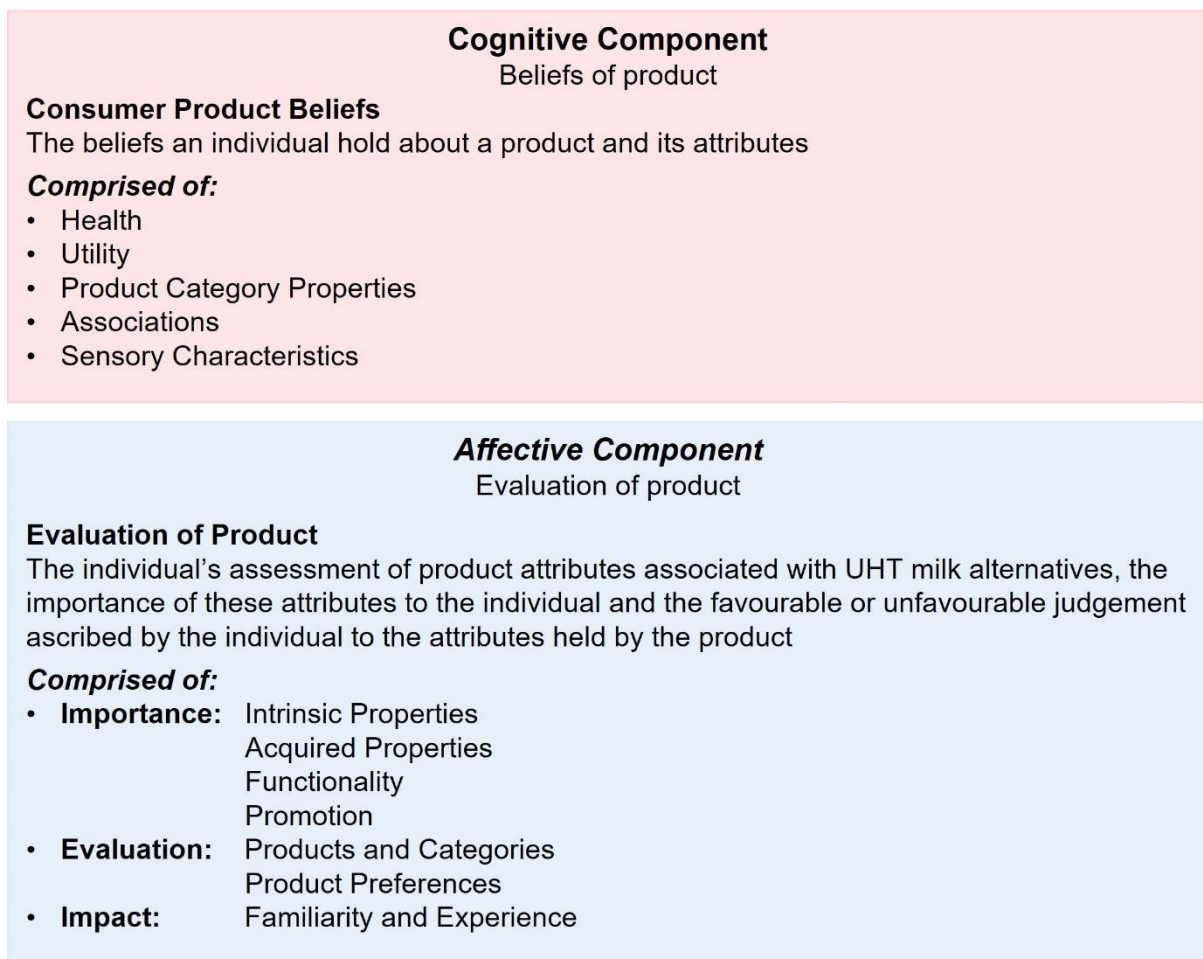


Figure 9.4: Product-Related Attitudes – Cognitive and Affective Components

While a favourable evaluation of one product attribute alone is not considered sufficient to determine the overall evaluation of the product, it is suggested that the evaluation of multiple product attributes, the importance ascribed to these attributes and the impact of familiarity and past experience collectively shape the meaning which consumers ascribe to a product and their related purchase intention. Given that similar product-focused concepts were discussed by participants on their *beliefs* of a product and their *evaluation* of product attributes, it is proposed that *consumer product beliefs (cognitive component)* and the *evaluation of products*

(*affective component*) are closely connected and collectively shape consumer *product-related attitudes* toward UHT milk alternative products (Figure 9.4).

Once again, the proposed links between consumer *evaluation of products* and *purchase intentions*, but also the link between *consumer product beliefs* and *purchase intentions*, support the need highlighted by the aim of the research for an integrated model within which consumer attitudes toward and purchase intentions of UHT milk alternatives can be interpreted holistically and not in an isolated manner. It is suggested that the connection observed between *consumer product beliefs* and *evaluation of products* to comprise the *consumer's product-related attitudes* will require these concepts to stand in close proximity to each other to depict their mutual connection to *purchase intentions*. However, the interpretation of these *product-related attitudes* alone is not considered sufficient to holistically understand consumer purchase intentions and the interpretation of the impact of *non-product-related attitudes* is included in the next section.

9.3.3 Interpretation of Findings: Objective 3

Apart from *consumer product beliefs* and *evaluation of products*, shaping consumer *product-related attitudes*, several non-product-related themes were identified which were suggested to contribute to participants' *intentions to purchase* UHT milk alternatives. These findings are considered valuable to inform the third research sub-question.

Sub-question 3: Which factors impact consumer purchase intentions of UHT milk alternatives?

From the theoretical framework it was established that the *conative component* of attitudes could be described as the consumer's *intention toward a behaviour*. This behavioural intention was interpreted as the *intention to purchase* in this study. Findings reveal that non-product-related attitudes contribute to consumer purchase intention, thus supporting the third research objective.

Objective 3: To establish the factors that initiate consumers' purchase intentions of UHT milk alternatives (*conative component of attitudes*).

It is put forward that three non-product-related factors potentially drive or deter participants' purchase intentions in the case of UHT milk alternatives. These non-product related factors include the ***Expected Outcomes (Theme 3)*** participants hold if they are to consume the product, the impact of participants' ***Social Norm (Theme 4)*** and participant ***Control (Theme 5)*** over product purchases and consumption as indicated in Figure 9.5.

It is proposed that six distinct *expected outcomes* impact consumer *purchase intentions*, including the way in which a product could meet consumer *health needs*, whether it could support consumers to attain a *vegan or vegetarian lifestyle*, to reach *weight goals*, or to live a *healthy lifestyle* and whether it is suited for *experimentation* in food preparation. It is also suggested that occasional, unfavourable purchase intentions of UHT milk alternatives can be linked to consumers' *desire for pure, whole cow milk*, in which case milk alternatives are not considered suitable to meet these consumer expectations.

Findings suggest that consumers indicate that certain milk alternatives, such as functional, high-protein milk, supported their desired outcome to lead an active lifestyle, or that certain alternatives, such as almond milk and coconut milk, supported their need for low-carbohydrate milk replacement products as part of a weight-loss diet. This positions UHT milk alternatives as lifestyle products in the consumer mind and it is proposed that it is marketed as such to draw the interest of this consumer market segment. Findings also suggest that South African consumers utilize UHT milk alternatives to support their desire to experiment with different ingredients during food preparation. It is proposed that the consumer can be further supported in their product selection and encouraged in the experimental use of UHT milk alternatives through purposeful education on the suitability of specific products for specific dishes and purposes.

The research findings further suggest that the impact of the consumer's social norm could support or prevent UHT milk alternative purchases, with consumers who feel unsupported or ridiculed for their consumption of milk alternatives finding it more challenging to purchase and consume their preferred products than consumers who do experience support from their significant others. It is proposed that educational initiatives are launched which educate the South African consumer on the reasons for product usage, with the aim to address preconceived consumer ideas regarding the product category and normalize product usage.

Research findings suggest that consumers consider milk alternatives to be unaffordable for the majority of South African consumers. This leads to the perception that it is a luxury, lifestyle product category, only attainable by a few consumers and it remains out of the reach of the average South African consumer to sustain its purchase in the long-term. It is proposed that the pricing strategies of UHT milk alternatives be reconsidered if the South African consumer base is to be grown. It is also suggested that marketing and educational initiatives highlighting the value of these products to the consumer can to some extent support a shift in consumer focus from product price to product value. It is also specifically suggested that consumers link their perceived long-term ability to use UHT milk alternatives to the product sensory properties. While it is proposed that consumers who use UHT milk alternatives for weight control purposes

are willing to reconcile themselves short-term to perceived undesirable sensory properties in pursuit of their weight goals, consumers do not continue long-term product consumption if the sensory properties are not considered favourably, but would rather exclude milk and milk alternatives from their diet in such situations. It is proposed that product sensory characteristics receive marked attention from producers to encourage product usage.

The *expected outcome*, the consumer's *social norm* (comprised of the perceived amount of support received from significant others and the importance the participant ascribed to complying with the opinions of significant others), as well as the consumer's *control* (as impacted by practical, medical and sensory limitations and living arrangements), are suggested to shape the *conative component* of consumer attitudes and the potential link this component holds with intentions to purchase UHT milk alternatives, as suggested in Figure 9.5.

Non-Product Related Attitudes

Overall attitude towards the intention to purchase a product based on non-product related factors, such as expected outcomes, social norm and control

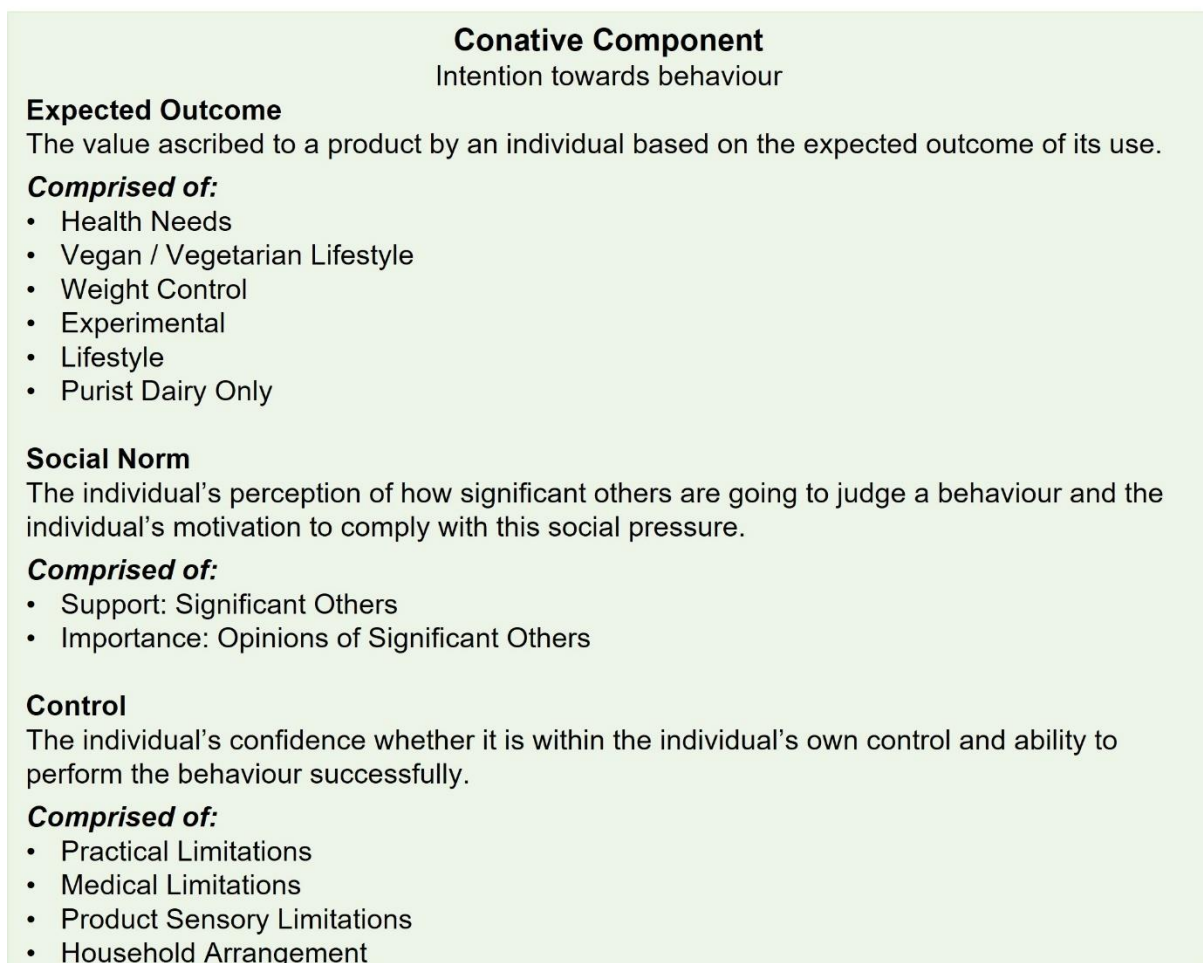


Figure 9.5: Non-Product Related Attitudes – Conative Component

Given that consumers' *expected outcomes* from UHT milk alternative consumption (Theme 3), *social norm* (Theme 4) and *control* over product selection (Theme 5) shape the *conative component* of their attitudes, it is considered to be the *non-product related attitudes* which can be linked to consumer *purchase intentions* of UHT milk alternatives. Since linkages are suggested between both the *product-related attitudes* (*cognitive* and *affective* components) and the *non-product related attitudes* (*cognitive* component) toward UHT milk alternatives and consumer purchase intentions, the need to consider these components holistically is identified again. This holistic interpretation of the findings is presented in the next section, whereafter a model is proposed within which these purchase intentions can be holistically interpreted.

9.3.4 Interpretation of Findings: Objective 4

The interpretation of findings in the previous three sections, in conjunction with insight from the discussion chapter, informed the fourth research sub-question.

Sub-question 4: How can the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions be holistically described and interpreted?

From the theoretical framework, *purchase intentions* were clarified as the consumer's *inclination* to purchase UHT milk alternatives. As inferred from the previous sections and the discussion chapter, it is proposed that consumer *purchase intentions* do not stand in isolation but are always connected to one or more of the themes discussed which influence the intention to purchase UHT milk alternatives. Consequently, the research puts forward that single attitudes cannot predict consumer purchase intentions in isolation, but that multiple aspects need to be considered collectively to arrive at a more comprehensive understanding of the linkages between consumer *attitudes* and their *purchase intentions* (Figure 9.6).

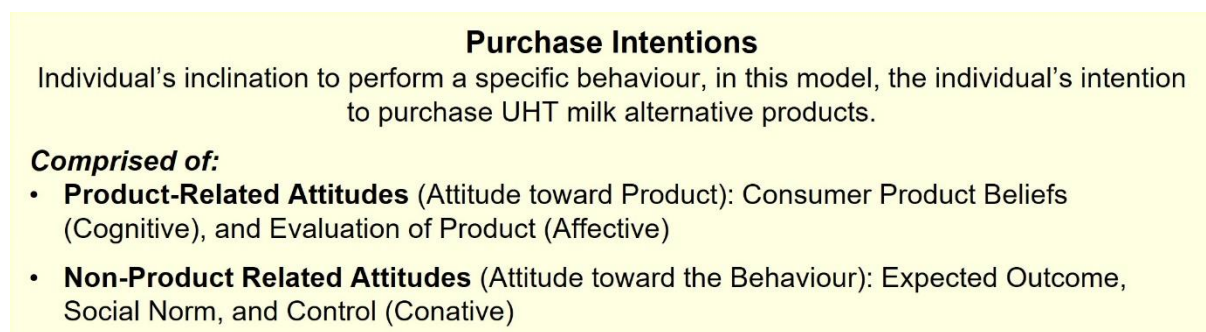


Figure 9.6: Purchase Intentions

As noted in Figure 9.6, consumer purchase intentions of UHT milk alternatives are comprised of *product-related attitudes* and *non-product-related attitudes*. From the thematic analysis, meaningful links and patterns were identified in the data to enable the study to capture the

essence of the lived experiences of the participants. By seeking similarities and acknowledging differences, meaning could be constructed from the multiple perspectives participants brought to the enquiry, leading to the development of a complex picture of the research phenomenon. By focusing on the meaning that participants hold toward UHT milk alternatives and its purchase, the multiple factors involved in the *purchase intentions* of consumers can be identified. It is suggested that these factors (research themes) can be pooled under two overarching factors impacting the purchase of UHT milk alternative products: *product-related attitudes* and *non-product-related attitudes*.

Consumers' *product-related attitudes* are specifically focused on the participant's beliefs of the product category itself, comprising *consumer product beliefs (Theme 1)* and the meaning they ascribed to the *evaluation of the product (Theme 2)*, with all the supporting sub-themes. *Non-product-related attitudes* are focused on factors, such as *expected outcomes (Theme 3)*, *social norm (Theme 4)* and *control (Theme 5)*, which impact consumers' *purchase intentions*. The findings suggest that consumer attitudes toward UHT milk alternatives itself (*product-related attitudes*) strongly impact, but do not determine, South African consumer purchase intentions of the product category in isolation. *Non-product-related attitudes* can therefore not be excluded in a holistic attempt to understand the research phenomenon. It is proposed that a combination of the themes and their supporting subthemes, shape the essence of consumer *purchase intentions* toward UHT milk alternatives, including *consumer product beliefs (cognitive component)*, *product evaluation (affective component)*, as well as the *expected outcome* of the behaviour, the impact of the *social norm* and the individual's perceived *control over purchase decisions (conative component)* as depicted in Figure 9.7.



Figure 9.7: Essence of Consumer Purchase Intentions

The interpretation of the research findings as related to participants' realities and experiences provides a description of the linkages found between the five themes of the study in support of a deeper understanding of the meaning associated with the purchase of UHT milk alternatives. It is suggested that none of these elements alone can favourably predict consumer purchase intentions. However, in contrast, it is proposed that an unfavourable consumer perception of one element alone can unfavourably impact consumer purchase intentions. This necessitates a diligent, integrated approach to studying all the related elements mentioned above before a holistic understanding of the central research question can be conveyed. This led to the development of the proposed model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted, from which the fourth research objective is realised.

Objective 4: To propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted.

The next section presents the proposed model that was developed based on the research findings, discussion and interpretation, depicting the interaction of multiple factors to provide a perspective within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted.

9.4 PROPOSED INTEGRATED ATTITUDE-INTENTION MODEL

The proposed model was developed from the research findings, discussion and interpretation and is presented in context of the study's contextual framework to reach the fourth objective and the aim of the research enquiry:

Research aim: To propose a model within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be interpreted.

As discussed in Chapter 3, various models were presented in literature in the past in an effort to predict consumer purchase behaviour. These models served to inform the initial enquiry of the research through the conceptual framework of the study which is recapped in Figure 9.8.

Anticipated Integrated Attitude Model

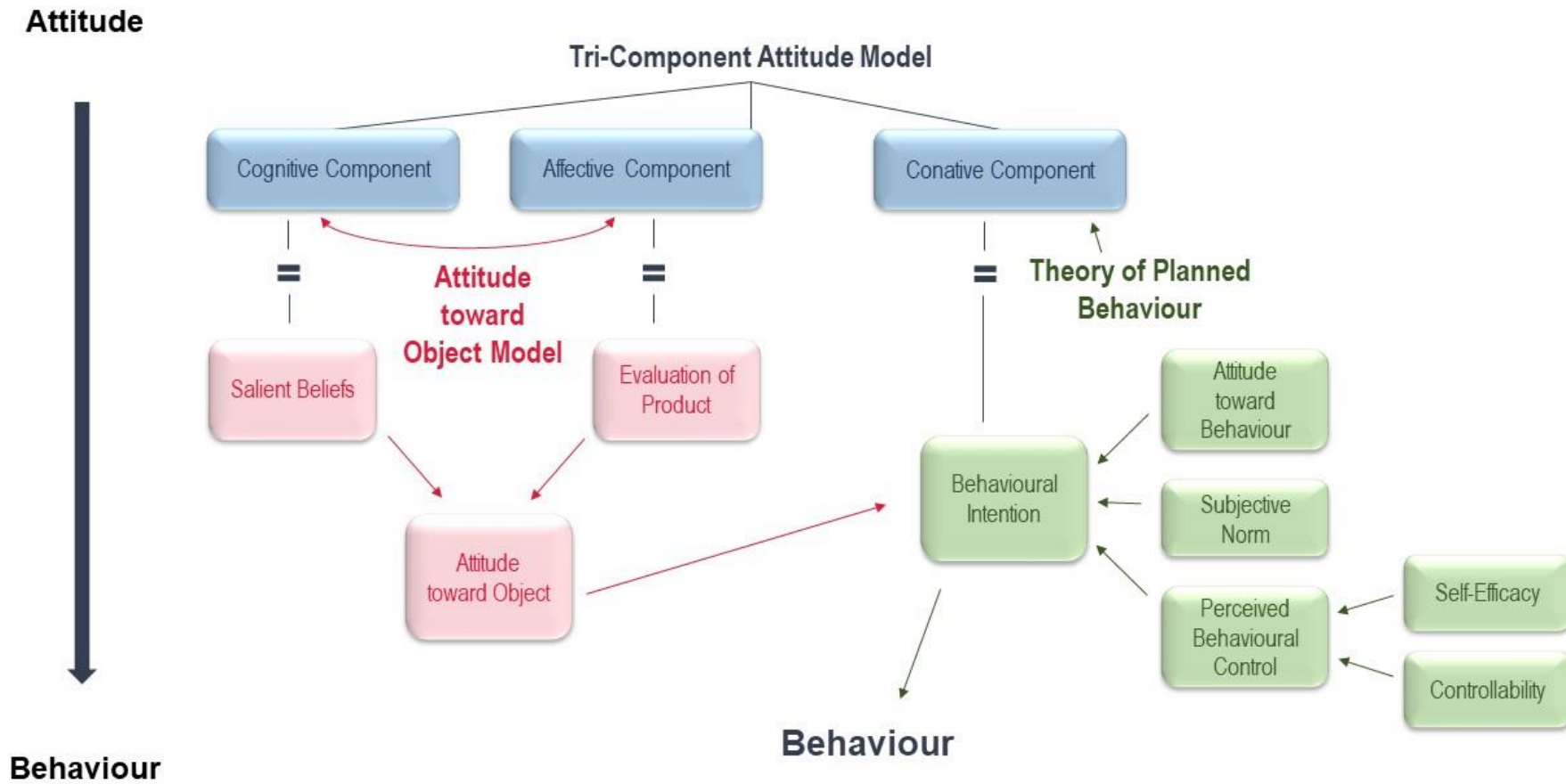


Figure 9.8: Conceptual Framework – Anticipated Model

While the *tri-component attitude model*, as indicated in Figure 9.8, was used as the basis for the conceptual framework of the study, provided a high-level overview of consumer attitudes and provided valuable support for the strong relations found by the study between the *cognitive, affective* and *conative components* of consumer attitudes (Schiffman & Wisenblit, 2019) (Kumar, Vohra & Dangi, 2017), it was not found to be detailed enough to provide a comprehensive understanding, description or interpretation of the essence of South African consumer attitudes toward UHT milk alternative products and *purchase intentions*. Similarly, the researcher considered the potential of the *attitude toward object models* from literature (Solomon, 2019), as depicted in Figure 9.8, to interpret the research phenomenon because favourable consumer attitudes toward products were found to impact the consumption of products favourably. However, *attitude toward object models* were considered unsuitable for the proposed model due to the over-emphasis on the product itself in consumer purchase decisions and the model's inability to comprehensively predict behaviour based on its failure to consider the role of *non-product-related constructs* impacting consumer behaviour. *Attitude toward behaviour models* and the *theory of reasoned action* (Montaño & Kasprzyk, 2015) presented similar challenges, for the purpose of the research, by considering *non-product related constructs* which impact consumer *purchase intentions* but failing to sufficiently consider the role of the product itself in consumer behaviour predictions. To overcome the limitations of existing models, as presented above from the conceptual framework, the researcher proposes the following model as developed from the discussion and interpretation of research findings, within which the essence of South African consumer attitudes toward UHT milk alternative products and purchase intentions can be holistically described and interpreted (Figures 9.9a and 9.9b).

The *integrated attitude-intention model* (depicted in Figures 9.9a and 9.9b) aimed to holistically depict the elements that were found to shape the core of South African consumer attitudes toward UHT milk alternative products and their *purchase intentions*. The proposed model retained the *cognitive, affective* and *conative* components of attitudes from the initially anticipated model as these components were suggested to shape the consumer perspective on UHT milk alternatives in a logical and structured manner, providing a framework within which the other elements found in the study could be connected. However, it was realised that consumer attitudes and purchase intentions could not be sufficiently presented in an anticipated model which deals with attitudes alone. The linkages found during the research between the *cognitive, affective* and *conative components* of attitudes and *purchase intentions* led to the recognition that a model was required that could integrate the elements impacting consumer *attitudes* and *intentions to purchase* the products.

Proposed Integrated Attitude-Intention Model

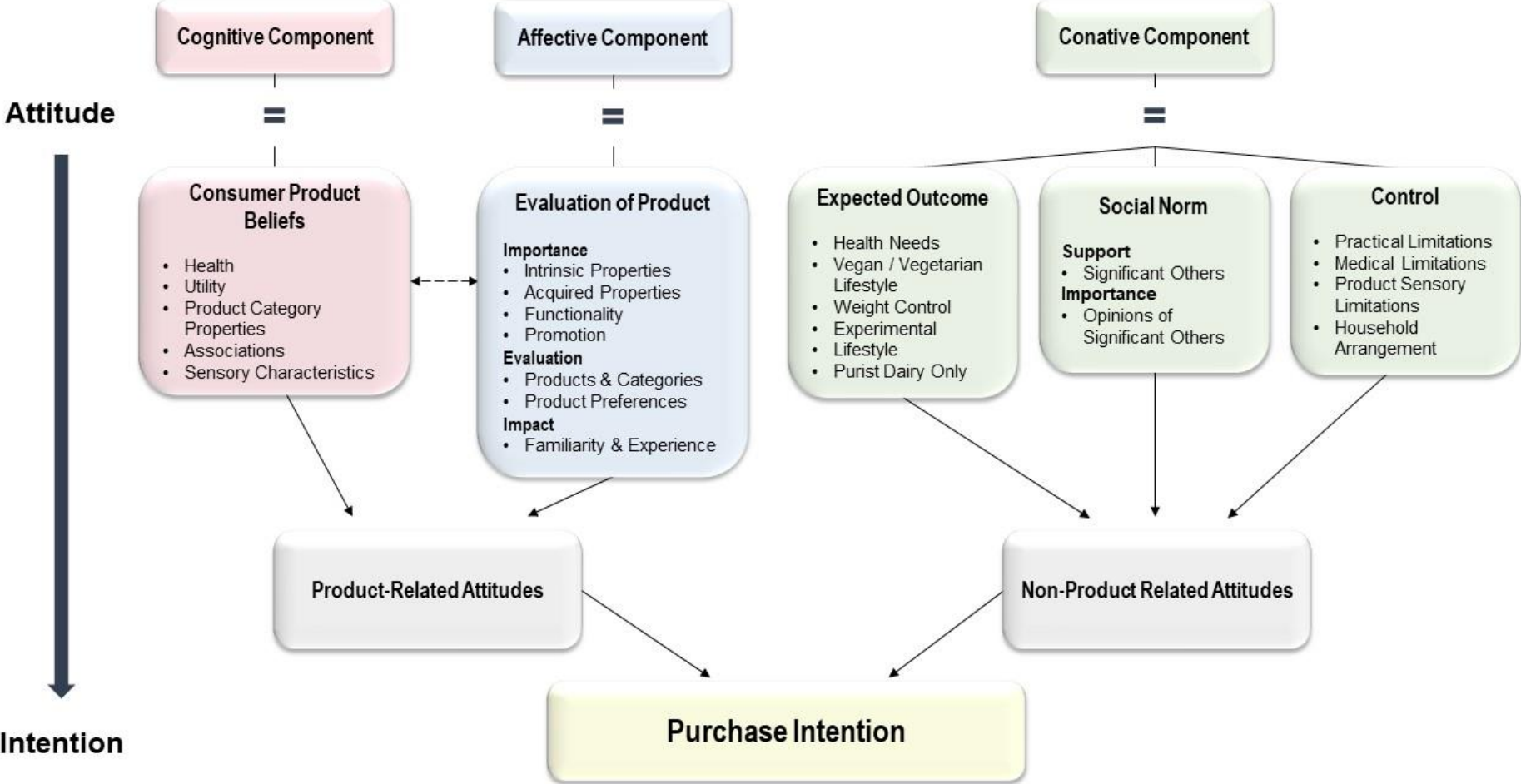


Figure 9.9a: Proposed Integrated Attitude-Intention Model

Product-Related Attitudes

Overall attitude towards a product based on product beliefs and evaluation of attributes

Cognitive Component

Beliefs of product

Consumer Product Beliefs

The beliefs an individual hold about a product and its attributes

Comprised of:

- Health
- Utility
- Product Category Properties
- Associations
- Sensory Characteristics

Affective Component

Evaluation of product

Evaluation of Product

The individual's assessment of product attributes associated with UHT milk alternatives, the importance of these attributes to the individual and the favourable or unfavourable judgement ascribed by the individual to the attributes held by the product

Comprised of:

- **Importance:** Intrinsic Properties
Acquired Properties
Functionality
Promotion
- **Evaluation:** Products and Categories
Product Preferences
- **Impact:** Familiarity and Experience

Non-Product Related Attitudes

Overall attitude towards the intention to purchase a product based on non-product related factors, such as expected outcomes, social norm and control

Conative Component

Intention towards behaviour

Expected Outcome

The value ascribed to a product by an individual based on the expected outcome of its use.

Comprised of:

- Health Needs
- Vegan / Vegetarian Lifestyle
- Weight Control
- Experimental
- Lifestyle
- Purist Dairy Only

Social Norm

The individual's perception of how significant others are going to judge a behaviour and the individual's motivation to comply with this social pressure.

Comprised of:

- Support: Significant Others
- Importance: Opinions of Significant Others

Control

The individual's confidence whether it is within the individual's own control and ability to perform the behaviour successfully.

Comprised of:

- Practical Limitations
- Medical Limitations
- Product Sensory Limitations
- Household Arrangement

Purchase Intentions

Individual's inclination to perform a specific behaviour, in this model, the individual's intention to purchase UHT milk alternative products.

Comprised of:

- **Product-Related Attitudes** (Attitude toward Product): Consumer Product Beliefs (Cognitive), and Evaluation of Product (Affective)
- **Non-Product Related Attitudes** (Attitude toward the Behaviour): Expected Outcome, Social Norm, and Control (Conative)

Figure 9.9b: Key for Proposed Integrated Attitude-Intention Model

Consequently, it was not desirable for the recommended model to only uphold the value of attitudes but to incorporate the linkages found to *purchase intentions* as described in the previous sections. As indicated in the theoretical framework of the study, models cannot predict behaviour itself. However, it can depict the elements which favourably or unfavourably shape intentions. Since behaviour is considered to be preceded by a conscious intention to behave in a specific manner, a model depicting elements shaping consumer intentions to engage in specific behaviour, in this case, purchase intentions is considered a more accurate description than claims to predict behaviour itself. Thus, the proposal is that the model should be named an *integrated attitude-intention model* to represent both *attitudes* and *purchase intentions* on equal standing, as opposed to merely an attitude or merely a behaviour model as found in the theoretical background. This model name would also solidify the concept that *attitudes toward products* have a meaningful linkage with *purchase intentions* and that these two concepts cannot be used in isolation to interpret consumer decision-making related to UHT milk alternative purchases. Thus, the arrow on the initially anticipated model indicating a flow from attitudes to behaviour was also amended to depict a flow from attitudes toward intention.

As suggested by the research findings, elements impacting consumer purchase intentions could be divided into two overarching categories: (1) elements pertaining to *product-related attitudes* and (2) elements pertaining to *non-product-related attitudes*. While the *product-related attitudes* indicated on the proposed model were found to be specifically focused on the product itself, as with the anticipated model's *attitude toward the object*, it was renamed on the proposed model to indicate a clear focus on the *product* and not an abstracted description as presented by the term *object*. Non-product-related attitudes were not depicted in the anticipated model but were suggested to be important elements impacting consumer purchase intentions by the research findings and discussion. Consequently, *non-product-related attitudes* were added to the new proposed model as an element linked to *purchase intentions*.

As mentioned above, the three attitude components (cognitive, affective and conative) of the originally anticipated model were retained in the proposed model. However, the components were linked to the five research themes to add a greater depth of understanding of how these themes shape consumer attitudes and impact purchase intentions specifically toward UHT milk alternative *purchase intentions*. It is suggested by the proposed model that the *cognitive component* of consumer attitudes is comprised of *consumer product beliefs* of UHT milk alternatives (Theme 1). While the original anticipated model similarly linked *salient beliefs* to the *cognitive component*, the term *salient beliefs* (as suggested by the *attitude toward object model*) was also considered rather abstract and was termed *consumer product beliefs* in the proposed model to provide a more precise, focused term that indicates that the element was

found to deal with consumer's *beliefs* specifically related to UHT milk alternative *products*. As indicated in the key for the proposed integrated attitude-intention model (Figure 9.9b), the *term consumer product beliefs* are defined as the beliefs an individual hold about a product and its attributes. The *consumer product beliefs* are comprised of the subthemes of Theme 1 and are linked to *purchase intentions* as part of the consumer's *product-related attitudes*, as suggested by the interpretation of the research findings in Section 9.3.1.

As in the anticipated model, the proposed model suggests that the *affective component* of consumer attitudes entails the consumer's *evaluation of the product* (Theme 2). The proposed model defines the concept *evaluation of product* as the individual's assessment of product attributes associated with UHT milk alternatives, the importance of these attributes to the individual and the favourable or unfavourable judgement ascribed by the individual to the attributes of the product. The interpretation of the research findings in Section 9.3.2 suggests that the consumer *evaluation of a product*, in the case of UHT milk alternatives, is comprised of the subthemes of Theme 2 which indicate both the importance and evaluation of attributes to the consumer. However, one concept not expressly mentioned by previous attitude models or the anticipated model is the impact of familiarity and past experiences of a product in the evaluation of the product. From the research findings and discussion, it became apparent that information gained through familiarity, past experiences and previous milk alternative consumption, was used by the consumer in the *evaluation of the product* and potentially has a meaningful influence on the consumer's future intentions to purchase the product again. Thus, it was included as a subtheme under *evaluation of products* in the proposed model.

It is proposed by the new model that *consumer product beliefs (cognitive component)* and *evaluation of the product (affective component)* both shape the consumer's attitude toward UHT milk alternative products and consequently both elements are linked to *product-related attitudes* on the proposed model. Interpretation of the findings (section 9.3.2) also indicates potentially strong interlinkages between *consumer product beliefs (cognitive component)* and *evaluation of the product (affective component)* with these two components seemingly impacting upon each other in consumer attitudes toward a product, consequently the potential meaningful linkage is portrayed with a dotted arrow. *Product-related attitudes* are therefore defined in the proposed model as the consumer's overall attitude toward a product based on product beliefs and evaluation of attributes. It is suggested by research findings that product-related attitudes toward UHT milk alternatives have a meaningful influence on consumers' *intention to purchase* UHT milk alternatives. However, favourable attitudes toward the product category itself were not considered to be sufficient alone to support purchase intentions, since other non-product related elements were also proposed to potentially impact consumer purchase intentions. While research findings suggest that one favourably perceived element

in isolation cannot necessarily favourably impact consumer purchase intentions, the contrary also suggested that one element strongly perceived unfavourably by the consumer could lead to complete product avoidance, as observed specifically with the evaluation of product sensory characteristics and consumer expected outcomes. The model proposes that a favourable *product-related attitude* based on *consumer product beliefs* and *evaluation of the product* cannot impact *purchase intentions* in isolation. Instead, it suggests that all the non-product related elements identified from the study should also be integrated into the proposed model to depict linkages between consumer attitudes and intentions holistically.

While the anticipated model originally did not dedicate an element to non-product related attitudes and their linkage to purchase intentions, the final proposed model suggests that the *conative component* entails various of these non-product related aspects which research findings linked to consumers' *purchase intentions*. The anticipated model connected the consumer's *attitude toward behaviour*, *subjective norm* and *perceived behavioural control*, as suggested by the theoretical background on the *theory of planned behaviour*, to the *conative component* via the element of *behavioural intention*. This however was not considered to be an accurate depiction of consumers' attitudes and intentions in the case of UHT milk alternatives as suggested by the research findings. Consequently, the proposed model depicts consumers' *non-product related attitudes*, as linked to the *conative component* of attitudes through the non-product related elements which surfaced from the research findings. The anticipated model indicated that the consumer's *attitude toward a behaviour* is linked to the consumer's *behavioural intention*. The final proposed model omitted the element of *attitude toward behaviour* since the concept did not feature meaningfully in the research findings on UHT milk alternatives. Instead, the research findings suggested that consumers do not necessarily explicitly consider an *attitude toward the behaviour* separately from their *intention to purchase* UHT milk alternatives and any *attitudes toward behaviour* were expressed as their *purchase intention*. While the proposed model omits the concept of *attitude toward behaviour*, it does suggest that the consumer's *expected outcome* (Theme 3) of the consumption of milk alternatives and the manner in which this outcome fits into the needs and preferences of the individual, form part of the non-product related attitudes which shape consumer purchase intentions of UHT milk alternatives. The expected outcome is defined as the value ascribed to a product by an individual based on the expected outcome of its use by the proposed model. It is suggested that the expected outcome in the case of UHT milk alternatives is comprised of the six subthemes of Theme 3 and that meaningful linkages exist between the *expected outcome* and the *purchase intention* as indicated by the interpretation of the research findings in section 9.3.3.

The anticipated model suggested that the consumer's *subjective norm* influences *behavioural intention*. The proposed model retained the element of the subjective norm but renamed it to the *social norm* (Theme 4) in preference for distinct, descriptive terms as opposed to abstracted concepts. The consumer's *social norm* was defined by the proposed model as the individual's perception of how significant others are going to judge a behaviour and the individual's motivation to comply with this social pressure. In context of UHT milk alternatives, the *social norm* is comprised of the two subthemes of Theme 4 and holds a meaningful linkage with purchase intentions, as suggested by the interpretation of the research findings in section 9.3.3. The *social norm* was consequently repositioned in the proposed model to depict its suggested position as part of the *conative component* which comprise *non-product related attitudes* and potentially influences *purchase intentions*.

The anticipated model indicated that *self-efficacy* and *controllability* comprise the consumers *perceived behavioural control* which potentially impacts *behavioural intentions*. The proposed model retained the element of *control* (Theme 5) but repositioned it alongside the elements of *expected outcome* and *social norm* in a manner which depicts its suggested position as part of the *conative component* which shapes the *non-product-related attitudes* and potentially impacts consumer *purchase intentions*. The sub-elements of *self-efficacy* and *controllability* suggested in the anticipated model were omitted in the proposed model due to several reasons: (1) *self-efficacy* was described by research findings as *limitations* on the consumer's ability to consume UHT milk alternatives sustainably over a long period of time, (2) *controllability* was described by research participants in context of their *household arrangements*, (3) these concepts were included in the research findings as subthemes to Theme 5, but provided with more descriptive terms specifically suggested to apply to UHT milk alternative consumption and (4) the proposed model depicted the themes as suggested from research, but only depicted the subthemes suggested to comprise each theme in the key (Figure 9.9b) for the sake of clarity and simplicity in the proposed model. The proposed model defines *control* as the individual's confidence whether it is within the individual's own control and ability to perform the behaviour successfully and suggests that it is comprised of the subthemes of research Theme 5. Consumers' *control* of their own purchase behaviour was linked to their perceived ability to successfully attain and sustain their preferred behaviour and was consequently proposed to have a meaningful impact on consumer *purchase intentions*. Thus, the new model proposes the inclusion of an altered version of *self-efficacy* and *controllability* in the definition and sub-themes and depicts the linkage between *control* as part of the *non-product-related attitudes* which potentially impact *purchase intentions*, as suggested by the interpretation of the research findings in section 9.3.3.

It is proposed that the three non-product related elements of *expected outcome*, *social norm* and *control* comprise the *conative component* of consumer attitudes in the case of UHT milk alternatives and that these three elements collectively comprise *non-product related attitudes* which potentially have a meaningful impact on consumer *purchase intentions*. The proposed model defines non-product-related attitudes as consumers' overall attitude towards the intention to purchase a product based on non-product related factors, such as expected outcomes, social norm and control. As suggested by the interpretation of the research findings in section 9.3.4, consumer *purchase intentions* are collectively shaped by both the *product-related attitudes* (comprised of *consumer product beliefs* and *evaluation of product* and the related sub-themes) and the *non-product-related attitudes* (comprised of *expected outcome*, *social norm* and *control* and the related sub-themes) and are consequently depicted to be linked in a potentially meaningful way by the proposed *integrated attitude-intention model*. The proposed model defines *purchase intentions* as the individual's inclination to perform a specific behaviour. While the anticipated model initially included *behaviour* as an element in the model, as mentioned above, the theoretical framework of the study, as well as research findings suggest that actual consumer behaviour cannot be fully predicted but is preceded by the intention to engage or not to engage in the behaviour. The proposed model does not indicate a predictive value in consumer behaviour, but rather aims to depict an integrated approach within which a greater depth of understanding can be reached of the elements shaping consumer *purchase intentions* toward the UHT milk alternative category. Consequently, the proposed model suggests that the indicated attitude elements, based on the research findings, make a meaningful contribution to shaping consumer *purchase intentions* of UHT milk alternatives.

In conclusion, the proposed *Integrated Attitude-Intention Model* presents the suggested answers to the central research question of the research:

Central research question: What shapes the core of South African consumer attitudes and their purchase intentions toward UHT milk alternative products?

Collectively the themes and subthemes presented in the research findings, the discussion and interpretation of the research findings, as well as the proposed Integrated Attitude-Intention Model arrived at during this phenomenological enquiry presented a more holistic framework within which the essence of South African consumer attitudes and purchase intentions toward the UHT milk alternatives category can be interpreted. Thus, leading to a greater theoretical depth of understanding of consumer *attitudes* and *purchase intentions* of the UHT milk alternative product category. The next section provides recommendations specifically for the

industry. It is followed by the contributions and limitations of the study, whereafter the chapter is concluded with recommendations for future research.

9.5 RECOMMENDATIONS TO INDUSTRY

The findings of the study allow the industry to arrive at a deeper understanding of how to develop and market UHT milk alternative products introduced on the South African market to meet consumer needs and expectations. As seen from the findings, several factors determine the beliefs consumers hold toward a product, how the consumer evaluates products and what impacts their purchase intentions. Based on the research findings the following recommendations are made for the UHT milk alternative industry, specifically on product innovation and marketing.

9.5.1 Product Innovation

It is recommended that the following aspects identified from the research findings receive particular attention by *producers* in the UHT milk alternative industry to ensure products developed meet consumer requirements:

9.5.1.1 Sensory Properties

The sensory properties of UHT milk alternative products were frequently mentioned by participants to be a barrier to purchase which could not be overcome by other favourable product attributes. While participant attitudes toward sensory properties may or may not have been based on past experience, participants frequently indicated that unfavourably perceived sensory properties in milk alternative products would serve as barriers to purchase. Thus, whether these attitudes are based on past experience or their rationalization of unconscious beliefs, it remains an important element in consumers' purchase intentions and should receive sufficient attention during product innovation. Typical unfavourable sensory properties mentioned include a brownish appearance, a clay-like smell, tastelessness, a grass-like, beany or artificial taste, or a watery or grainy mouthfeel. Sensory properties extended to the concept of products being fit for its intended purpose, with participants indicating a need for products to retain acceptable sensory properties whether it is used as a drink, in hot beverages, during baking or in food preparation of cereals and porridge. One of the mentioned issues participants mentioned was the nature of some of the plant-based products to curdle, thicken or form fat globules when used in hot beverages. Due to the importance that research findings suggest consumers ascribe to sensory properties, it is recommended that producers continuously explore ways in which products presented to the market can be improved in this aspect. However, as seen with soy milk, consumers' past experiences with a product may create an enduring perception of its sensory properties. Consequently, it is recommended that improvements made during product innovation are communicated to consumers through

marketing campaigns and label information to overcome unpleasant past experiences in the consumer mind.

9.5.1.2 Suitability of Ingredients

Participants who considered UHT milk alternatives for the purpose of health needs and plant-based lifestyles mentioned their concern that all ingredients and additives used should be suitable. Individuals with allergies expressed frustration toward the lack of purity in milk alternative products and that additives include common allergens such as whey, soy, nuts and gluten. Participants indicated the likelihood of individuals allergic to milk also being allergic to other common allergens. Similarly, participants pursuing plant-based lifestyles expressed frustration that while the primary ingredient of plant-based products was suitable, not all additives to plant-based products were necessarily free from animal-derived products, rendering the product unsuitable for their lifestyle. Since allergies and vegan lifestyles were suggested to be some of the leading motivations behind UHT milk alternative intentions, it is recommended that product developers consider the suitability of all ingredients and additives included in their entirety to meet consumer needs. This product innovation recommendation can be supported by highlighting the suitability of each product for its respective function by highlighting claims such as dairy-free, nut-free, lactose-free or vegan, through marketing campaigns and product labelling to support consumers in suitable product selection.

9.5.1.3 Naturalness

Participants often expressed their concern that UHT milk alternatives were considered to be too processed causing a loss of nutrients, to contain too many unfamiliar ingredients, too many additives, flavour enhancers, artificial sweeteners, or preservatives and containing unwanted ingredients such as added sugar or palm oil. It is recommended that producers consider consumers' desire for natural, minimally processed products with clean and familiar ingredient lists, free from unwanted ingredients and preservatives, during product innovation to remain on par with changing consumer demands. It is recommended that this concept is further supported through consumer education on the reasons behind the inclusion of processes and additives for product safety, improved convenience of extended shelf-life and sensory acceptability.

9.5.1.4 Shelf Life and Packaging

Participants expressed frustration toward the short shelf-life of plant-based UHT alternatives once the container was opened resulting in an inability to consume the product timeously and product loss. Product loss was perceived as economic loss, food wastage and unsustainable use of resources. Participants indicated that this aspect often led to limited product consumption due to careful consideration of whether they should really open a container and

can use it timeously. While it is recommended that producers consider the shelf-life of products during product innovation (whilst still maintaining product naturalness), the pack sizes presented in the South African retail market should receive attention. Participants consider the standard one-liter containers too big. It is recommended that the introduction of smaller pack sizes is explored to allow consumers to use smaller quantities at a time and to limit product wastage. Other consumer requirements that product developers need to take note of include the need for product packaging that fits well in the refrigerator and the consumer preference for packaging which reduce spillage through easy-pour lids and, in the case of lactose-free milk, bulk six-packs which are easy to carry without tearing apart for households with children where lactose-free milk replace normal cow milk.

9.5.2 Marketing and Consumer Education

Very little marketing of UHT milk alternative products aimed at the South African consumer was found during the research. Current sources where the South African consumer may encounter information on the product category typically include general magazines or popular media articles providing information on lactose intolerance, milk allergies, weight loss diets and vegan lifestyles. However, these sources do not necessarily explicitly promote the use of milk alternatives but may make mention of them to the consumer. These sources are not peer-reviewed for accuracy and are typically only accessible to individuals subscribing to it and not necessarily to all consumers. Consumers searching specifically for information on milk alternatives can find basic product information, such as a product image, a description, the ingredients and the nutritional information of the product on producers' own websites, or on the online shopping platforms where UHT milk alternatives are sold. This information is limited to basic product information and typically only accessed by individuals who purposefully search online for the specific information. It does not typically contain marketing or educational information on milk alternatives. While traditionally more reputable sources of information, such as dieticians' websites and online educational information for the dairy industry are occasionally found to present information on lactose intolerance, vegetarian/vegan lifestyles and milk allergies, they are not actively promoting milk alternatives, but rather acknowledge that some consumers cannot consume dairy due to medical reasons whilst pointing out how important the role of dairy is in the consumer diet to those who can consume dairy. Popular media websites presenting the consumer with information on specific lifestyles or diets, such as vegan or weight loss diets, are often found to list products considered to be suitable within context of the lifestyle or diet and recipes which use these products. However, information on these websites may not necessarily be scientifically based and do not serve as marketing campaigns for milk alternatives specifically, but rather promote a lifestyle or diet which may or may not use these products.

Consumers are presented with very little information of promotional or educational value on the milk alternative product category itself. Consumers with specific needs, such as allergies, lactose intolerance, vegan lifestyles, or weight loss and fitness goals are most often observed to join support groups on social media where like-minded consumers provide each other with information and recipes in support of the specific need or lifestyle, recommendations for suitable or unsuitable products. While these platforms may not present entirely accurate information to consumers, they serve as influential sources of information and recommendations by word of mouth may be the only promotion of a product the consumer comes across. The most likely encounter which South African consumers currently have with UHT milk alternatives is in the retail space itself when walking down the aisle and seeing the actual products. Consumers who are interested can then pick up the product and are left to draw conclusions about the product based on the information presented and claims made on the product label. Some claims, such as 'immune boosting', present the consumer with very little information in the media to support the label claims. This points to a general lack of marketing campaigns and education for the South African consumer, leaving the South African consumer to draw their own conclusions from what they can gather from label claims and word-of-mouth recommendations. It is recommended that *marketers* of the product category pay attention to the following research findings to find ways to improve the consumer perception where necessary through *promotion campaigns*, but also to build *marketing strategies* around favourable beliefs held toward the product or product category.

9.5.2.1 *Market Positioning*

It is recommended that marketers of UHT milk alternative products consider the market positioning of this unique product category to support the consumer understanding in their search for potentially suitable products for their needs. Participants frequently indicated confusion regarding the need for or use of some UHT milk alternatives. It is suggested that marketers pay attention to the market positioning of the specific products mentioned below and provide clarity in the consumer market of the purpose and value of these products through marketing campaigns and label information, but also to consider these consumer perceptions when launching new products.

- Participants indicated confusion as to why one would purchase a *dairy blend* and speculated whether it was a low-cost alternative to cow milk to be used in baking. This created the belief that it could be a cheap, poor-quality replacement product for individuals unable to afford cow milk.
- Participants expressed uncertainty about where *rice milk* fits into the product category. Some participants speculated whether it was suitable for individuals who were allergic to everything else and believed it to lack any nutritional value.

- Similarly, participants could not identify a perceived need for a product such as *cashew milk* and merely believed it to be an expensive fad.
- *Coconut milk* was considered to be a popular ingredient in food preparation, however, participants indicated confusion regarding the UHT coconut milk products as an alternative to cow milk.
- Several participants indicated confusion on the need for *UHT dairy-based milk alternatives*, such as *fortified, enriched and functional* alternatives, with some participants believing these products to have minimal additions which simply made the product more expensive without the addition of real value to the consumer.
- It is recommended that consumers be supported in their product selection and encouraged to experiment with UHT milk alternatives in food preparation through purposeful consumer education on the suitability of specific products for specific dishes or purposes.
- Apart from the need for marketers to address the confusion on the products mentioned above through purposeful market positioning, it is also recommended that marketers take advantage of and expand upon the market positioning already established in the consumer mind where UHT milk alternatives are considered suitable to meet certain health needs, support plant-based lifestyles, as well as its potential suitability to support weight and fitness goals and experimentation in food preparation.

9.5.2.2 *Consumer Perceptions*

The belief was found among participants that UHT milk alternatives are only for vegans and individuals with milk allergies or lactose intolerance. In some situations, unfavourable perceptions of product usage by a consumer's social norm can lead to ridicule or lack of support for consumers who seek to utilize milk alternatives. While it is recommended that these beliefs are utilized in marketing strategies, it is also recommended that marketers address these perceptions of limited usefulness through marketing strategies which establish a consumer perception that UHT milk alternatives can be unique, exciting products for experimental use. It is further recommended that marketers invest in consumer education initiatives with the aim to address preconceived consumer ideas regarding the product category and normalize product usage among South African consumers. Another consumer perception that is considered to be important for marketers to address is the negative view established in the past of soy milk. Several participants indicated that soy milk used to be the only milk alternative available for individuals allergic to cow milk or desiring to follow plant-based lifestyles. While production methods have been extensively developed over time, resulting in improved product properties, many participants still associate plant-based milk alternatives, with disagreeable past sensory experiences of soy milk consumption. General

perceptions related to the consumption of soy have turned rather negative in recent years, with participants and literature indicating concerns about the oestrogen content of soy, the suitability of soy for human consumption and with soy milk seemingly becoming the scapegoat for all negative consumer associations with plant-based milk alternatives. It is highly recommended that marketers invest in strategies to redeem the consumer perception of soy milk by highlighting its improved sensory properties and flavour over time and addressing the vilification among popular literature sources of the use of soy for human consumption.

9.5.2.3 Packaging and Labelling

It is recommended that marketers consider and take advantage of the knowledge gained on consumer requirements of the presentation of UHT milk alternative product packaging and labelling. While some consumers prefer a neutral-looking label design and find realistic designs off-putting, others prefer a realistic design for quick identification of products. It is recommended that marketers invest in finding the perfect balance for the appearance of product label designs to accommodate the different consumer preferences. While legal requirements stipulate the need for nutritional information and product ingredients to be indicated in a minimum font size on all product packaging, participants expressed their frustration with the difficulty to read the small print of this information in a retail environment. In the case of individuals with allergies, participants mentioned that they often purchased products, only to find at home that it contained ingredients unsuitable for their consumption (leading to economic loss) but could not read it in the retail environment. It is recommended that product labels are designed for enhanced legibility, by keeping font type, size and colour in mind.

9.5.2.4 Origin

As research findings suggest, consumers find the country of origin important in product selection. Consumers indicate a preference for locally produced products, linking a trust in their familiarity with local production and food safety standards as well as a desire to support local farmers to the product origin. Where possible, it is recommended that marketers include the local origin and potentially branding linking products to the farmer or community of origin in their marketing strategies to create a sense of familiarity and trust in the consumer mind by linking the product to its origin.

9.5.2.5 Familiarity

As indicated above, consumers find familiarity to be important in their purchase decisions. While consumers vary in their adherence to brand loyalty during product purchases, participants indicated that whether they purchased branded UHT milk alternatives or the retailer's house-brand, they would only purchase products if they were familiar and satisfied

with the quality of the product. The lack of availability of small pack sizes or sample packs to familiarize the consumer with a product prior to purchase was indicated as a barrier to consumer purchases. It is recommended that marketers make use of sample packs to familiarize consumers with UHT milk alternatives to allow them to try a product prior to purchase.

9.5.2.6 *Claims*

While participants often regarded label claims such as hormone-, additive- and preservative-free, environmentally friendly, sustainably produced, GMO-free, fair trade or farmer-friendly, insect-friendly and organic favourably in principle, many participants expressed scepticism whether these claims were really applied or can be side-stepped in practice and how much value was really derived from the claims. It is recommended that marketers provide consumers with clear definitions of what claims imply as well as credible supporting evidence that implementation of practices to support these claims can be verified.

9.5.2.7 *Affordability*

Participants often expressed concern that UHT milk alternatives are expensive products which are unattainable for the general South African population. Other participants considered UHT milk alternatives to be expensive considering the perceived low actual content of the primary ingredient and the use of additives. Participants were especially concerned about the price of UHT milk alternatives in relation to the price of cow milk if it is to be used as a substitute for cow milk. It is recommended that marketers review the pricing strategies of UHT milk alternatives and the South African retail market to determine if it should retain the image of a unique, niche lifestyle product, or whether growth in the product category would be better served through pricing strategies which would render it more attainable by the general South African consumer. It is also recommended that the consumer perception of UHT milk alternatives as expensive be addressed by marketing strategies that shift the consumer focus from mere product cost to the consumer education through credible sources of information on the potential value presented to the consumer by the product.

9.5.2.8 *Availability*

Finally, it is recommended that the industry invests in marketing and distribution strategies which would present the consumer with UHT milk alternatives at convenient locations, such as retail stores which they frequent. The availability, potentially through online order platforms, of UHT milk alternatives in rural areas and towns needs particular investigation to improve availability of the product category across the country. While some participants indicate a limited variety of products available in the market with a need for more variety, other participants indicate that the current variety (along with the lack of clear market positioning) of

UHT milk alternatives is overwhelming. Consequently, it is recommended that marketers investigate the product offering to simplify the presentation and decision-making process to the consumer, whether through a revised quantity of products on offer or improved product positioning in the retail market.

While this section made recommendations to theory and industry, based on the suggested research findings, the next section provides the contributions of the research.

9.6 CONTRIBUTIONS OF THE STUDY

The research made valuable contributions by providing an in-depth description of South African consumer attitudes toward UHT milk alternatives and their purchase intentions thereof. In particular, the study's contributions to theory, methodology, the body of literature and the UHT milk alternative industry created value both locally and globally in the following ways:

9.6.1 Theory

The first contribution to theory, based on the suggested research findings, is the recognition of the need to promote the concept among academics to *use integrated, holistic approaches to research enquiries* to arrive at a more comprehensive understanding of niche products, such as UHT milk alternatives and consumer decision-making, rather than segmented approaches which could result in fragmented perspectives gained of phenomena under study. A holistic approach, as recommended, would broaden the *body of knowledge of informed literature* on the topic in a meaningful way. However, it is recommended that holistic approaches to research enquiries are still substantiated with sufficient detail to inform and support research findings.

The second contribution to theory is the proposed Integrated Attitude-Intention Model depicted in section 9.4, as developed based on the research findings. This proposed model provides a more current and relevant depiction within which South African consumer attitudes toward UHT milk alternatives and purchase intentions can be interpreted, than the classical decision-making models, the Tri-component attitude model, attitude-toward-object models, or theory of planned behaviour could provide. The research contributed to the development of the model, through a detailed description of consumer product beliefs and evaluation of products, as well as how these attitudes and other non-product related factors, such as expected outcome, social norm and control influence consumer purchase intentions. It is recognised from this study that academics should revisit the classical consumer decision-making models, as well as attitude and behavioural intention models, to determine if these models are still practical and applicable or need an amendment for the contemporary consumer in an ever-changing consumer market which entails online connectivity, social media connectedness, fast-paced

product development advances, increased access to products from brick-and-mortar stores to include online platforms.

Since the theory underlying these elements which contribute to South African consumer purchase intentions of UHT milk alternatives cannot be studied in isolation if a meaningful, holistic perspective is to be described, the study's contribution of a holistic model is valuable as a framework within which consumer attitudes and purchase intentions can be interpreted. It is recommended that the proposed *integrated attitude-intention model* is applied theoretically within context of decision-making theory, including other influencing factors, such as consumer motivation, perceptions, knowledge and learning to understand even more comprehensively how South African consumer attitudes toward UHT milk alternatives and purchase intentions shape consumer decision-making. This would provide *academics* with a greater *depth of understanding* through an *integrated approach* to arrive at a holistic perspective within which consumer attitudes and interventions toward UHT milk alternatives can be interpreted. Other researchers may find the contribution to theory in the form of the model useful in their enquiries in other geographical areas, target markets and other products. The model and its development process could be used as the basis for the development of interpretive models for milk alternative markets in other regions of the world, as well as models to interpret the consumption of other food products in South Africa. The development of a model within which the theory behind these attitudes can be understood in this study provides a framework to utilise during further research, product innovation or introduction of milk alternatives on the South African market.

While the use of a holistic approach to enquiries and the novel proposed model serves as the two main contributions to theory, contributions to theory also include recommendations for future research, which is expanded on under the section on future research.

9.6.2 Body of Literature

The study made a positive contribution to the body of literature through the development of a research plan which analysed the phenomenon into its relevant elements to gain a detailed description thereof. As identified in the research problem, a gap of knowledge existed specifically on South African consumers' attitudes toward UHT milk alternatives and toward purchase intentions thereof. The research addressed this gap in knowledge by producing literature that is produced through locally relevant research, specifically based on UHT milk alternative products, instead of relying on international consumer research, or studies based on attitudes toward normal cow milk. The insights uncovered contribute current insight in an area where little information existed prior to the study and complement the available literature by addressing previous gaps in consumer beliefs and evaluation of UHT milk alternative

products, providing a description of consumer attitudes toward the product category itself, as well as non-product related factors which impact consumer purchase intentions, such as expected outcomes, social norm and control. As indicated in the problem statement, a gap existed in research linking consumer attitudes and purchase intentions holistically to understand consumer decision-making related to UHT milk alternatives. The proposed integrated attitude-intention model contributes to addressing this gap in the body of literature by linking these aspects in South African consumer attitudes toward UHT milk alternatives and how they fit in together to form the individual's overall attitude toward the product and its purchase, allowing a framework within which consumer attitudes and purchase intentions of UHT milk alternatives can be interpreted in the South African context. While these contributions address previous gaps or complement other available literature locally to provide insight into the current state of the product category as linked to the consumer, the research also contributes knowledge to the global body of literature on the topic to inform future enquiries.

9.6.3 Methodology

The methodological contribution of the research, as described below, can be considered both locally and globally for future consumer research. The study made a valuable contribution by demonstrating the value of post-positivist, qualitative research to uncover previously unknown concepts and to generate a vast depth of understanding of a phenomenon. It further contributed by indicating the depth of knowledge which could be generated from small online mini-focus groups. The research found that with the purposeful focus of the moderator to ensure all participants engage, small online mini-focus groups led to great depth in the discussions, whilst simultaneously minimising participant discomfort of engaging with a large group of unfamiliar fellow participants on an online platform to share personal experiences. The research also contributes to existing methodology by suggesting that online data-gathering methods, such as online mini-focus groups and semi-structured interviews can be useful and appropriate tools in situations where in-person data-gathering sessions with participants are not practically feasible. Further, the inductive-deductive thematic data analysis complements existing methods where either the one or the other approach is used, by indicating the value of first using an inductive analysis approach to uncover themes and subthemes from data and thereafter applying a deductive approach to verify that the themes and subthemes established from the inductive analysis are indeed supported sufficiently from the data and that any gaps or duplication of themes were addressed. This analytical approach served to maximise gains from the data gathered while providing a useful analytical process to support trustworthiness and robustness of qualitative research findings. The main methodological contribution of the research is the emphasis on the use of a holistic approach

to generate in-depth meaning from the lived experiences of and meanings ascribed by participants to UHT milk alternatives and its purchase through the phenomenological approach.

9.6.4 Industry

The main contribution of the study to the industry is the comprehensive description of consumer beliefs related to the product category, insight into how consumers evaluate products, as well as non-product related factors influencing consumer intentions to purchase UHT milk alternatives. This allows the South African UHT milk alternative *industry* to re-evaluate the attributes of the products as well as the market positioning of their current product offering in the retail market to determine whether it will optimally drive consumer purchases and product consumption. This information contributes to the information available to industry to answer several consumer-related questions to understand who uses these products, why are these products used, what are consumer expectations of the product category, what do consumers believe about the products, what do they consider when evaluating these products favourably or unfavourably, are the users of the product category uniform in their expectations of and need for the products, does milk alternatives substitute or complement cow milk in the consumer diet and what drive or limits their purchase intentions thereof. The contribution of a comprehensive model informing industry on important consumer attitudes toward the product category and elements impacting the consumer's purchase intentions makes a valuable contribution, to informing new product innovation, market positioning and effective promotion of UHT by supporting the design of marketing strategies to reach the correct target market effectively. The availability of consumer information and purchase intentions also contributes by mitigating the risks associated with the introduction of new products in the market by supporting the development of products with high consumer acceptance based on informed research on consumer needs and expectations of the product category. Finally, the research also contributes a section on practical industry recommendations to be considered during the innovation and marketing of UHT milk alternatives to ensure product innovation and marketing strategies align with consumer needs and expectations.

9.7 LIMITATIONS OF THE STUDY

The research limitations can be considered in four sections: theory, design, method and interpretation as presented below.

9.7.1 Limitations in Context of Theory

Regardless of which consumer decision-making model is adopted, the theory underlying the consumer decision-making process is comprised of a wide variety of constructs which impact the final consumer decision. The study is limited by the attainable scope in one research

project to focus the enquiry on theory underlying *consumer attitudes* toward the product category and the related *purchase intentions*. Other external elements indicated from available theory which could influence the consumer decision include the marketing mix, communication sources and sociocultural influences, while other internal influences include the consumer's psychological influences, such as motivation, personality traits, perceptions and learning based on knowledge and previous experience. While the study found both *consumer attitudes* and *purchase intentions* to be important to inform the research question, it is limited by the attainable scope from attaining a further in-depth perspective on these other mentioned theoretical constructs which potentially influence the consumer decision-making process from comprehensively addressing the research problem. The research enquiry could only touch on some of these constructs, such as product attributes, promotion, price, availability, social norm, recommendations from significant others and social media, past experiences and the impact on future purchases, where it was expressly linked by participants to their *attitudes* and *purchase intentions*. A vast amount of theoretical elements still remain to be explored and described before the South African consumer decision-making as related to UHT milk alternatives can be fully understood.

9.7.2 Limitations in Context of Research Design

Limitations were identified related to the design of the research. The use of a postpositivist paradigm to frame the study was useful in its recognition that humans and their multiple experienced realities, rather than strict quantitative methodologies, should inform an in-depth study on the research topic. While this paradigm was useful to arrive at the meanings that participants ascribe to the research topic, it can become a limitation if the nature of the paradigm and its purpose to arrive at particularity rather than generalisability is not considered in the interpretation and use of research findings through careful consideration the transferability of findings in different contexts. The qualitative approach used presented similar potential limitations if findings are applied out of context of the purpose of research paradigm. The main limitation of the qualitative approach is the inability to draw conclusive, measurable findings. However, the purpose of the qualitative approach and this research, is not to arrive at conclusive, measurable findings, but rather to generate new insight and a greater depth of understanding of the research topic. Consequently, it is not a limitation inherent to the qualitative approach, but rather a potential limitation if the findings are applied conclusively outside of this context. The main limitation of the exploratory-descriptive design lies in the fact that its findings are flexible, descriptive, tentative and subjective and does not have predictive, measurable value. Consequently, potential links between concepts can be observed and highlighted, but the existence of cause-effect relationships and the strength of such potential relationships cannot be established from exploratory-descriptive findings of a qualitative

nature. Similarly, participants may expand more on some themes than others, providing greater depth of data; however, that would not necessarily imply that their evaluation thereof is more important than lesser explored themes. Once again, the value of the exploratory-descriptive design lies in its ability to explore new insights and describe meanings from participant realities to be interpreted within context and the potential limitation of the design lies in incorrect application of findings as predictive findings, rather than informative findings. As with the research design elements mentioned above, any limitations linked to the phenomenological strategy apply to the context of the application of research findings. The aim of phenomenological studies is to describe the common meaning several participants ascribe to a phenomenon based on their lived experiences, developing a composite description with the purpose to understand the essence of their shared experience. Such findings are particular within the context of the participants of the research and subjective to their interpretations of the phenomenon. The potential limitation of the phenomenological strategy arises when findings are incorrectly applied universally in other contexts without prior consideration for similarities, differences and transferability between different contexts. While all efforts have been made to support trustworthiness of the research findings, the potential limitation that similar approaches in other contexts might provide different findings must be acknowledged due to the subjective nature of findings and limited ability for exact replication in other contexts of such a research approach. While the geographic location of the study was restricted to participants residing within the borders of South Africa, the relatively small number of participants used in qualitative, phenomenological research, limits the representativity of findings to the entire South African population. Again, during the application of findings, the research aimed to generate new and deeper insight, as opposed to generating measurable, predictive conclusions, must be considered to use findings appropriately within context of the research design.

9.7.3 Limitations in Context of Research Method

Limitations identified by the research method applied include the online data-gathering process. As described in the methodology chapter, the data-gathering process had to be adapted from the initially planned in-person mini-focus groups to online mini-focus groups and semi-structured interviews due to restrictions on in-person gatherings during the COVID-19 pandemic. This resulted in many participants potentially engaging in online meeting platforms, such as Zoom, for the first time. Although the researcher assisted participants where needed to use the online platform and aimed to establish that all participants were comfortable with the use of the platform at the beginning of each session, prior to gathering data on the research topic, a potential level of unease during the first-time online interaction of some participants cannot entirely be eliminated. While a vast depth of information was uncovered during the

data-gathering sessions, this could have impacted on participant comfort levels to engage and share more information during sessions. Since mini-focus groups were small and online mini-focus groups generally only allowed for one participant to talk at a time, the researcher found it manageable to provide each participant with a chance to contribute to the discussion. However, the potential impact of peer-pressure on the opinions provided by participants, as with in-person mini-focus groups, cannot be assumed to be eliminated. As mentioned in Section 4.7, it was challenging to find mutually suitable timeslots for participants to join mini-focus groups during the pandemic due to traditional work hours, lunch breaks and the clear distinction in the allocation of time for work and family responsibilities being blurred, or greatly varied, while participants were restricted to work from home. Participants who could not join scheduled mini-focus groups participated in semi-structured interviews with the researcher. While the online interviews created the opportunity for focused interaction with individual participants and generated meaningful depth of data, it did remove the potential contribution in these sessions which discussions among participants could have generated. As mentioned in the previous section, the nature of qualitative research using small participant samples highlights the importance that the reader needs to establish the transferability of the findings within the research context before applying it to other sections or within other contexts in the South African population. The transferability and consequent application of findings should focus on the value of the depth of information presented within context of the participant sampling and recruitment strategies applied. While every effort was made during the research process to support trustworthiness of results, limitations can potentially apply to the transferability of findings and dependability in replication of the process in different contexts. Transferability of findings to other contexts must be established by the end-user of research findings, based on the description of the research methodology and participant sampling and recruitment strategies applied, prior to the application of findings to other contexts. Similarly, the dependability of findings within other contexts may be limited, since the inductive thematic analysis process depended on the researcher's perspective, as described in the epoché and other researchers in other contexts, or with other participants may arrive at different ways to code, categorise and generate themes on which findings are based. To overcome any potential limitations related to the research method, it is recommended that end-users of the research findings study the research methodology applied in this study to determine the applicability of findings to the particular context within which findings are intended to be used.

9.7.4 Limitations in Context of Interpretation of Findings

As frequently mentioned in the previous sections, the research limitations often arise from the potential incorrect application of findings if the context and purpose of the research design and method are not considered prior to the application of findings. This section of the limitations

particularly serves as a warning to industry to consider the subjective nature of the findings of the study. Research findings must be interpreted in context of the extensive theory as well as the research design and method applied as informative and descriptive outcomes, rather than predictive, measurable outcomes. Findings cannot be directly applied to other contexts to inform industry decision-making without further research and prior establishment of the transferability of findings. Since the research made use of a study sample out of the population, findings cannot merely be generalised to the entire South African population without further research to test the applicability of findings to diverse South African contexts. Instead, it must be acknowledged that the value of the research findings lies in the depth of understanding that particularity brought to the research findings rather than in its generalisability.

9.8 FUTURE RESEARCH

Recommendations for future research include both qualitative and quantitative research. It is suggested that further qualitative research be conducted to determine how other elements identified from consumer decision-making models, such as consumer motivation, perceptions, knowledge and learning, impact South African consumer decision-making concerning UHT milk alternatives. It is also recommended that research is conducted to determine the applicability of existing theory and decision-making models for the contemporary consumer in an ever-changing consumer market. Future research should also determine consumers' social media connectedness and the shift in product accessibility from traditional brick-and-mortar stores to online platforms impacting their decision-making process and their perception of the product marketing mix. Concepts, such as food neophobia, consumer perceptions of status as linked to purchase decision-making, the socio-cultural context within which South African consumers make purchase decisions, attitudes and practices of plant-based diets, product labelling legislation, typical early product innovators and the perceived market positioning of various products can be further studied in context of milk alternative products to expand future discussions and the potential impact of these concepts on consumer purchase decisions. In particular, it is recommended that future research measure how consumers' past experience with UHT milk alternatives influences their attitudes and purchase intentions toward the product category. It is also recommended that future research includes extensive research on the market positioning of UHT milk alternatives, as well as continuous research into ways to enhance the sensory properties of the category to present meaningful and acceptable products to the South African consumer.

Recommendations for future research also include a quantitative component. The research findings suggest that linkages exist between the various themes in the proposed integrated attitude-intention model and participants' intention to purchase UHT milk alternatives. It is

recommended that this qualitative study is followed by quantitative research, with a larger and more diverse sample of respondents, to test the model and to establish the generalisability and representativeness of the findings to the South African population. It is particularly recommended that future research quantitatively establishes the strength and significance of these linkages to determine whether meaningful relationships exist between consumer product-related attitudes, non-product-related attitudes and consumer purchase intentions. If such relationships are established through quantitative research, it is recommended that quantitative research expand to determine if some concepts have a more meaningful influence on consumer purchase intentions than others by ascribing weightings to the different themes in the proposed model in their influence on purchase intentions. The recommended future research would allow a focused approach to research, product innovation and marketing efforts on the meaningful factors that influence consumer purchase intentions as related to UHT milk alternatives.

9.9 NOVELTY OF THE RESEARCH

The research provides a new, in-depth description of South African consumer attitudes toward UHT milk alternatives and their purchase intentions through a detailed description of consumer product beliefs and evaluation of products. The research further describes how these product-related attitudes and other non-product related attitudes, such as expected outcome, social norm and control influence consumer purchase intentions. The research re-established the importance ascribed to *use integrated, holistic approaches to research enquiries* to arrive at a comprehensive understanding of niche products, such as UHT milk alternatives and consumer decision-making, rather than segmented approaches which can result in fragmented perspectives of a phenomenon. The research proposed the novel Integrated Attitude-Intention Model, based on the research findings which provides a more current and relevant depiction within which South African consumer attitudes toward UHT milk alternatives and purchase intentions can be interpreted than the classical consumer decision-making, attitude or behaviour models could provide. The research addressed a gap in knowledge by contributing to current literature, based on locally relevant research as related to the South African consumer and locally available UHT milk alternative products. Methodologically, the study provides new insight to both local and global research by indicating the depth of knowledge which can be generated from small online mini-focus groups. The research suggests that online data-gathering methods can be appropriate tools in situations where in-person data-gathering sessions with participants are not practically feasible. The research also indicates the value of an inductive-deductive thematic data analysis approach when first using an inductive approach to uncover themes from data and then applying a deductive approach to verify that the themes are indeed supported sufficiently by the data. The value of this inductive-

deductive thematic data analysis approach is not limited to local research, but may also contribute fundamentally to the robustness of global qualitative research by first uncovering and then verifying findings from the data gathered. Finally, the research generated new insight upon which practical industry recommendations could be made to inform UHT milk alternatives industry to ensure product innovation and marketing strategies align with consumer needs and expectations.

REFERENCE LIST

- A2 MILK COMPANY. (2017). Milk allergy vs milk intolerance – how can you tell the difference? [Online]. The a2 Milk Company. Available: <https://thea2milkcompany.com/> [Accessed 27 July 2017].
- AAKER, D.A., KUMAR, V., LEONE, R.P. and DAY, G.S. (2013). Marketing Research. 11th ed. United States of America: Wiley.
- ABDALLAT, M.M.A. and EMMAM, H.S. (2012). Consumer behavior models in tourism. *Diakses pada*, 15.
- ABOULFAZLI, F., BABA, A.S. and MISRAN, M. (2016). Replacement of bovine milk with vegetable milk: Effects on the survival of probiotics and rheological and physicochemical properties of frozen fermented dessert. *International Journal of Dairy Technology*, 69 (1), pp.71-80.
- ADIMANDO, S. (2016). Cooking with Coconut Milk. *Vegetarian Times*, 42 (3), pp.68-73.
- AGARWAL, R.K. and BOSCO, S.J.D. (2014). Optimization of Viscozyme-L Assisted Extraction of Coconut Milk and Virgin Coconut Oil. *Asian Journal of Dairy and Food Research*, 33 (4), pp.276-284.
- AGRICULTURE AND CONSUMER PROTECTION. (n.d.). Technology of Production of Edible Flours and Protein Products From Soybeans, Soymilk and Related Products [Online]. Food and Agriculture Organization of the United Nations. Available: <http://www.fao.org/docrep/t0532e/t0532e09.htm> [Accessed 25 September 2017].
- AHAMED, B., ISLAM, S.M.M. and QAOM, K. (2015). Customers' Attitude towards E-commerce in Bangladesh: An Empirical Study on some Selected B2C E-commerce Sites. *Journal of Business Technology*, 1, pp.37-54.
- AJZEN, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50 (2), pp.179-211.
- ALLEN, L., DE BENOIST, B., DARY, O., HURRELL, R., HORTON, S., LEWIS, J., PARVANTA, C., RAHMANI, M., RUEL, M. and THOMPSON, B. (2006). Guidelines on Food Fortification with Micronutrients. Rome: Food and Agriculture Organization of the United Nations and World Health Organisation.
- ALLEN, S.M.M. (2012). Consumer Preferences for Milk and Yogurt Products in Canada. Dissertation (MSc). Edmonton: University of Alberta.

ALPRO. (2018). Our plant-based products [Online]. Available: <https://www.alpro.com/za> [Accessed 4 August 2018].

ALPRO. (2022a). Alpro Almond Milk [Image]. South Africa: Alpro. Available: <https://www.alpro.com/za/products/drinks/almond-drinks/alpro-amond-milk/> [Accessed 16 July 2019].

ALPRO. (2022b). Cashew Original [Image]. South Africa: Alpro. Available: <https://www.alpro.com/uk/products/drinks/cashew-drinks/cashew-original/> [Accessed 20 November 2022].

ANDERSON, D.P. and CLAWSON, S. (2016). Little milk price improvement expected into the new year. *Southwest Farm Press*, 43 (2), pp.16.

ARCHER, E. (2018). Qualitative Data Analysis: A primer on core Approaches. In: Kramer, S., Fynn, A., Laher, S. and Janse Van Vuuren, H. (eds.) *Online Readings in Research Methods*. Johannesburg: Psychological Society of South Africa (PsySSA).

ASKEW, K. (2018a). 'The familiarity factor': Consumers want recognisable protein sources. *Food Navigator USA* [Online]. Available: https://www.foodnavigator-usa.com/Article/2018/05/21/Demand-for-familiar-protein-ingredients-rising?utm_source=newsletter_daily&utm_medium=email&utm_ca [Accessed 3 June 2018].

ASKEW, K. (2018b). The incline has become steeper': Nestlé's uphill battle to grow [Online]. *Food Navigator USA*. Available: https://www.foodnavigator.com/Article/2018/02/16/The-incline-has-become-steeper-Nestle-s-uphill-battle-to-grow?utm_source=newsletter_daily&ut... [Accessed 20 February 2018].

BAIO, L.M., DOS SANTOS, S.S. and MADRONA, G.S. (2016). Alegria e Intolerância ao Leite no Consumo Alimentar: Estudo de Caso Sobre o Conhecimento da População Sobre o Tema. *Brazilian Journal of Surgery and Clinical Research*, 17 (1), pp.62-67.

BARGH, J.A. (1990). Auto-motives: Preconscious determinants of social interaction. *Handbook of motivation and cognition: Foundations of social behavior*, 2, pp.93-130.

BARLEY, L. (2013). The Veggie-Preneurs. *Vegetarian Times*, 402, pp.56-60.

BEGEN, F.M., BARNETT, J., PAYNE, R., ROY, D., GOWLAND, M.H. and LUCAS, J.S. (2016). Consumer preferences for written and oral information about allergens when eating out. *PLoS ONE*, 11 (5), pp.1-12.

- BEKELE, A.D., BEUVING, J. and RUBEN, R. (2017). How African households shop: Evidence from dairy chains in Ethiopia. *The European Journal of Development Research*, 29 (4), pp.806-826.
- BELLAMY, K. and VAN BATTUM, S. (2017). *Global Dairy Top 20: Deciding on Alternative Routes*. Amsterdam: Rabobank.
- BELLINI, M. and ROSSI, A. (2018). Is a Low FODMAP Diet Dangerous? Techniques in Coloproctology [Online]. Available: <https://doi.org/10.1007/s10151-018-1835-9> [Accessed 15 August 2018].
- BESIR, A., AWAD, N., MORTAS, M. and YAZICI, F. (2022). A Plant-Based Milk Type: Hemp Seed Milk. *Academic Food Journal/Akademik GIDA*, 20 (2), pp.170-181.
- BETSCH, T. and HABERSTROH, S. (eds.) 2012. *The Routines of Decision-Making*, New York: Psychology Press.
- BEVERAGE INDUSTRY (2015a). Almond milk continues to lead dairy alternatives segment. *Beverage Industry*, pp.14.
- BEVERAGE INDUSTRY (2015b). ITI Tropicals releases coconut water and coconut milk blends. *Beverage Industry*, pp.63.
- BEVERAGE INDUSTRY (2016). R&D News. *Beverage Industry*, pp.46.
- BEVERAGE INDUSTRY (2017). Taking an alternative path. *Beverage Industry*, pp.12.
- BFAP BASELINE (2017). *Agricultural Outlook 2017 - 2026*. South Africa.
- BFAP BASELINE (2020). *How South Africans Spend their Food Budgets*. South Africa.
- BFAP BASELINE (2022). *Agricultural Outlook 2022-2031*. South Africa.
- BIBLE, A. (2016). Milk It. *Muscle & Fitness*, 77 (4), pp.82.
- BIMBO, F., BONANNO, A., LIU, X. and VISCECCHIA, R. (2016). Hedonic analysis of the price of UHT-treated milk in Italy. *Journal of Dairy Science*, 99 (2), pp.1095-1102.
- BLACKWELL, R.D., MINIARD, P.W. and ENGEL, J.F. (2001). *Consumer behaviour*. 9th. New York: Harcourt.
- BLUE DIAMOND GROWERS. (2018). Blue Diamond Almonds [Online]. Available: <https://bluediamondalmonds.co.za> [Accessed 4 August 2018].

- BLUE DIAMOND GROWERS. (2022a). Almond Breeze Almond Milk Unsweetened Barista Blend [Image]. South Africa: Blue Diamond Growers. Available: <https://almondbreeze.co.za/products/barista-blend-almond-breeze/> [Accessed 16 July 2019].
- BLUE DIAMOND GROWERS. (2022b). Almond Breeze Almond Milk Unsweetened Original [Image]. South Africa: Blue Diamond Growers. Available: <https://almondbreeze.co.za/products/almond-breeze-unsweetened/> [Accessed 16 July 2019].
- BLUE DIAMOND GROWERS. (2022c). Almond Milk [Image]. South Africa: Blue Diamond Growers. Available: <https://almondbreeze.co.za/our-products/> [Accessed 20 November 2022].
- BOAITEY, A. and MINEGISHI, K. (2020). Determinants of Household Choice of Dairy and Plant-based Milk Alternatives: Evidence from a Field Survey. *Journal of food products marketing*, 26 (9), pp.639-653.
- BOITZ, L.I. and MAYER, H.K. (2017). Extended shelf life milk—One concept, different qualities: A comprehensive study on the heat load of differently processed liquid milk retailed in Austria in 2012 and 2015. *LWT-Food Science and Technology*, 79, pp.384-393.
- BOYATZIS, R.E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Sage.
- BOYCE, J.A., ASSA'AD, A., BURKS, A.W., JONES, S.M., SAMPSON, H.A., WOOD, R.A., PLAUT, M., COOPER, S.F., FENTON, M.J., ARSHAD, S.H., BAHNA, S.L., BECK, L.A., BYRD-BREDBENNER, C., CAMARGO, C.A., JR., EICHENFIELD, L., FURUTA, G.T., HANIFIN, J.M., JONES, C., KRAFT, M., LEVY, B.D., LIEBERMAN, P., LUCCIOLI, S., MCCALL, K.M., SCHNEIDER, L.C., SIMON, R.A., SIMONS, F.E., TEACH, S.J., YAWN, B.P. and SCHWANINGER, J.M. (2010). Guidelines for the diagnosis and management of food allergy in the United States: Report of the NIAID-sponsored expert panel. *Journal of Allergy and Clinical Immunology*, 126 (60), pp.1-58.
- BOZINOFF, L. (1982). A script theoretic approach to information processing: an energy conservation application. *Advances in Consumer Research*, 9, pp.481-486.
- BOZOGLU, M., HUANG, C.L.L., FLORKOWSKI, W.J. and TOPUZ, B.K. (2014). Consumers' Purchase Intention toward Safety Labeled Dairy Products in the Black Sea Region of Turkey. *Journal of Agricultural Sciences*, 20 (4), pp.434-445.
- BRAUN, V. and CLARKE, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3 (2), pp.77-101.

- BRÁZDOVÁ, Z.D., KLIMUSOVÁ, H., VORLOVÁ, L. and FIALA, J. (2014). Food preference for milk and dairy products. *Acta Veterinaria Brunensis*, 83, pp.41-44.
- BRODZIAK, A., KRÓL, J., LITWIŃCZUK, Z., ZABORSKA, A. and CZERNECKI, T. (2017). Effect of storage time under home refrigeration conditions on the quality of opened drinking milk. *Mljekarstvo*, 67 (4).
- BUONO, A.D. (2016). Growing space for alternatives. *Beverage Industry*, pp.12-15.
- CARDELLO, A.V., LLOBELL, F., GIACALONE, D., ROIGARD, C.M. and JAEGER, S.R. (2022). Plant-based alternatives vs dairy milk: Consumer segments and their sensory, emotional, cognitive and situational use responses to tasted products. *Food quality and preference*, 100.
- CASINI, L., CONTINI, C., MARONE, E. and ROMANO, C. (2013). Food habits. Changes among young Italians in the last 10 years. *Appetite*, 68, pp.21-29.
- ČELAKOVSKÁ, J., ETTLEROVÁ, K., ETTLER, K., VANĚČKOVÁ, J. and BUKAČ, J. (2015). Evaluation of food allergy to wheat, cow milk, egg, soy and peanuts in patients suffering from atopic dermatitis. *Food & Agricultural Immunology*, 26 (1), pp.26-37.
- CERNIVEC, S. (2014). Health in a nutshell. *Beverage Industry*, 105 (11), pp.12-14.
- CHAIKEN, S. and TROPE, Y. (1999). *Dual-process theories in social psychology*. Guilford Press.
- CHECKERS. (2022a). Clover Numel Medium Fat Milk Blend [Image]. South Africa: Checkers. Available: <https://www.checkers.co.za/All-Departments/Food/Food-Cupboard/Long-Life-Milk-and-Dairy-Alternatives/Coconut-Milk-and-Cream/Clover-Numel-Medium-Fat-Milk-Blend-Box-1L/p/10532940EA> [Accessed 20 November 2022].
- CHECKERS. (2022b). Clover Nutri Kids RTD Full Cream Kids Milk [Image]. South Africa: Checkers. Available: <https://www.checkers.co.za/All-Departments/Food/Fresh-Food/Milk%2C-Butter-and-Eggs/Long-Life-Milk-and-Cream/Clover-Nutri-Kids-RTD-Full-Cream-Kids-Milk-Box-1L/p/10541692EA> [Accessed 20 November 2022].
- CHURCHILL, G.A., BROWN, T.J. and SUTER, T.A. (2010). *Basic Marketing Research*. 7th ed. Australia: Cengage Learning.
- CLOVER (2016). *Integrated Annual Report for the year ended 30 June 2016*. Constantia Kloof.
- CLOVER S.A. (2022a). Good Hope Enriched Soy [Image]. South Africa: Clover S.A. Available: <https://www.clover.co.za/product/soy-milk/clover-good-hope/good-hope-enriched-soy-1l/?range=Soy%20Milk> [Accessed 20 November 2022].

CLOVER S.A. (2022b). Good Hope MA [Image]. South Africa: Clover S.A. Available: <https://www.clover.co.za/product/soy-milk/clover-good-hope/good-hope-ma-milk-alternative-1/?range=Soy%20Milk> [Accessed 20 November 2022].

CLOVER S.A. (2022c). Good Hope Regular [Image]. South Africa: Clover S.A. Available: <https://www.clover.co.za/product/soy-milk/clover-good-hope/good-hope-regular-1-1/?range=Soy%20Milk> [Accessed 20 November 2022].

CLOVER S.A. (2022d). Good Hope Regular Unsweetened [Image]. South Africa: Clover S.A. Available: <https://www.clover.co.za/product/soy-milk/clover-good-hope/good-hope-regular-unsweetened-1/> [Accessed 20 November 2022].

CLOVER S.A. (2022e). Nolak Lactose Free UHT Medium Fat Milk [Image]. South Africa: Clover S.A. Available: <https://www.clover.co.za/product/lactose-free-milk/nolak/nolak-lactose-free-ultra-pasteurised-medium-fat-milk-1/> [Accessed 20 November 2022].

CLOVER SA. (2018). Clover: Way Better [Online]. Clover S.A. Available: <https://www.clover.co.za> [Accessed 4 August 2018].

CLOW, K.C. and BAACK, D. (2021). Integrated Advertising, Promotion and Marketing Communications. 9th ed. United Kingdom: Pearson UK.

CLOW, K.C. and JAMES, K.E. (2014). Essentials of Marketing Research: Putting Research into Practice. United States of America: Sage Publications.

COBE, P. (2015). Healthier Menus: Dealing With Dairy Allergies. Food Service Director, pp.18.

COCAN, I., DOGARU, D., POIANĂ, M. and NEGREA, M. (2015). Soy Milk Obtaining and Comparative Characterization With Cow's Milk. Research Journal of Agricultural Science, 47 (4), pp.35-40.

COETZEE, K. (2016). What drives the growth of dairy consumption. The Dairy Mail, pp.15.

COMAX FLAVORS (2017). 2017 Flavour Trends: Not Milking It. New York.

CONSUMER REPORTS (2014a). Choosing the Right Milk for You: How almond, coconut, hemp, rice and soy milks compare with dairy. Consumer Reports.

CONSUMER REPORTS (2014b). Milk alternatives: Should you sip or skip? Consumer Reports, 79 (9), pp.8.

CONSUMER REPORTS (2022). Which Plant Milk is Best for You? Consumer Reports.

CONSUMER REPORTS ON HEALTH (2014). On Your Mind. Consumer Reports on Health, 26 (5), pp.12.

CONSUMER REPORTS ON HEALTH (2015). Food Sense: What you must know about milk. Consumer Reports on Health, pp.9.

COOKE, R., DAHDAH, M., NORMAN, P. and FRENCH, D.P. (2016). How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. Health Psychology Review, 10 (2), pp.148-167.

CORBIN, J. and STRAUSS, A. (2008). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. 3rd. Sage Publications, Inc.

CORNALL, J. (2018a). Five top consumer trends from Fonterra's NZMP. Dairy Reporter [Online]. Available: https://www.dairyreporter.com/Article/2018/03/28/Five-top-consumer-trends-from-Fonterra-s-NZMP?utm_source=newsletter_daily&utm_medium=email&utm_campaign= [Accessed 29 March 2018].

CORNALL, J. (2018b). Technology will address growing need for dairy: IFCN. Dairy Reporter [Online]. Available: https://www.dairyreporter.com/Article/2018/06/18/Technology-will-address-growing-need-for-dairy-IFCN?utm_source=newsletter_daily&utm_medium= [Accessed 9 July 2018].

COURT, E. (2018a). Plant-Based Athlete Novak Djokovic Victorious In Wimbledon Finals. Plant-based News [Online]. Available: <https://www.plantbasednews.org/> [Accessed 6 January 2018].

COURT, E. (2018b). Survey Reveals Nearly Half of Dairy Consumers Also Buy Alternatives. Plant-based News [Online]. Available: <https://www.plantbasednews.org/> [Accessed 6 January 2018].

CRAWFORD, E. (2018). Fat, fibre & whole grains among attributes that drive consumption, while sugar remains a turn-off. Food Navigator USA [Online]. Available: https://www.foodnavigator-usa.com/Article/2018/04/12/Fat-fiber-whole-grains-among-attributes-that-drive-consumption-while-sugar-remains-a-turn-off?utm_source= [Accessed 12 April 2018].

CRESWELL, J.W. and CRESWELL, J.D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. United States of America: SAGE Publications.

CRESWELL, J.W. and POTTS, C.N. (2017). Qualitative Inquiry & Research Design: Choosing among five approaches. 4th. United States of America: SAGE Publications.

CULLINEY, K. (2018). Milking it? LATAM dairy-free demands weak compared to global boom. Dairy Reporter [Online]. Available: https://www.dairyreporter.com/Article/2018/05/30/Milking-it-LATAM-dairy-free-demands-weak-compared-to-global-boom-says-Rabobank?utm_sou%E2%80%A6 [Accessed 6 July 2018].

DAIRY STANDARD AGENCY. (2015). Code of Practice for the Secondary Dairy Industry. Centurion: Dairy Standard Agency.

DEL BUONO, A. (2018). Nuts for plant-based solutions. Beverage Industry, 109 (3), pp.72.

DEPARTMENT OF HEALTH (2012). Regulations relating to foodstuffs for infants and young children. Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972. South Africa: Department of Health.

DEWFRESH. (2017). Products [Online]. Available: <https://www.dewfresh.co.za> [Accessed 4 August 2018].

DHINESHKUMAR, V., RAMASAMY, D. and SIDDHARTH, M. (2016). High pressure processing technology in dairy processing: A review. Asian Journal of Dairy and Food Research, 35 (2), pp.87-95.

DIRECTORATE OF STATISTICS AND ECONOMIC ANALYSIS (2017). Economic Review of the South African Agriculture 2016/17. Pretoria.

DIS-CHEM. (2018). Products [Online]. Available: <https://dischem.co.za> [Accessed 4 August 2018].

DO NASCIMENTO, K.D.O., PAES, S. and AUGUSTA, I.M. (2018). A review "Clean Labeling": Applications of natural ingredients in bakery products. Journal of Food Nutrition and Research, 6 (5), pp.285-294.

DOANE, A.N., PEARSON, M.R. and KELLEY, M.L. (2014). Predictors of cyberbullying perpetration among college students: An application of the Theory of Reasoned Action. Computers in Human Behavior, 36, pp.154-162.

DUDLICEK, J. (2016). Protein Springs Eternal. Progressive Grocer, 95 (5), pp.118-120.

EAGLE, J. (2016). Frost & Sullivan: 'More dairy companies will expand into the dairy alternative category to offset fat liquid milk sales'. Beverage Daily [Online]. Available: <https://www.beveragedaily.com/Article/2016/07/08/Danone-WhiteWave-reaction> [Accessed 7 July 2016].

EARTH&CO. (2019a). Unsweetened Dairy Free Almond Milk [Image]. South Africa: Earth&Co. Available: <https://earthandco.co.za/products/unsweetened-dairy-free-almond-milk/> [Accessed 16 July 2019].

EARTH&CO. (2019b). Unsweetened Dairy Free Rice Milk [Image]. South Africa: Earth&Co. Available: <https://earthandco.co.za/products/unsweetened-dairy-free-rice-milk/> [Accessed 16 July 2019].

EARTH&CO. (2019c). Unsweetened Oat Milk [Image]. South Africa: Earth&Co. Available: <https://earthandco.co.za/products/unsweetened-oat-milk/> [Accessed 16 July 2019].

EARTH&CO. (2019d). Unsweetened Soya Milk [Image]. South Africa: Earth&Co. Available: <https://earthandco.co.za/additional-information/dairy-free/> [Accessed 16 July 2019].

ECONOMIST (2018). Got oats? *Economist*, 428 (9103), pp.52.

EDEM, V.E. and ELIJAH, A.I. (2016). Effect of extraction variables on consumer acceptability of coconut milk: a response surface approach. *Annals Food Science and Technology*, 17 (1), pp.75-85.

EGAN, J. (2015). *Marketing Communications*. 2nd ed. Great Britain: Sage Publications.

EKANAYAKA, R.A.I., EKANAYAKA, N.K., PERERA, B. and DE SILVA, P.G.S.M. (2013). Impact of a traditional dietary supplement with coconut milk and soya milk on the lipid profile in normal free living subjects. *Journal of nutrition and metabolism*, pp.1-11.

ERASMUS, A., BOSHOFF, E. and ROUSSEAU, G. (2001). Consumer decision-making models within the discipline of consumer science: A critical approach. *Journal of Family Ecology and Consumer Sciences /Tydskrif vir Gesinsekologie en Verbruikerswetenskappe*, 29, pp.82-90.

ETTMAN, L. (2016). What Built it? *Nutrition Action Healthletter*, pp.8-9.

FALETAR, I., CERJAK, M. and KOVAČIĆ, D. (2016). Odrednice stava i namjere kupnje ekološkog mlijeka. *Mljekarstvo*, 66 (1), pp.59-65.

FAO and WHO (1999). *General Standard for the Use of Dairy Terms*. Codex Alimentarius International Food Standards. Rome: Food and Agriculture Organization of the United Nations and World Health Organisation.

FAO and WHO (2009). *Code of Hygienic Practice for Milk and Milk Products*. Codex Alimentarius International Food Standards. Rome: Food and Agriculture Organization of the United Nations and World Health Organisation.

FAO and WHO (2018). General Standard for Food Additives. Codex Alimentarius International Food Standards. Rome: Food and Agriculture Organization of the United Nations and World Health Organisation.

FAZIO, R.H. and WILLIAMS, C.J. (1986). Attitude accessibility as a moderator of the attitude–perception and attitude–behavior relations: An investigation of the 1984 presidential election. *Journal of personality and social psychology*, 51 (3), pp.505.

FERNANDO, J. (2016). Consumer Corner: Demand for Dairy Milk and Milk Alternatives. Alberta.

FETTERS, K.A. (2016). Which milk should I have? *Cosmopolitan*, 260 (3), pp.122.

FIRST CHOICE. (2020). Kick Energy Booster [Image]. South Africa. Available: <https://www.getkick.co.za/kick-cranberry/> [Accessed 16 July 2019].

FIRST CHOICE DAIRY. (2015). Dairy Products [Online]. Available: <http://firstchoice.co.za/dairy-products/> [Accessed 4 August 2018].

FIRST CHOICE DAIRY. (2022). High Protein Recovery [Image]. South Africa: First Choice Dairy. Available: <https://www.firstchoice.co.za/products/high-protein-recovery> [Accessed 20 November 2022].

FIRST GRADE INTERNATIONAL LTD. (2019). koko [Image]. United Kingdom: First Grade International Ltd. Available: <https://www.kokodairyfree.com/> [Accessed 16 July 2019].

FISHBEIN, M. (1963). An investigation of the relationships between beliefs about an object and the attitude toward that object. *Human relations*, 16 (3), pp.233-239.

FONTANETTA, C. (2016). Health News. *Marie Claire*, 23 (4), pp.200.

FOOD REVIEW (2017). Unlock lactose-free dairy. *Food Review*, 44 (9), pp.14.

GANGULY, S. and SATARUPA, R. (2014). Health Benefits of Coconut: A Review. *International Journal of Pharmacy and Life Sciences*, 5 (1), pp.3228-3229.

GAVOJDIAN, D., JANKU, D., KRASIC, J., BURSAC, V., VOIA, S.-O., SAUER, M., ALBULESCU, M. and PADEANU, I. (2016). Milk and Dairy Products Consumers Behavior and Preferences in Vojvodina-Republic of Serbia. *Lucrari Stiintifice: Zootehnie si Biotehnologii*, 49 (2), pp.174-177.

GEILS, A.R. (1981). An investigation into variables, other than price, influencing the consumption of milk in the greater Durban area. Dissertation (MBA). Durban: University of Kwa-Zulu Natal.

- GOLDMAN, H. (2014). Milk alternatives. *Real Simple*, 15 (4), pp.197-201.
- GOLDMAN, H. (2017). Things cooks know. *Real Simple*, 18 (4), pp.46.
- GORMAN, M., KNOWLES, S., FALKEISEN, A., BARKER, S., MOSS, R. and MCSWEENEY, M.B. (2021). Consumer Perception of Milk and Plant-Based Alternatives Added to Coffee. *Beverages*, 7 (4), pp.80.
- GREENWALD, A.G. and BANAJI, M.R. (1995). Implicit social cognition: attitudes, self-esteem, and stereotypes. *Psychological review*, 102 (1), pp.4.
- GRIMMER, M. and MILES, M.P. (2017). With the best of intentions: a large sample test of the intention-behaviour gap in pro-environmental consumer behaviour. *International Journal of Consumer Studies*, 41 (1), pp.2-10.
- GULSEVEN, O. and WOHLGENANT, M. (2017). What are the factors affecting the consumers' milk choices? *Zemledska Ekonomika*, 63 (6), pp.271-282.
- HAAS, R., CANAVARI, M., IMAMI, D., GJONBALAJ, M., GJOKAJ, E. and ZVYAGINTSEV, D. (2016). Attitudes and preferences of Kosovar consumer segments toward quality attributes of milk and dairy products. *Journal of International Food and Agribusiness Marketing*, 28 (4), pp.407-426.
- HACKMAN, C.L. and KNOWLDEN, A.P. (2014). Theory of reasoned action and theory of planned behavior-based dietary interventions in adolescents and young adults: a systematic review. *Adolescent Health, Medicine and Therapeutics*, 5, pp.101.
- HANSEN, K.L., BRUSTAD, M. and JOHNSEN, K. (2015). Prevalence of self-reported stomach symptoms after consuming milk among indigenous Sami and non-Sami in Northern and Mid-Norway—the SAMINOR study. *International journal of circumpolar health*, 74 (1), pp.1-9.
- HANSLIN, K. and RINDELL, A. (2014). Consumer-brand relationships in step-down line extensions of luxury and designer brands. *Journal of Fashion Marketing and Management*, 18 (2), pp.145-168.
- HARVARD HEALTH LETTER (2015). In search of a milk alternative. *Harvard Health Letter*, pp.5.
- HASLER, C.M. (2002). Functional foods: benefits, concerns and challenges—a position paper from the American Council on Science and Health. *The Journal of Nutrition*, 132 (12), pp.3772-3781.

HE, M., SUN, J., JIANG, Z.Q. and YANG, Y.X. (2017). Effects of cow's milk beta-casein variants on symptoms of milk intolerance in Chinese adults: a multicentre, randomised controlled study. *Nutrition Journal*, 16, pp.72.

HEALE, R. and FORBES, D. (2013). Understanding triangulation in research. *Evidence-based nursing*, 16 (4), pp.98.

HEINE, R.G., ALREFAEE, F., BACHINA, P., DE LEON, J.C., GENG, L., GONG, S., MADRAZO, J.A., NGAMPHAIBOON, J., ONG, C. and ROGACION, J.M. (2017). Lactose intolerance and gastrointestinal cow's milk allergy in infants and children—common misconceptions revisited. *World Allergy Organization Journal*, 10, pp.41.

HELLING, A.P. (2015). Sustainable Agriculture in Vermont: Economics of Climate Change Best Management Practices and the Complexity of Consumer Perceptions of Raw Milk. Dissertation (MSc). Burlington: University of Vermont.

HOWARD, J.A. and SHETH, J.N. (1969). *The theory of buyer behavior*. New York.

HUNTER, D., MCCALLUM, J. and HOWES, D. (2019). Defining exploratory-descriptive qualitative (EDQ) research and considering its application to healthcare. *Journal of Nursing and Health Care*, 4 (1).

HUSSAIN, S. and RASHID, Y. (2016). Brand extension success elements: A conceptual framework. *Journal of Business Administration and Education*, 8 (1), pp.23-35.

HUSSERL, E. (1958). *Ideas: General introduction to pure phenomenology*. Ravenio Books.

HWANG, S.H. and HONG, J.H. (2015). Determining the Most Influential Sensory Attributes of Nuttiness in Soymilk: A Trial with Korean Consumers using Model Soymilk Systems. *Journal of Sensory Studies*, 30 (5), pp.425-437.

IACOBUCCI, D. and CHURCHILL, G.A. (2018). *Marketing Research Methodological Foundations*. 12th ed. United States of America: South-Western Cengage Learning.

IOANĂS, E. and STOICA, I. (2020). Social Media and its Impact on Consumers Behavior Part 2. *Journal Kesehatan Prima*, 1 (1), pp.1-5.

ISHAQ, M.N., XIA, L.C., RASHEED, R., AHMAD, Z. and ABDULLAH, M. (2016). Alternative Milk Marketing Channels and Dairy Performance of Smallholders in Pakistan: A Case of South Region of Punjab Province. *Sarhad Journal of Agriculture*, 32 (4), pp.304-315.

IWANITKIT, V. (2013). Soy milk toxicity: Additional concern. *Journal of Postgraduate Medicine*, 59 (4), pp.333.

- JACOBSEN, J. (2014). Not immune to the effects. *Beverage Industry*, 105 (8), pp.42-44.
- JACOBSEN, J. (2017). Supporting consumers' healthy eating patterns. *Beverage Industry*, pp.24.
- JANOVSKY, E. (2017). *Absa Agricultural Outlook 2017*. South Africa.
- JESKE, S., ZANNINI, E. and ARENDT, E.K. (2017). Evaluation of physicochemical and glycaemic properties of commercial plant-based milk substitutes. *Plant Foods for Human Nutrition*, 72, pp.26-33.
- JIANQIN, S., LEIMING, X., LU, X., YELLAND, G.W., NI, J. and CLARKE, A.J. (2016). Effects of milk containing only A2 beta casein versus milk containing both A1 and A2 beta casein proteins on gastrointestinal physiology, symptoms of discomfort, and cognitive behavior of people with self-reported intolerance to traditional cows' milk. *Nutrition Journal*, 15, pp.35.
- JISANA, T.K. (2014). *Consumer Behaviour Models: An Overview*. *Sai Om Journal of Commerce & Management*, 1 (5), pp.34-43.
- JONES, G. (2017). *Applying an extended version of the Theory of Planned Behaviour to understand exercise behaviour after leaving university*. Thesis (PhD). United Kingdom: University of Sheffield.
- KEMP, H. and ELLIS, L. (2016). *Retail Trade, Quarterly analysis of activity in retail, wholesale and motor trade: Third quarter 2016*. Stellenbosch.
- KEMPEN, E. and CHRISTIE, L. (2022). Designing to Attract in an Emerging Market: Applying Behavioural Reasoning Theory to South African Consumer Reactions to an Ultra-High Temperature Milk Product Line Extension. *Journal of Marketing and Consumer Behaviour in Emerging Markets*, 1 (14), pp.4-21.
- KEMPEN, E., KASAMBALA, J., CHRISTIE, L., SYMINGTON, E., JOOSTE, L. and VAN EEDEN, T. (2016). Expectancy-value theory contributes to understanding consumer attitudes towards cow's milk alternatives and variants. *International Journal of Consumer Studies*, pp.245-252.
- KIMMEL, A.J. (2013). *Psychological Foundations of Marketing*. United Kingdom: Routledge.
- KIRK, B., MITCHELL, J., JACKSON, M., AMIRABDOLLAHIAN, F., ALIZADEHKHAIYAT, O. and CLIFFORD, T. (2017). A2 Milk Enhances Dynamic Muscle Function Following Repeated Sprint Exercise, a Possible Ergogenic Aid for A1-Protein Intolerant Athletes? *Nutrients*, 9 (2), pp.94.

KNABE, A.P. (2012). Applying Ajzen's Theory of Planned Behavior to a Study of Online Course Adoption in Public Relations Education. Thesis (PhD). Milwaukee: Marquette University.

KORSTJENS, I. and MOSER, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*, 24 (1), pp.120-124.

KÜHL, S., GASSLER, B. and SPILLER, A. (2017). Labeling strategies to overcome the problem of niche markets for sustainable milk products: The example of pasture-raised milk. *Journal of Dairy Science*, 100 (6), pp.5082-5096.

KUMAR, A., VOHRA, A. and DANGI, H.K. (2017). Consumer decision-making styles and post purchase behaviour of poor for Fast Moving Consumer Goods. *International Journal of Consumer Studies*, 41, pp.121-137.

KUMAR, N. and KAPOOR, S. (2015). Does the consumers' buying behavior differ for vegetarian and non-vegetarian food products? Evidences from an emerging market. *British Food Journal*, 117 (8), pp.1998-2016.

KUMARI, A. and SINGH, J. (2018). Processing of groundnut and soybean to enhance their value. *Food Science Research Journal*, 9 (1), pp.218-222.

KURAJDOVA, K. and TÁBORECKA-PETROVICOVA, J. (2015). Literature review on factors influencing milk purchase behaviour. *International Review of Management and Marketing*, 5 (1), pp.9-25.

KVIDAHL, M. (2015). 4 signs a store is ready to take on catering. *Natural Foods Merchandiser*, pp.44.

LACTALIS SOUTH AFRICA. (2022a). Growth Milk 1+ Follow Up Formula [Image]. South Africa: Lactalis South Africa. Available: <https://lactalis.co.za/our-brands/parmalat-milk> [Accessed 20 November 2022].

LACTALIS SOUTH AFRICA. (2022b). Growth Milk 3+ Low Fat Dairy Blend [Image]. South Africa: Lactalis South Africa. Available: <https://lactalis.co.za/our-brands/parmalat-milk> [Accessed 20 November 2022].

LACTALIS SOUTH AFRICA. (2022c). Lactose Free Milk - Full Cream [Image]. South Africa: Lactalis South Africa. Available: <https://lactalis.co.za/our-brands/parmalat-milk> [Accessed 20 November 2022].

LACTALIS SOUTH AFRICA. (2022d). Lactose Free Milk - Low Fat [Image]. South Africa: Lactalis South Africa. Available: <https://lactalis.co.za/our-brands/parmalat-milk> [Accessed 20 November 2022].

LALIĆ, J., DENIĆ, M., SUNARIĆ, S., KOCIĆ, G., TRUTIĆ, N., MITIĆ, S. and JOVANOVIĆ, T. (2014). Assessment of thiamine content in some dairy products and rice milk. *CyTA: Journal of Food*, 12 (3), pp.203-209.

LAWRENCE, S.E., LOPETCHARAT, K. and DRAKE, M.A. (2016). Preference mapping of soymilk with different US consumers. *Journal of Food Science*, 81 (2), pp.463-476.

LE FAMISHED CAT. (2022). Oat Milk [Image]. South Africa: Le Famished Cat. Available: <https://www.lefamishedcat.co.za/drinks-smoothies/dairy-free-milk-alternatives-banana-milk-recipe/> [Accessed 20 November 2022].

LE PORT, A., BERNARD, T., HIDROBO, M., BIRBA, O., RAWAT, R. and RUEL, M.T. (2017). Delivery of iron-fortified yoghurt, through a dairy value chain program, increases hemoglobin concentration among children 24 to 59 months old in Northern Senegal: A cluster-randomized control trial. *PLoS ONE*, 12 (2), pp.1-17.

LI, T.F. (2011). Study on consumers' willingness to pay for milk safety in big cities and its influencing factors - evidence from Beijing, Tianjin and Shijiazhuang. Dissertation (MA). Beijing: Renmin University of China.

LI, X.E., LOPETCHARAT, K., QIU, Y. and DRAKE, M.A. (2015). Sugar reduction of skim chocolate milk and viability of alternative sweetening through lactose hydrolysis. *Journal of Dairy Science*, 98 (3), pp.1455-1466.

LIEM, D.G., BOLHUIS, D.P., HU, X. and KEAST, R.S.J. (2016). Influence of labeling on Australian and Chinese consumers' liking of milk with short (pasteurized) and long (UHT) shelf life. *Journal of Dairy Science*, 99 (3), pp.1747-1754.

LIFESTYLE FOODS. (2022a). Coconut Milk Drink [Image]. South Africa: Lifestyle Foods. Available: <https://lifestylefoods.co.za/product/coconut-milk-drink-1/> [Accessed 20 November 2022].

LIFESTYLE FOODS. (2022b). Oat Milk – Barista Blend [Image]. South Africa: Lifestyle Foods. Available: <https://lifestylefoods.co.za/product/oat-milk-barista-blend/> [Accessed 20 November 2022].

LIFESTYLE FOODS. (2022c). Rice Milk [Image]. South Africa: Lifestyle Foods. Available: <https://lifestylefoods.co.za/> [Accessed 20 November 2022].

LIFESTYLE FOODS. (2022d). Soya Milk [Image]. South Africa: Lifestyle Foods. Available: <https://lifestylefoods.co.za/> [Accessed 20 November 2022].

LIFESTYLE FOODS. (2022e). Soya Milk Sweetened [Image]. South Africa: Lifestyle Foods. Available: <https://lifestylefoods.co.za/product/soya-milk-sweetened-1/> [Accessed 20 November 2022].

LIPTON, B. (2016). Alterna-Milk Decoder. *Health*, 30 (2), pp.126.

LOUDON, D.L. and DELLA BITTA, A.J. (1993). *Consumer Behaviour Concepts and Applications*. 4th. McGraw-Hill College.

LOVE, L. (2014). The Truth About Almond Milk. *Dance Magazine*, 88 (10), pp.56-57.

LU, J., PICKOVA, J., VÁZQUEZ-GUTIÉRREZ, J.L. and LANGTON, M. (2018). Influence of seasonal variation and ultra high temperature processing on lipid profile and fat globule structure of Swedish cow milk. *Food Chemistry*, 239, pp.848-857.

LUDVIGSEN, H.K. and BAEZ, G. (2018). Controlling stability for non-dairy alternative drinks. pp.1-4.

MÄKINEN, O.E., WANHALINNA, V., ZANNINI, E. and ARENDT, E.K. (2016). Foods for special dietary needs: Non-dairy plant-based milk substitutes and fermented dairy-type products. *Critical Reviews in Food Science and Nutrition*, 56 (3), pp.339-349.

MALHOTRA. (2012). *Basic Marketing Research: Integration of Social Media*. 4th ed. Boston: Pearson.

MALHOTRA, N.K., BIRKS, D.F. and WILLS, P. (2012). *Marketing Research: An Applied Approach*. 4th ed. Harlow: Pearson.

MALMGREN, B., ARDÖ, Y., LANGTON, M., ALTSKÄR, A., BREMER, M.G.E.G., DEJMEK, P. and PAULSSON, M. (2017). Changes in proteins, physical stability and structure in directly heated UHT milk during storage at different temperatures. *International Dairy Journal*, 71, pp.60-75.

MAREE, K. (2012). *First Steps in Research*. Revised ed. Pretoria: Van Schaik.

MARKHAM, L., AULD, G., BUNNING, M. and THILMANY, D. (2014). Attitudes and Beliefs of Raw Milk Consumers in Northern Colorado. *Journal of hunger & environmental nutrition*, 9 (4), pp.546-564.

MASLIN, K. (2015). The effect of a cows'milk exclusion diet and substitute formula in infancy on childhood eating habits. Thesis (PhD). United Kingdom: University of Portsmouth.

- MASON, A.N., NARCUM, J. and MASON, K. (2021). Social media marketing gains importance after Covid-19. *Cogent Business & Management*, 8 (1).
- MCCARTHY, K.S., PARKER, M., AMEERALLY, A., DRAKE, S.L. and DRAKE, M.A. (2017). Drivers of choice for fluid milk versus plant-based alternatives: What are consumer perceptions of fluid milk? *Journal of Dairy Science*, 100 (8), pp.6125-6138.
- MCDANIEL, C. and GATES, R. (2020). *Marketing Research*. 12th ed. Singapore: John Wiley and Sons.
- MCGREGOR, S.L.T. (2018). *Understanding and Evaluating Research: A Critical Guide*. United States of America: SAGE Publications.
- MCINDOO, H. (2015). The Best Plant-Based Milks. *Environmental Nutrition*, 38 (1), pp.5.
- MILLER, A.B. (2014). Almond milk, coffee drinks slake thirst. *Dairy Foods*, 115 (11), pp.78-84.
- MILNER, T. and ROSENSTREICH, D. (2013). A review of consumer decision-making models and development of a new model for financial services. *Journal of Financial Services Marketing*, 18 (2), pp.106-120.
- MINTEL. (2018). United States non-dairy milk sales grow 61% over the last 5 years [Online]. United States of America: Mintel Group,. Available: <http://www.mintel.com/press-centre/food-and-drink/us-non-dairy-milk-sales-grow-61-over-the-last-five-years> [Accessed 6 February 2018].
- MISHRA, D., AKMAN, I. and MISHRA, A. (2014). Theory of reasoned action application for green information technology acceptance. *Computers in Human Behavior*, 36, pp.29-40.
- MOLLAH, S., KIM, M. and CHOUDHURY, M.M. (2015). Consumer Attitude Towards Different Shampoo Brands: Evidence from Bangladesh. *World Journal of Social Sciences*, 5 (2), pp.81-89.
- MONTAÑO, D.E. and KASPRZYK, D. (2015). Theory of Reasoned Action, Theory of Planned Behaviour, and the Integrated Behavioral Model. In: Glanz, K., Rimer, B.K. and Viswanath, K. (eds.) *Health behavior: theory, research, and practice*. 5th ed. ed. San Fransisco: Wiley.
- MOROCCO, C. (2014). *Things Cooks Know*. Realsimple, pp.182.
- MOSER, A. and KORSTJENS, I. (2018). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice*, 24 (1), pp.9-18.

- MOSS, R., BARKER, S., FALKEISEN, A., GORMAN, M., KNOWLES, S. and MCSWEENEY, M.B. (2022). An investigation into consumer perception and attitudes towards plant-based alternatives to milk. *Food Research International*, 159.
- MOYER, M.W. (2015). Should you be drinking milk? *Cosmopolitan*, 258 (3), pp.128.
- NAIK, A., VENU, G.V., PRAKASH, M. and RAGHAVARAO, K.S.M.S. (2014). Dehydration of coconut skim milk and evaluation of functional properties. *CyTA: Journal of Food*, 12 (3), pp.227-234.
- NAN, X., VERRILL, L. and ILES, I. (2017). As Much Calcium as a Glass of Milk! Understanding American Consumers' Preferences for Fortified Foods. *Journal of food products marketing*, 23 (1), pp.24-41.
- NESTLÉ. (2018). Special Dietary Needs: Food Allergy & Intolerance. *Nutrition, Health and Wellness* [Online]. Available: <https://www.nestle.ie/nutritionhealthwellness/specialdietaryneeds> [Accessed 11 August 2017].
- NICOSIA, F.M. (1966). *Consumer Decision Processes: Marketing and Advertising Implications*. Harlow: Prentice Hall.
- NIELSEN, S.D., JANSSON, T., LE, T.T., JENSEN, S., EGGERS, N., RAUH, V., SUNDEKILDE, U.K., SØRENSEN, J., ANDERSEN, H.J., BERTRAM, H.C. and LARSEN, L.B. (2017). Correlation between sensory properties and peptides derived from hydrolysed-lactose UHT milk during storage. *International Dairy Journal*, 68, pp.23-31.
- NYMBERG, V.M., BOLMSJÖ, B.B., WOLFF, M., CALLING, S., GERWARD, S. and SANDBERG, M. (2019). 'Having to learn this so late in our lives...' Swedish elderly patients' beliefs, experiences, attitudes and expectations of e-health in primary health care. *Scandinavian Journal of Primary Health Care*, 37 (1), pp.41-52.
- NYUMBA, T.O., WILSON, K., DERRICK, C.J. and MUKHERJEE, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, 9, pp.20-32.
- OHLAU, M. and RISIUS, A. (2022). Integrating a Real-Life Experience with Consumer Evaluation: Sensory Acceptance and Willingness to Pay for Coffee Drinks in a Real Café. *Journal of International Food & Agribusiness Marketing*, 34 (2), pp.123-143.

- OXFORD UNIVERSITY PRESS. (2023). Oxford Languages [Online]. Oxford: Oxford University Press. Available: https://www.google.com/search?q=niche+market&si=ACFMAN9fBiQIoPlj1C7sL5YSk-HuXb4t2oIVPXOGjil21bQrU9_gYdQRc3oiyP707K73Fmtj8_bsdIJ4FaVopsNcB_dMRevuKyr3Go1fuQXRPo8fPWL8WGw%3D&expnd=1&sa=X&ved=2ahUKEwiur9Ha8YGAAxUJBMAKHd70CIIQ2v4IegQIGBAN&biw=1270&bih=647&dpr=1.25 [Accessed 1 July 2023].
- PACKAGED FACTS. (2018). The Dairy & Dairy Alternatives Market [Online]. Market Research Group. Available: <https://www.packagedfacts.com/Content/Featured-Markets/Dairy-and-Dairy-Alternatives> [Accessed 2 June 2018].
- PAL, S., WOODFORD, K., KUKULJAN, S. and HO, S. (2015). Milk intolerance, beta-casein and lactose. *Nutrients*, 7 (9), pp.7285-7297.
- PANWAR, D., ANAND, S., ALI, F. and SINGAL, K. (2019). Consumer decision making process models and their applications to market strategy. *International Management Review*, 15 (1), pp.36-44.
- PARMALAT. (2018). Products [Online]. Available: <https://parmalat.co.za> [Accessed 4 August 2018].
- PARMALAT FUNCTIONAL MILK. (2018). More than Milk [Online]. Available: <http://functionalmilk.co.za> [Accessed 4 August 2018].
- PARVIAINEN, H., ELORINNE, A.L., VÄISÄNEN, P. and RIMPELÄ, A. (2016). Consumption of special diets among adolescents from 1999 to 2013: A population-based study in Finland. *International Journal of Consumer Studies*, 41 (2), pp.216-224.
- PATERSON, M.E. (2016). Assessment of consumers' perceptions, preferences, behaviors and values with fluid milk packaging, code date and new product concepts. Thesis (PhD). Ames: Iowa State University.
- PATIL, U., BENJAKUL, S., PRODPRAN, T., SENPHAN, T. and CHEETANGDEE, N. (2017). A comparative study of the physicochemical properties and emulsion stability of coconut milk at different maturity stages. *Italian Journal of Food Science*, 29, pp.145-157.
- PATINO, A., PITTA, D.A. and QUINONES, R. (2012). Social media's emerging importance in market research. *Journal of consumer marketing*, 29 (3), pp.233-237.
- PAUL, J., MODI, A. and PATEL, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of retailing and consumer services*, 29, pp.123-134.

PICARDI, C.A. and MASICK, K.D. (2014). *Research Methods: Designing and Conducting Research with a Real-World Focus*. Los Angeles: Sage Publications.

PICK N PAY. (2022a). Alpro Soya Milk Unsweetened [Image]. South Africa: Pick n Pay. Available: [https://www.pnp.co.za/pnpstorefront/pnp/en/All-Products/Milk,-Dairy-&Eggs/Long-Life-Milk-\(UHT\)/Soya-Milk/Alpro-Soya-Milk-Unsweetened-1l/p/000000000000320941_EA](https://www.pnp.co.za/pnpstorefront/pnp/en/All-Products/Milk,-Dairy-&Eggs/Long-Life-Milk-(UHT)/Soya-Milk/Alpro-Soya-Milk-Unsweetened-1l/p/000000000000320941_EA) [Accessed 16 July 2022].

PICK N PAY. (2022b). Online Shop [Online]. South Africa: Pick n Pay. Available: <https://www.pnp.co.za> [Accessed].

PICK N PAY. (2022c). PnP UHT Soya Milk [Image]. South Africa: Pick n Pay. Available: https://www.pnp.co.za/pnpstorefront/pnp/en/All-Products/Milk%2C-Dairy-%26-Eggs/Long-Life-Milk-%28UHT%29/Soya-Milk/PnP-Uht-Soya-Milk-1l/p/000000000000120868_EA [Accessed 16 July 2019].

PILELIENĖ, L. and LIESIONIS, V. (2014). Influence of product attributes on milk consumer's choice in Lithuania. *Research for Rural Development*, 2, pp.223-228.

PRICECHECK. (2022a). CLOVER Care UHT Milk 1L Full Cream Kosher [Image]. South Africa: PriceCheck. Available: <https://www.pricecheck.co.za/offers/175211041/CLOVER+Care+Uht+Milk+1L+Full+Cream+Kosher> [Accessed 20 November 2022].

PRICECHECK. (2022b). Parmalat Growth Milk [Image]. South Africa: PriceCheck. Available: <https://www.pricecheck.co.za/offers/93024554/Parmalat+Growth+Milk> [Accessed 20 November 2022].

PULAU SAMBU. (2022a). Kara Classic UHT Coconut Milk [Image]. Singapore: Pulau Sambu. Available: <https://kara-coconut.com/product/classic-ugt-coconut-milk/#product-detail> [Accessed 20 November 2022].

PULAU SAMBU. (2022b). Kara Coco Coconut Milk Drink [Image]. Singapore: Pulau Sambu. Available: <https://kara-coconut.com/product/coconut-milk-drink/> [Accessed 20 November 2022].

REDISCOVER DAIRY (2013). *Nutrient Composition of Milk*. In: *Milk South Africa* (ed.). Menlo Park.

REMLER, D.K. and VAN RYZIN, G.G. (2011). *Research Methods in Practice: Strategies for Description and Causation*. United States of America: Sage Publications.

REYES-JURADO, F., SOTO-REYES, N., DÁVILA-RODRÍGUEZ, M., LORENZO-LEAL, A.C., JIMÉNEZ-MUNGUÍA, M.T., MANI-LÓPEZ, E. and LÓPEZ-MALO, A. (2021). Plant-based milk alternatives: Types, processes, benefits, and characteristics. *Food Reviews International*, pp.1-32.

RILEY, S. (2017). Not your mother's soy milk: The evolving market for dairy alternatives. *Dairy Reporter* [Online]. Available: https://www.dairyreporter.com/Article/2017/11/17/Not-your-mother-s-soy-milk-The-evolving-market-for-dairy-alternatives?utm_source=newsletter_%E2%80%A6 [Accessed 21 November 2017].

RIZZO, P.V., HARWOOD, W.S. and DRAKE, M.A. (2020). Consumer desires and perceptions of lactose-free milk. *Journal of Dairy Science*, 103 (8), pp.6950-6966.

ROSENBERG, M.J. (1960). Cognitive, affective, and behavioral components of attitudes. *Attitude organization and change*, pp.1-14.

SAIKHWAN, P., THONGCHAN, S., JUMWAN, N., THUNGSIABYUAN, P., SAKDANUPHAP, J., BOONSOM, S., KRAITONG, P. and DANWANICHAKUL, P. (2015). Cleaning studies of coconut milk foulants formed during heat treatment process. *Food and Bioproducts Processing*, 93 (1), pp.166-175.

SCHIFFMAN, L.G. and WISENBLIT, J.L. (2019). *Consumer Behavior*. 12th Global ed. London: Pearson.

SCHNABOLK, L. (2015). *Milk Matters*. Kiwi, pp.20.

SEARBY, L. (2018). Dairy innovation: how product makers can steal back the share. *Food Manufacture* [Online]. Available: <https://www.foodmanufacture.co.uk/> [Accessed 17 August 2018].

SERVAAS, J. (2013). Made in the USA: New Moo Drinks. *Saturday Evening Post*, pp.23.

SETHI, S., TYAGI, S.K. and ANURAG, R.K. (2016). Plant-based milk alternatives an emerging segment of functional beverages: a review. *Journal of Food Science and Technology*, 53 (9), pp.3408-3423.

SHANNON-BAKER, P. (2015). Making Paradigms Meaningful in Mixed Methods Research. *Journal of Mixed Methods Research*, pp.1-16.

SHANNON, R. and RODRIGUEZ, J.M. (2014). Total arsenic in rice milk. *Food Additives and Contaminants*, 7 (1), pp.54-56.

SHENTON, A.K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22, pp.63-75.

SHOP FIRST CHOICE S.A. (2022). Products [Image]. South Africa: Shop First Choice S.A.,. Available: <https://shopfirstchoice.co.za/collections/all> [Accessed 16 July 2019].

SHOUP, M.E. (2018a). Dairy scores higher in consumer perception study than non-dairy substitutes. Dairy Reporter [Online]. Available: https://www.dairyreporter.com/Article/2018/03/29/Dairy-scores-higher-in-consumer-perception-study-than-non-dairy-substitutes?utm_source=newsletter_daily&utm [Accessed 29 March 2018].

SHOUP, M.E. (2018b). Researchers say soy offers 'most balanced nutritional profile' compared to other dairy alternatives. Food Navigator USA [Online]. Available: <https://www.foodnavigator-usa.com/Article/2018/02/01/Researchers-say-soy-offers-most-balanced-nutritional-profile-compared-to-other-dairy-alter%E2%80%A6> [Accessed 11 February 2018].

SIEGNER, C. (2018). Majority of consumers prefer the taste of dairy to alternatives. Food Dive [Online]. Available: <https://www.fooddive.com/news/majority-of-consumers-prefer-the-taste-of-dairy-to-alternatives/520347/> [Accessed 6 February 2018].

SILVA, A.R., SILVA, M.M. and RIBEIRO, B.D. (2020). Health issues and technological aspects of plant-based alternative milk. Food Research International, 131.

SILVA E ALVES, A.T., ANTUNES, A.E.C., TRENTO, F.K.H.S., ZACARCHENCO, P.B., ORMENESE, R.C.S.C. and SPADOTI, L.M. (2016). Pasteurised, microfiltered and lactose-hydrolysed skimmed milk with added probiotics: Development and storage stability. International Journal of Dairy Technology, 69 (1), pp.22-30.

SKYPALA, I.J. and MCKENZIE, R. (2018). Nutritional Issues in Food Allergy. Clinical Reviews in Allergy and Immunology, pp.1-13.

SOLOMON, M.R. (2019). Consumer Behavior: Buying, Having, and Being. 13th ed. United States of America: Pearson Education.

SOON, J.M. (2018). 'No nuts please': Food allergen management in takeaways. Food Control, 91, pp.349-356.

SPAR. (2018). Our Brands [Online]. Available: <https://www.spar.co.za/Our-Brands> [Accessed 4 August 2018].

SPAR. (2022a). Almond Milk Unsweetened [Image]. South Africa: SPAR. Available: <https://www.spar.co.za/Assets/Our-Brands/In-Store/Our-Brands-Microsite/Products?categoryId=26> [Accessed 16 July 2019].

- SPAR. (2022b). Oat Milk [Image]. South Africa: SPAR. Available: <https://www.spar.co.za/Assets/Our-Brands/In-Store/Our-Brands-Microsite/Products?categoryId=26#productModal> [Accessed 20 November 2022].
- SPAR. (2022c). Parmalat Growth [Image]. South Africa: SPAR. Available: <https://crossingnelspruit.spar.co.za/products/6001049058100> [Accessed 16 July 2019].
- SPAR. (2022d). Rice Drink Unsweetened [Image]. South Africa: SPAR. Available: <https://www.spar.co.za/Assets/Our-Brands/In-Store/Our-Brands-Microsite/Products?categoryId=26> [Accessed 16 July 2019].
- SPAR. (2022e). Soya Drink Sweetened [Image]. South Africa: SPAR. Available: <https://www.spar.co.za/Assets/Our-Brands/In-Store/Our-Brands-Microsite/Products?categoryId=26> [Accessed 20 November 2022].
- SPAR. (2022f). Soya Drink Unsweetened [Image]. South Africa: SPAR. Available: <https://www.spar.co.za/Assets/Our-Brands/In-Store/Our-Brands-Microsite/Products?categoryId=26> [Accessed 20 November 2022].
- STEWART, J. (2015). Do the New Milks Deliver? *Men's Health*, 30 (8), pp.45-48.
- STRZAŁKOWSKA, N., JASIŃSKA, A.J. and JÓŹWIK, A. (2018). Physico-chemical properties of lactose, reasons for and effects of its intolerance in humans—a review. *Animal Science Papers and Reports*, 36 (1), pp.21-31.
- STUKUS, D.R. and MIKHAIL, I. (2016). Pearls and pitfalls in diagnosing IgE-mediated food allergy. *Current Allergy and Asthma Reports*, 16 (5), pp.34.
- SUDSA-ARD, K., KIJBONCHOO, K., CHAVASIT, V., CHAUNCHAIYAKUL, R., NIO, A.Q.X. and LEE, J.K.W. (2014). Lactose-free milk prolonged endurance capacity in lactose intolerant Asian males. *Journal of the International Society of Sports Nutrition*, 11 (1), pp.2-11.
- SUMBERG, J., JATOE, J., KLEIH, U. and FLYNN, J. (2016). Ghana's evolving protein economy. *Food Security*, 8 (5), pp.909-920.
- SVENSSON, S. and ÄNGERFORS, J. (2010). *Milking the Consumers' Conscience: Consumers' perception of ecologically and locally produced milk*. Dissertation (MBA). Sweden: Uppsala University.
- TATE & LYLE (2018). *The New Dairy Aisle: The Global Growth of Dairy Alternatives. Making Food Extraordinary*. London.
- TAYLOR, M. (2015). Mac and cheese goes vegan. *Food Service Director*, 28 (6), pp.12.

- THOMING, T.K., RABEN, A., THOLSTRUP, T., ASTRUP, A., SOEDAMAH-MUTHU, S., GIVENS, I. and ASTRUP, A. (2016). Milk and dairy products: good or bad for human health? An assessment of the totality of scientific evidence. *Food & Nutrition Research*, 60, pp.1-11.
- TO, E.K. (2012). Sensory evaluation ratings of non-dairy milk substitutes in a cold chocolate dessert. Dissertation (MSc). Buffalo: D'Youville College.
- TUFTS UNIVERSITY (2013). Should You Join the Switch from Dairy Milk? *Health & Nutrition Letter*, 31 (7), pp.4-5.
- TURCO, R., SALVATORE, S., MIELE, E., ROMANO, C., MARSEGLIA, G.L. and STAIANO, A. (2018). Does a low FODMAPs diet reduce symptoms of functional abdominal pain disorders? A systematic review in adult and paediatric population, on behalf of Italian Society of Pediatrics. *Italian Journal of Pediatrics*, 44, pp.53.
- TURNER, L. (2015). Milkin' It. *Better Nutrition*, 77 (10), pp.72.
- TURPEINEN, A., KAUTIAINEN, H., TIKKANEN, M., SIBAKOV, T., TOSSAVAINEN, O. and MYLLYLUOMA, E. (2016). Mild protein hydrolysis of lactose-free milk further reduces milk-related gastrointestinal symptoms. *Journal of dairy research*, 83 (2), pp.256-260.
- UNDERWOOD, P.L. (2017a). Don't have a cow. *Men's Fitness*, 33 (4), pp.39.
- UNDERWOOD, P.L. (2017b). Not Milk? *Muscle & Fitness*, 78 (1), pp.86.
- UNISA. (2013). Policy on Research Ethics. Pretoria: UNISA.
- UNIVERSITY OF CHICAGO CELIAC DISEASE CENTER. (2018). Celiac Answer Bank [Online]. Available: <https://www.cureceliacdisease.org/faq/whats-the-difference-between-enriched-and-fortified-when-it-comes-to-foods/> [Accessed 4 August 2018].
- USA TODAY (2018). Milk Alternatives Gaining Ground. *USA Today Magazine*, 147 (2879), pp.5.
- UTAMI, H.D. (2014). Consumer Behavior Toward Goat Milk and Its Processed Products in Malang, Indonesia. *Journal of International Food & Agribusiness Marketing*, 26 (1), pp.1-2.
- VALLATH, A., SHANMUGAM, A. and RAWSON, A. (2022). Prospects of future pulse milk variants from other healthier pulses - As an alternative to soy milk. *Trends in Food Science & Technology*, 124, pp.51-62.
- VAN COUTER, Y., MAHY, A. and D'ATH, F. (2016). The Use of the Reserved Names Milk, Yogurt and Dairy for Non-Dairy Products. *European Food and Feed Law Review*, 11 (4), pp.328-332.

VAN HEKKEN, D.L., TUNICK, M.H., REN, D.X. and TOMASULA, P.M. (2017). Comparing the effect of homogenization and heat processing on the properties and in vitro digestion of milk from organic and conventional dairy herds. *Journal of Dairy Science*, 100 (8), pp.6042-6052.

VANDENPLAS, Y., DE GREEF, E. and HAUSER, B. (2014). Safety and tolerance of a new extensively hydrolyzed rice protein-based formula in the management of infants with cow's milk protein allergy. *European Journal of Pediatrics*, 173 (9), pp.1209-1216.

VANGA, S.K. and RAGHAVAN, V.J. (2018). How well do plant based alternatives fare nutritionally compared to cow's milk? *Journal of food science technology*, 55 (10), pp.10-20.

VECCHIO, R., VAN LOO, E.J. and ANNUNZIATA, A. (2016). Consumers' willingness to pay for conventional, organic and functional yogurt: evidence from experimental auctions. *International Journal of Consumer Studies*, 40 (3), pp.368-378.

VIKSNE, K., SALKOVSKA, J., GAITNIECE, E. and PUKE, I. (2016) Comparative analysis of customer behaviour models. *International conference on Economic Science for Rural Development*: 231-238.

VIRGINIA DARE (n.d.). *Top trends in beverage formulation*. New York.

VORAMONTRI, D. and KLIEB, L. (2019). Impact of social media on consumer behaviour. *International Journal Information and Decision Sciences*, 11 (3), pp.209-233.

WADYKA, S. (2022). *Top-Rated Dairy-Free Ice Cream* [Online]. New York: Consumer Reports. Available: <https://www.consumerreports.org/non-dairy-ice-cream/dairy-free-and-vegan-ice-cream-review-a1061430064/> [Accessed 16 November 2022].

WAITROSE & PARTNERS. (2022). *Alpro Cashew Drink* [Image]. United Kingdom: Waitrose & Partners. Available: <https://www.waitrose.com/ecom/products/alpro-cashew-drink/801937-507963-507964> [Accessed 20 November 2022].

WARREN, R.M. (2019). *Almond? Oat? Soy?* Consumer Reports, pp.32-35.

WASSENAAR, A. (2016). *Exploring South African consumers' attitudes toward game meat*. Masters (Master of Consumer Science). Pretoria: University of South Africa.

WATSON, E. (2017a). FDA proposes to revoke health claim for soy protein and heart disease, Soyfoods association 'concerned' by move. *Confectionery News* [Online]. Available: https://www.confectionerynews.com/Article/2017/10/30/FDA-proposes-to-revoke-health-claim-for-soy-protein-and-heart-disease?utm_source=new%E2%80%A6 [Accessed 31 October 2017].

WATSON, E. (2017b). If FDA permits terms such as almondmilk, its standards of identity are 'meaningless,' says NMPF. Food Navigator USA [Online]. Available: <https://www.foodnavigator-usa.com/Article/2018/03/23/NMPF-hails-victory-over-plant-based-milks-in-spending-bill-PBFA-says-claims-have-zero-legal-significance> [Accessed 26 October 2017].

WATSON, E. (2017c). Per capita consumption of dairy milk beverages plunges 22% between 2000 and 2016; plant-based alternatives pick up the slack. Packaged Facts [Online]. Available: https://www.foodnavigator-usa.com/Article/2017/11/09/Packaged-Facts-lists-dairy-alternative-beverage-trends-to-watch?utm_source=newsletter_daily&utm_medium=email&utm_campaign=09-Nov-2017&c=36vyzBNJ%E2%80%A6 [Accessed 11 October 2017].

WATSON, E. (2018a). Got milk? Yes, but not as we used to know it. Food Navigator USA [Online]. Available: https://www.foodnavigator-usa.com/Article/2018/07/03/Fluid-milk-sales-are-down-but-cheese-butter-ready-to-drink-coffee-sales-are-up?utm_sourc%E2%80%A6 [Accessed 9 July 2018].

WATSON, E. (2018b). NMPF hails victory over plant-based 'milks' in spending bill, PBFA says claims have zero legal significance. Food Navigator USA [Online]. Available: <https://www.foodnavigator-usa.com/Article/2018/03/23/NMPF-hails-victory-over-plant-based-milks-in-spending-bill-PBFA-says-claims-have-zero-legal-significance> [Accessed 25 March 2018].

WATSON, E. (2018c). 'Plant-based' plays way better than 'vegan' with most consumers. Food Navigator USA [Online]. Available: https://www.foodnavigator-usa.com/Article/2018/04/19/Plant-based-plays-way-better-than-vegan-with-most-consumers-says-Mattson?utm_source=newsletter_da [Accessed 19 March 2018].

WATSON, E. (2018d). SPINS data: Who are the winners and losers in the plant-based milk category? Food Navigator USA [Online]. Available: https://www.foodnavigator-usa.com/Article/2018/06/04/SPINS-data-Who-are-the-winners-and-losers-in-the-plant-based-milk-category?utm_sourc%E2%80%A6 [Accessed 7 June 2018].

WELLNESS WAREHOUSE. (2018). Dairy Alternatives [Online]. Available: <https://www.wellnesswarehouse.com/shop> [Accessed 4 August 2018].

WELLNESS WAREHOUSE. (2022a). OKJA Oat Milk 16% Oats [Image]. South Africa: Wellness Warehouse. Available: <https://www.wellnesswarehouse.com/okja-oat-milk-16-oats-11-00487276904152> [Accessed 20 November 2022].

WELLNESS WAREHOUSE. (2022b). Rude Health Organic Cashew Drink [Image]. South Africa: Wellness Warehouse. Available: <https://www.wellnesswarehouse.com/rude-health-cashew-drink-1l-00388920000152> [Accessed 20 November 2022].

WELLNESS WAREHOUSE. (2022c). Rude Health Organic Oat Milk [Image]. South Africa: Wellness Warehouse. Available: <https://www.wellnesswarehouse.com/rude-health-oat-drink-gluten-free-1l-00359850000152> [Accessed 20 November 2022].

WHITAKER, P. (2013). Them bones, them bones may well need calcium - but perhaps it's time to moove on from milk. *New Statesman*, 142 (5183), pp.67.

WIMMER, R.D. and DOMINICK, J.R. (2014). *Mass Media Research: An Introduction*. 10th ed. United States of America: Wadsworth Cengage Learning.

WOLF, C.A., TONSOR, G.T. and OLYNK, N.J. (2011). Understanding US consumer demand for milk production attributes. *Journal of Agricultural and Resource Economics*, pp.326-342.

WOOLWORTHS. (2018). Food [Online]. Available: <https://www.woolworths.co.za> [Accessed 4 August 2018].

WOOLWORTHS. (2022a). Barista Almond Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/Food/Milk-Dairy-Eggs/Dairy-Alternatives/Long-Life/Barista-Unsweetened-Almond-Drink-1-L/_/A-6007875137613?isFromPLP=true [Accessed 20 November 2022].

WOOLWORTHS. (2022b). Barista Oat Milk [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/Food/Milk-Dairy-Eggs/Dairy-Alternatives/Long-Life/Barista-Unsweetened-Oat-Drink-1-L/_/A-6007875137620?isFromPLP=true [Accessed 20 Nov 2022].

WOOLWORTHS. (2022c). Barista Organic Unsweetened Oat Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6007875137637?colourSKUId=6007875137637 [Accessed 20 November 2022].

WOOLWORTHS. (2022d). Barista Organic Unsweetened Soya Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6007875137736?colourSKUId=6007875137736 [Accessed 20 November 2022].

WOOLWORTHS. (2022e). Coconut & Rice Milk [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6009189908194 [Accessed 20 November 2022].

WOOLWORTHS. (2022f). Lactose Free Full Cream Milk [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/Food/Milk-Dairy-Eggs/Lactose-Free/Lactose-Free-Full-Cream-Milk-1-L-/_/A-6009223479307?isFromPLP=true [Accessed 20 November 2022].

WOOLWORTHS. (2022g). Organic Sweetened Soya Milk [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6001009034731 [Accessed 20 November 2022].

WOOLWORTHS. (2022h). Organic Unsweetened Almond and Rice Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6007875137712 [Accessed 20 November 2022].

WOOLWORTHS. (2022i). Organic Unsweetened Coconut and Rice Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6007875137729 [Accessed 20 November 2022].

WOOLWORTHS. (2022j). Organic Unsweetened Rice Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6007875137644 [Accessed 20 November 2022].

WOOLWORTHS. (2022k). Organic Unsweetened Soya Drink [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6007875137736?colourSKUId=6007875137736 [Accessed 20 November 2022].

WOOLWORTHS. (2022l). Rice Milk with Sunflower Seed Oil Unsweetened [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6009101611249 [Accessed 16 July 2019].

WOOLWORTHS. (2022m). Sweetened Soya Milk [Image]. South Africa: Woolworths. Available: https://www.woolworths.co.za/prod/_/A-6009101611256 [Accessed 16 July 2019].

YANG, T. and DHARMASENA, S. (2020). Consumers preferences on nutritional attributes of dairy-alternative beverages: hedonic pricing models. *Food Science & Nutrition*, 8 (10), pp.5362-5378.

YAYAR, R. (2012). Consumer characteristics influencing milk consumption preference. The Turkey case. *Theoretical and Applied Economics*, 7 (7), pp.25-42.

YOSINI (2011). Consumer Preferences on Import and Local Fruit in Indonesia. *Lucretia Stiintifice Seria Agronomie*, 54 (2), pp.32-37.

ZEVNIK, N. (2013). Best Dairy-Free Milks. *Better Nutrition*, 75 (5), pp.52-54.

ZEVNIK, N. (2014). Not Milk? Better Nutrition, 76 (10), pp.60-62.

ZHUANG, Y. (2010). Three essays on organic milk marketing and consumer purchase behavior. Thesis (PhD). Pennsylvania: Pennsylvania State University.

ZIKMUND, W.G. and BABIN, B.J. (2013). Essentials of Marketing Research. 5th ed. Australia: Cengage.

APPENDIX A: DISCUSSION GUIDE



Focus Group Discussion Guide

The following discussion guide will be used during focus groups. The aim of the groups is to allow participants to discuss their attitudes freely and to be flexible to explore unanticipated insights as it arises. Therefore, this discussion guide will serve as a guideline only to ensure all objectives are covered and to start conversations on each topic. Various options on the phrasing of questions have been included to allow the researcher different options on how to probe participants for information. The specific phrasing of questions may vary depending on the discussion at hand on the day. Not all questions and their variations will necessarily be used, but questions will be asked from each main point in order to gather comprehensive data for each objective.

INTRODUCTION

- Welcome participants and thank them for their participation
- Provide aim of research and focus groups
- Briefly discuss voluntary consent and participants' right to withdraw
- Ground rules:
 - All participants and their responses are equally valuable to the research
 - Desire to present each participant with an equal opportunity to voice their opinions
 - No right or wrong opinions, please provide own opinion, whilst also respecting the opinions of others
- Plant-based milk alternatives refer to milk-type products derived from plants, such as soy, rice, coconut, etc. Dairy-based milk alternatives refers to dairy milk product alternatives with changed properties such as lactose-free, functional, enriched, etc. milk.

- Products referred to in this discussion (may include others if introduced to the South African market during the research timeframe):
 - Soymilk
 - Almond Milk
 - Cashew Milk
 - Oat Milk
 - Rice Milk
 - Coconut milk
 - Lactose-free milk
 - Functional, enriched and fortified milk
 - Milk blend



(Alpro, 2022b; Blue Diamond Growers, 2022b; Checkers, 2022a; Clover S.A., 2022c; Clover S.A., 2022e; Lactalis South Africa, 2022b; PriceCheck, 2022a; Shop First Choice S.A., 2022; SPAR, 2022c; SPAR, 2022d; Waitrose & Partners, 2022; Wellness Warehouse, 2022c; Woolworths, 2022l; First Grade International Ltd., 2019)

COGNITIVE COMPONENT

Salient beliefs

- What comes to your mind when I mention UHT milk alternatives? Please provide 3 words.
- Does this impression hold for both plant-based and dairy-based milk alternatives, or do you distinguish between the two groups?
- How familiar are you with the milk alternative products mentioned above?
- Have you used any of the above-mentioned milk alternative products in the past?
 - If so, how would you best describe milk alternative products and your experience of these products?
 - If not, what would you expect the products to be like?
- How would you / do you think one would normally use milk alternatives?

AFFECTIVE COMPONENT

Positive/negative attributes

- Do specific attributes of milk alternative products impress you?
- Are there specific attributes which disappoint or frustrate you, or are unappealing to you?
- What is your opinion about the sensory properties (taste, smell, texture, appearance) of plant-based and dairy-based milk alternative products? (This can be your opinion on the two product categories in general, or on specific products which you have an opinion about.)
- What are your favourite and least favourite attributes of milk alternative products? (This can be your opinion on the two product categories in general, or on specific products which you have an opinion about.)

Importance of attributes

- Which aspects do you consider when selecting milk alternatives?
- To what extent does milk alternatives meet your expectations regarding these aspects?
- Are there any attributes which could be improved to make milk alternatives more appealing to you?
- To what extent will claims like enriched, immune boosting/growth enhancing, GMO free, lactose-free, organic, environmentally friendly, rBST free influence your decision when purchasing milk or milk alternatives?

CONATIVE COMPONENT

Expected outcome of behaviour

- Why do you think consumers would consider alternatives useful, or desirable, to purchase?
- Would the use of milk alternatives be a good choice for you personally? Please motivate your answer
- **Subjective norm**
 - What do you think are South African consumer opinions in general on milk alternatives?
 - What do you think will motivate South African consumers to drink milk alternatives?
 - What would your family or friends think if you used any of the milk alternatives mentioned?
 - Would they have specific recommendations on using or not using it?
 - Would they use milk alternative products themselves?
 - How important would their opinion be in your personal choice of milk or milk alternative products?
- **Attitude toward behaviour**
 - Would you sacrifice milk products currently in your diet in exchange for any of the milk alternative products mentioned above? Please motivate.
 - Would you recommend the use of milk alternatives to family or friends?
 - What would you say to motivate them to use, or not to use, these products?

Perceived behavioural control

- **Controllability**
 - Would it be possible for you to use milk alternative products taking your circumstances into consideration?
 - What would make it easy or difficult?
 - Would you be able to sustain it for more than a year? Please motivate your answer.
- **Self-efficacy**
 - How much control do you have over the type of milk or milk alternative products purchased in your household?
 - If others influence this choice, who's opinions and choices carry the most weight during purchase decisions? And why that person?

Behavioural intention

- What are the most important considerations for you when purchasing UHT milk / milk alternatives? Please motivate your answer.
- Are there any reasons why you would not purchase milk alternatives, or any of the specific products mentioned?
- How likely are you to purchase any of the mentioned milk alternative products? Please motivate your answer.
- Which types of milk or milk alternatives do you prefer? / Please rank the following milk-alternative products according to preference (1 being most preferred and 8 least preferred): Please motivate the reason for your first choice.
 - Soymilk
 - Almond Milk
 - Cashew Milk
 - Oat Milk
 - Rice Milk
 - Coconut milk
 - Lactose-free milk
 - Functional, enriched and fortified milk

CONCLUSION

- Are there anything which we haven't discussed that you feel is important and would like to add?
- Thank participants for their participation and valuable input.



Demographic Information

- Please select your age group:

<input type="checkbox"/>	Younger than 18 years
<input type="checkbox"/>	18 – 39 years
<input type="checkbox"/>	40 – 64 years
<input type="checkbox"/>	65+ years

- Do you live within the borders of South Africa?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

- Please select your gender:

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

- Please select the province in which you live (*If you migrate between different provinces during the year, please indicate the province in which you spend the most of your time during a typical year*):

<input type="checkbox"/>	Eastern Cape
<input type="checkbox"/>	Free State
<input type="checkbox"/>	Gauteng
<input type="checkbox"/>	KwaZulu-Natal
<input type="checkbox"/>	Limpopo
<input type="checkbox"/>	Mpumalanga
<input type="checkbox"/>	North West
<input type="checkbox"/>	Northern Cape
<input type="checkbox"/>	Western Cape

- How would you rate the level of influence you have over the choice of milk/milk alternative?

<input type="checkbox"/>	Complete control
<input type="checkbox"/>	Shared influence
<input type="checkbox"/>	Little influence
<input type="checkbox"/>	No influence

- Please select your areas of involvement in the decision-making concerning food and beverages in your household (*select all options that are relevant*)

<input type="checkbox"/>	Purchase groceries
<input type="checkbox"/>	Meal preparation
<input type="checkbox"/>	Consumption only

APPENDIX B: CAES ETHICS APPROVAL



CAES HEALTH RESEARCH ETHICS COMMITTEE

Date: 15/03/2019

Dear Ms Wassenaar

NHREC Registration # : REC-170616-051
REC Reference # : 2019/CAES/034
Name : Ms A Wassenaar
Student # : 43865208

**Decision: Ethics Approval from
14/03/2019 to 31/03/2020**

Researcher(s): Ms A Wassenaar
43865208@mylife.unisa.ac.za

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

Working title of research:

A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions

Qualification: PhD Consumer Science

Thank you for the application for research ethics clearance by the CAES Health Research Ethics Committee for the above mentioned research. Ethics approval is granted for a one-year period, **subject to approval by the Research Permissions Sub-Committee (RPSC) of Unisa**. After one year the researcher is required to submit a progress report, upon which the ethics clearance may be renewed for another year.

Due date for progress report: 31 March 2020

Please note the points below for further action:

1. The application must be submitted to the RPSC to obtain permission for the use of Unisa students, staff or data. That Committee has a separate application form which must be completed (attached). The completed application form must be submitted to Ms Van Wyk, who will then forward the application to the RPSC for consideration.



University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

*The **minimal risk application** was reviewed by the CAES Health Research Ethics Committee on 14 March 2019 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(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. 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.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. 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.
5. 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.
6. 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.
7. 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 **2019/CAES/034** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,



Prof MA Antwi
Deputy Chair of CAES Health REC
E-mail: antwima@unisa.ac.za
Tel: (011) 670-9391



Prof MJ Linington
Executive Dean : CAES
E-mail: lininmj@unisa.ac.za
Tel: (011) 471-3806



URERC 25.04.17 - Decision template (V2) - Approve

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

Signatures redacted for publication.

UNISA-CAES HEALTH RESEARCH ETHICS COMMITTEE

Date: 22/06/2020

Dear Ms Wassenaar

NHREC Registration # : REC-170616-051
REC Reference # : 2019/CAES/034
Name : Ms A Wassenaar
Student # : 43865208

**Decision: Ethics Approval
Confirmation after First Review
from 14/03/2019 to 31/03/2024**

Researcher(s): Ms A Wassenaar
43865208@mylife.unisa.ac.za

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

Working title of research:

A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions

Qualification: PhD Consumer Science

Thank you for the submission of your progress report to the Unisa-CAES Health Research Ethics Committee for the above mentioned research. Ethics approval is granted for five 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 that fieldwork may not commence until such time as the COVID-19 lockdown has been lifted.

Due date for progress report: 31 March 2021

Please note the points below for further action:

1. The committee notes that the amendment to the research methodology and approves the use of a secure online platform for the focus groups. The researcher may continue



with this during the lockdown period but is cautioned that the Covid-19 restrictions remain in place for any physical fieldwork.

*The **minimal risk application** was **reviewed** by the UNISA-CAES Health Research Ethics Committee on 07 May 2020 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 2019/CAES/034 should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.

Yours sincerely,



Prof MA Antwi
Chair of UNISA-CAES Health REC
E-mail: antwima@unisa.ac.za
Tel: (011) 670-9391



Prof SR Magano
Acting Executive Dean : CAES
E-mail: magansr@unisa.ac.za
Tel: (011) 471-3649



University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

Signatures redacted for publication.

APPENDIX C: RPSC RESEARCH PERMISSION APPROVAL



RESEARCH PERMISSION SUB-COMMITTEE (RPSC) OF THE SENATE RESEARCH, INNOVATION, POSTGRADUATE DEGREES AND COMMERCIALISATION COMMITTEE (SRIPCC)

02 December 2019

Decision: Research Permission Approval from 02 December 2019 until 31 May 2020 (data collection period).

Ref #: 2019_RPSC_059
Ms. Anjolize Wassenaar
Student #: 43865208
Staff #: N/A

Principal Investigator:

Ms. Anjolize Wassenaar
Department of Life and Consumer Sciences
School of Agriculture and Life Sciences
College of Agriculture and Environmental Sciences

Supervisor: Prof Elizabeth Kempen; kempeel@unisa.ac.za; 011 471 2241

A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions

Your application regarding permission to conduct research involving UNISA employees, students and data in respect of the above study has been received and was considered by the Research Permission Subcommittee (RPSC) of the UNISA Senate, Research, Innovation, Postgraduate Degrees and Commercialisation Committee (SRIPCC) on 15 November 2019.

It is my pleasure to inform you that permission has been granted for your study.

1. The requested employees' email addresses at Florida, and possibly at Muckleneuk if the researcher is unable to attain saturation point using Florida employees alone, will be released to the supervisor.
2. The supervisor will be required to assist the student researcher with recruiting the research participants.
3. The researcher may conduct lunch time focus group discussion sessions with staff at Florida and Muckleneuk.



University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

You are requested to submit a report of the study to the Research Permission Subcommittee (RPSC@unisa.ac.za) within 3 months of completion of the study.

The personal information made available to the researcher(s)/gatekeeper(s) will only be used for the advancement of this research project as indicated and for the purpose as described in this permission letter. The researcher(s)/gatekeeper(s) must take all appropriate precautionary measures to protect the personal information given to him/her/them in good faith and it must not be passed on to third parties. The dissemination of research instruments through the use of electronic mail should strictly be through blind copying, so as to protect the participants' right of privacy. The researcher hereby indemnifies UNISA from any claim or action arising from or due to the researcher's breach of his/her information protection obligations.

Note:

The reference number 2019_RPSC_059 should be clearly indicated on all forms of communication with the intended research participants and the Research Permission Subcommittee.

We would like to wish you well in your research undertaking.

Kind regards,



pp. Dr Retha Visagie – Deputy Chairperson: RPSC

Email: visagr@unisa.ac.za, Tel: (012) 429-2478

Prof L. Labuschagne – Chairperson: RPSC

Email: llabus@unisa.ac.za, Tel: (012) 429-6368



University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

Signature redacted for publication.

RESEARCH PERMISSION SUB-COMMITTEE (RPSC) OF THE SENATE
RESEARCH, INNOVATION, POSTGRADUATE DEGREES AND
COMMERCIALISATION COMMITTEE (SRIPCC)

02 December 2019 (Date of issue)

12 August 2020 (Date of amendment)

**Decision: Research Permission
Approval from 02 December 2019
until 30 Sep 2021 (data collection
period).**

Ref #: 2019_RPSC_059_AR

Ms. Anjolize Wassenaar

Student #: 43865208

Staff #: N/A

Principal Investigator:

Ms. Anjolize Wassenaar

Department of Life and Consumer Sciences

School of Agriculture and Life Sciences

College of Agriculture and Environmental Sciences

Supervisor: Prof Elizabeth Kempen; kempeel@unisa.ac.za 011 471 2241

A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions

Your application regarding permission to conduct research involving UNISA employees, students and data in respect of the above study has been received and was considered by the Research Permission Subcommittee (RPSC) of the UNISA Senate, Research, Innovation, Postgraduate Degrees and Commercialisation Committee (SRIPCC) on 15 November 2019.

It is my pleasure to inform you that permission has been granted for your study.

1. The requested employees' email addresses at Florida, and possibly at Muckleneuk if the researcher is unable to attain saturation point using Florida employees alone, will be released to the supervisor.
2. The supervisor will be required to assist the student researcher with recruiting the research participants.
3. The researcher may conduct lunch time focus group discussion sessions with staff at Florida and Muckleneuk, through MS Teams.



You are requested to submit a report of the study to the Research Permission Subcommittee (RPSC@unisa.ac.za) within 3 months of completion of the study.

The personal information made available to the researcher(s)/gatekeeper(s) will only be used for the advancement of this research project as indicated and for the purpose as described in this permission letter. The researcher(s)/gatekeeper(s) must take all appropriate precautionary measures to protect the personal information given to him/her/them in good faith and it must not be passed on to third parties. The dissemination of research instruments through the use of electronic mail should strictly be through blind copying, so as to protect the participants' right of privacy. The researcher hereby indemnifies UNISA from any claim or action arising from or due to the researcher's breach of his/her information protection obligations.

Note:

The reference number 2019_RPSC_059_AR should be clearly indicated on all forms of communication with the intended research participants and the Research Permission Subcommittee.

We would like to wish you well in your research undertaking.

Kind regards,



pp. Dr Retha Visagie – Deputy Chairperson: RPSC

Email: visagrg@unisa.ac.za, Tel: (012) 429-2478

Prof L. Labuschagne – Chairperson: RPSC

Email: llabus@unisa.ac.za, Tel: (012) 429-6368



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www.unisa.ac.za

Signature redacted for publication.

APPENDIX D: PARTICIPANT CONSENT

Good day

Herewith a request to participate in a focus group session on 15 - 23 October as part of my PhD in consumer science. Due to the current movement restrictions and safety protocols, the focus groups sessions will occur online.

The research theme is South African consumer attitudes and purchase intentions toward UHT milk alternatives.

- Input and opinions from general South African consumers will be appreciated, consequently, both consumers and non-consumers of milk and milk alternative products are requested to participate.
- The research project requires participation from individuals residing in South Africa, over the age of 18 years.
- The focus group sessions will be conducted in English. There are no right or wrong answers since all opinions are valued and respected.
- The research is conducted under the supervision of Prof Elizabeth Kempen and has been approved by the CAES Ethics Committee.

No preparation on the topic is required from participants prior to the sessions.

Thank you

Kind regards

Anjolize Wassenaar

milkalternative@gmail.com

CONSENT FORM

TITLE OF RESEARCH PROJECT

A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions

NATURE AND PURPOSE OF THE STUDY

The study will make use of online focus groups to gather information from South African consumers regarding their attitudes held toward UHT milk alternatives.

The purpose of the study is to gather deeper insights into South African consumers' attitudes toward the introduction of various UHT milk alternatives in the South African market with the ultimate goal to propose a model within which consumer attitudes toward purchase intentions can be understood.

RESEARCH PROCESS

- The study requires your participation through a focus group to provide your opinion on UHT milk alternatives.
- You can participate in a focus group discussion with other participants during a pre-arranged time slot convenient to you.

- Focus group discussions will be led by the researcher and will include various other participants. You will be requested to share your own opinions with the group and to participate in the discussion on the topic.
- During discussions, you will be given the opportunity to share your own opinion and will be required to allow others to also share their opinions freely. There are no right or wrong opinions. All participants' opinions during the discussion are valued.
- All participants are required to respect each other and their opinions.
- You do not need to prepare anything in advance.
- The duration of each focus group should be around 60 minutes.
- By arranging a time slot, joining the online session and participating in the focus group discussions, you give consent to participate in the research process.

NOTIFICATION THAT RESPONSES WILL BE RECORDED

Your attention is drawn to the fact that the audio of focus group discussions will be recorded and transcribed to ensure accuracy afterwards during data analysis. Recordings and transcriptions will not be shared with individuals who do not form part of the research. It will not be shared with any other third parties either. Transcriptions will not identify individual participants by name. The obligation to maintain privacy, anonymity and confidentiality extends to the researcher and anyone who assists in the research process. The recordings and transcriptions will be stored securely and will be deleted five years after all research activities have been completed. It will not be used for any other purposes.

CONFIDENTIALITY

The researcher does not gain access to any individual's personal information, other than that submitted by the individual themselves. Any data gathered are viewed as strictly confidential, and only members of the research team will have access to the information. No data published in dissertations or journals will contain any information by means of which individual responses may be identified. Your anonymity is therefore ensured.

WITHDRAWAL CLAUSE

Participants may withdraw from the research process at any time. They, therefore, participate voluntarily until such time as they request otherwise.

POTENTIAL BENEFITS OF THE STUDY

It is believed that South African consumers can benefit from the study if their attitudes toward UHT milk alternatives are better known. Understanding consumer attitudes allow the producer to adapt the product to meet consumer needs and expectations. This research will also assist researchers in subsequent studies to identify important variables in the research problem on which to base further research.

CONSENT

I have read and understood the above information relating to the project. I understand that focus group discussions will be recorded for research purposes. I have been afforded the opportunity to discuss relevant aspects of the project with the project leader, and hereby declare that, by attending and participating in the focus group, I agree voluntarily to participate in the project.

I indemnify the university and any employee or student of the university against any liability that I may incur during the course of the project.

I further undertake to make no claim against the university in respect of damages to my person or reputation that may be incurred as a result of the project/trial or through the fault of other participants, unless resulting from negligence on the part of the university, its employees or students.

I have access to a copy of this consent form which was emailed to me.

I have read the Consent Form and agree voluntarily to participate in the research.

By arranging a time slot and by arriving for and participating in the focus group discussions, I agree to the conditions stipulated in this consent form.

APPENDIX E: CONFIDENTIALITY OF INFORMATION

CONFIDENTIALITY AGREEMENT Transcription Services

A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions
(UNISA CAES Ethics Committee Reference Number: 2019/CAES/034)

I, _____, transcriptionist, agree to maintain full confidentiality in regards to any and all audio recordings and documentation received from Anjolize Wassenaar (principal researcher) related to her doctoral study on *A model of South African consumer attitudes toward UHT milk alternative products and purchase intentions*. Furthermore, I agree:

1. To hold in strictest confidence the identification of any individual that may be inadvertently revealed during the transcription of audio-recorded interviews, or in any associated documents;
2. To keep all research information that is shared with me (e.g. audio recordings, transcripts, data, etc.) strictly confidential by not discussing or sharing this information verbally or in any format with anyone other than the principal investigator of this study;
3. To ensure the security of all research information (e.g. audio recordings, transcripts, data, electronic files, etc.) while it is in my possession. This includes:
 - Using closed headphones when transcribing audio taped interviews;
 - Keeping all study-related audio recordings and electronic or printed files and text in a safe, secure location or on a password protected computer that is not shared by other individuals as long as they are in my possession;
 - Closing any transcription programs and documents when temporarily away from the computer;
 - Keeping any printed transcripts in a secure location;
 - Permanently deleting any digital communication containing the data.
4. To not make copies of any audio recordings, printed or computerized files of the transcribed interview texts, unless specifically requested to do so by the principal researcher;
5. To return all study-related documents to the principal researcher in a complete and timely manner.
6. To delete all electronic files containing study-related recordings or documents from my computer hard drive and any backup devices.
7. To erase or destroy all research information (e.g. audio recordings, transcripts, data, printed texts, electronic documents, etc.) after discussing it with the principal researcher, that cannot be returned to the principal researcher upon completion of my duties as a transcriber.

I am aware that I can be held legally liable for any breach of this confidentiality agreement, and for any harm incurred by individuals if I disclose identifiable information contained in the audio recordings and/or files/texts to which I will have access.

Transcriber's name (printed) _____

Transcriber's signature _____

Date _____ 20 November 2020 _____

The transcriber should keep a copy of the *Confidentiality Agreement* for their records.

Signature redacted for publication.

APPENDIX F: DATA ANALYSIS – QUOTE TABLES AND PROGRESSION TO THEMES

F.1 Participant Quotes as Related to Findings Themes and Sub-themes

Table F.1: Theme 1 - Consumer Product Beliefs

THEME 1: CONSUMER PRODUCT BELIEFS
Sub-theme 1a: Health
Health Benefits: <i>'packed with the health products and not with the milk'</i> <i>'because of health a lot of the time'</i> <i>'a trade-off between going to see a doctor or putting something that is safer for your body'</i> <i>'plant milks ... [the] good thing about them is that they are healthy'</i> <i>'I definitely think of a healthier product to consume'</i> <i>'they [have] health benefits ... the plant ones are better'</i> <i>'I would think it is probably a healthier alternative'</i> <i>'the nut milks ... the cashew, the almond, the coconut ... are very healthy'</i> <i>'maybe there are health benefits for people that cannot drink normal milk'</i> <i>'soy milk is the healthiest'</i> <i>'used it ... while ... pregnant'</i> <i>'it was recommended by ... medical practitioners'. 'used for those specific reasons'</i> <i>'loved it because of its health benefits'</i> <i>'sceptical of various health benefits'</i> <i>'in terms of health benefits we drink normal milk'</i>
Allergies: <i>'I have realised that a lot of people do use alternative milk products because of ... food allergies'</i> <i>'I think if one of us had allergies then obviously we would have definitely bought it'</i> <i>'plant-based milk alternatives ... I would not really have bought [it] ... because I do not really have allergies'</i> <i>'to me it feels more like a luxury item ... except if it is ... a necessity if you are allergic to something ... then definitely that is something else'</i> <i>'used to be the only available alternative'</i>
Lactose Intolerance: <i>'people who are lactose-intolerant ... go for these milks'</i> <i>'I do understand that there are a lot of lactose-intolerant people'</i> <i>'it is a genuine concern that there are so many lactose-intolerant people'</i> <i>'alternatives are for specific people'</i> <i>'if you are lactose-intolerant then there are specific plant-based milks which you can consume'</i> <i>'my son is lactose-intolerant and use rice milk from a young age'</i> <i>'my eldest daughter is lactose-intolerant so soy milk is something that always catches my eye'</i>

'when she does use the lactose-free milk it helps ... She does not get those cramps, she does not feel bad ... She does not have a stuffy nose ... She does not get an upset stomach ... She can feel the difference ... it works for her'

'I enjoy lactose-free milk, but it is not necessary for my health'

'I haven't tried lactose-free milk, because I didn't need it'

'but there might be people who can really benefit from it'

'if you need it, then it is okay if you buy a product that specifies that it is for that'

Weight Control:

'I would have tried it purely because of the recipes from a ... weight loss diet perspective'

'I used soy milk when I did [branded weight loss diet], because they said normal milk leads to weight gain ... but then I gained more weight with the soy milk'

'if you look at the different dieting crazes where they try to reduce your overall carbohydrate intake'

'you will get those people who say 'no real milk is fine and you need so much a day' ... [you] will get others who will say 'no dairy is really not good for you, it makes you put on weight ... you must replace it with something else'.

'Carbs-wise is the only reason why I used almond milk because I wanted to move away from [cow] milk ... since many diets ... disparage the use of [cow] milk'; 'I would use it ... if I do [high-fat, low carbohydrate] type of diets'; '[there are] different ways of eating - like ... all of these different diet types ... and certain diet types kind of promote these alternatives, whereas others do not'

'more like a diet food kind of thing'

'maybe if it is less kilojoules or something, then you want to try it when you are on a diet'

Impact on Human Body:

'cow milk is not meant for humans'

'is actually not good for you'

'very much against using soy products'

'I have also read that actually the UHT milk because it is so heat-treated, it actually is less healthy than normal milk'

'I prefer less processed'

'I'm cautious of anything coming from a can or a box, I try to avoid it'

'Everything is processed ... It's about what will be beneficial to my body ... heat energy destroys [nutrients]'

Nutritional Value:

'rice milk has no nutritional value'

'do not know what it does for you'

'hardly anything added to it'

'there's only omegas and a little vitamins added ... my child gets her omegas though supplements prescribed by the doctor and she drinks her vitamins every morning, so I find it unnecessary ... and will not purchase it'

'I would probably use the enriched milk especially when your children change from breast-milk or from bottle milk to normal milk. There was a time when I tried to get more enriched milk for them. Just a short period ...but I would have considered it for the children'

Fitness:

'see a lot of people using things like almond milk in their smoothies and so forth in gyms'

'associate ... almond milk with an active lifestyle'

'soy milk is probably going to be a very high protein milk'

'it is going to be something that if you need extra protein, ... if you go to the gym ... for muscle recovery ... You can use it afterwards with your protein products'

'is a quick way to fill up with proteins to prevent your body from losing protein when you have just exercised'

'it is actually something that is easy to use after you have had a gym session for muscle recovery'

Sub-theme 1b: Associations with Plant-based vs Dairy-based Milk Alternatives

Discernment between plant- and dairy-based milk alternatives:

'clearly distinguish between plant-based milk alternatives and dairy-based milk alternatives'

'there is a definite distinction'

'I definitely see the dairy-based and plant-based as separate'

'focus on what it is made of'

'I am vegan so I do not use the normal milk'

'main ingredient must be vegan'

'[we] use plant-based, [we're a] vegan household'

'I am very specific, because I know it's only this that I can use'

'processed different drinks'

'not real milk'

'the word 'milk' gives a misconception because it is not really close to milk ... [although] you would use it as a milk alternative'

'milk alternatives are the various types of 'look-alike' milk that have been slowly coming into the market and which offer people who cannot have regular cow's milk an alternative'

Associations with cow milk:

'I will stick with the dairy-based but there will be a clear distinction between the two'

'[plant-based alternatives] differs from the normal taste of milk'

'I did not enjoy plant-based UHT milk alternatives, but I like dairy-based UHT milk products'

'growth milk'

'it actually contains real dairy'

Associations with milk alternative product category:

'the most common thing that I know about milk alternatives ... soya milk'

'Plant-based milks. Dairy free'

'Milk alternatives ... Soy, yes. Soy, coconut, almond ...'

'if I thought alternatives I immediately would have thought 'plants''

'I would just immediately think plant-based'

'I think they're from plants and I do not think that they will taste the same as the ones that I am used to'

'to me, the first thing that comes to mind is that it is for specific people'

'the alternatives are for specific people'

'rice milk ... to me it is odd'

'oat milk ... it was like ... oats ... diluted. I did not really understand the milk concept behind it'

'rice is something you must eat, not drink'

'rice milk ... [I do] not really associate it with milk'

Sub-theme 1c: Associated Product Category Properties

Shelf-life:

'UHT'

'I am thinking about the shelf-life'

'first thing that comes to my mind is immediately the long-life milk'

'it keeps for long because it is UHT'

'it has a longer lifespan'

'long-life milk'

Safety, environmental impact and animal welfare:

'hormone-free'

'organic'

'grass-fed'

'GMO-free'

'sustainable'

'water consumption'

'free-range'

'safer product to consume'

'environmentally friendly'

'stewardship is important'

'no need to use dairy'

'feel good'

'consider the environment, animal welfare and health'

'poor cows'

'continually ... produce milk'

'the environmental sustainability ... of dairy farming'

'more intensive and invasive'

'for sustainable farming practice which is sensitive to the impact it might have on the environment'

'dairy ... will have to adapt ... as people become more sensitive to the dangers of dairy farming'

'I'm not impressed with little words like organic ... or free-range, or whatever'

'grass-fed ... we see often on these milk stuff and it sounds well in theory ... it should have an influence on the quality ... but does it really'

'growth hormones ... I don't think milk is the big culprit'

'other things like environmentally friendly, hormone-free and those things ... to be honest, I just absolutely do not believe it'

'good marketing'

Processing and Additives:

'highly processed'

'everything in the milk has been sterilised through the Ultra High Temperature'

'I am hesitant of anything in a box, bottle or can ... I prefer not to purchase it'

'I try to avoid processed foods as far as possible ... these processes cause trouble'

'I prefer my milk as natural as possible'

'everything is processed, then you begin to question it ... why can it not stay natural?'

'I like things to be as pure as possible'

'I check if there are things that I do not understand that is in the ingredients list then I try and stay away from that'

'sometimes there are palm kernel oil or palm sugar ... if I see it, I am wary of it'

'if there is any hidden sugars, I rather leave it'

'I check for flavourings and colourants ... then I try to avoid it'

Novelty:

'fad'

'exotic'

'Why would I want to have oat milk? I can eat oats and then I do not want to put oat milk on my oats'

'rice milk ... why would I want to add it to my coffee'

'cashews I would be a little bit suspicious of ... I like cashew nuts, but I do not see why you would need to make milk out of them'

'gimmick'

'notion'

'fad'

'chocolate high protein recovery ... what is this notion and I am saying notion because I do not know if there actually has been research into this'

'Sports recovery [protein-enriched] ... that is such a gimmick'

'the protein-enriched sports recovery chocolate milk ... what nonsense is this'

'I do not believe if ... something is enriched and I do not really care either ... my vitamin needs ... come from other food'

'Yes, it might be good for your growth ... how do I know'

'growth milk [enriched] ... if you get all your vitamins in, then it is unnecessary'

'omegas and a little bit of vitamins added ... I find it unnecessary'

'Why is it there? Will my body benefit from it, or is it just a fad'

'lifestyle'

'you sometimes get the impression that these are like ... I do not know how to put it ... kind of lifestyle milks, you know?'

'people who declare themselves to be lactose-intolerant, go for these milks and to me it is always like 'Are all of these milks really needed?''

'apparently the new craze was [lactose-free brand], which everyone thought was an orange milk and it turned out to be normal milk'

'there are too many options available in the market'

'you have got this milk shelf and 20 different kinds of milks and you start wondering if all of these are really needed or are some of them being marketed as kind of gimmicky stuff?'

Cost:

'more expensive than dairy milk'

'very expensive'

'Most plant-based milks are very expensive, so it would not meet my needs'

'I do think that price is very, very important in South Africa because the products might be available, but it will still be a small group who can actually afford to buy these products'.

'South Africans in general ... are very price conscious. Even wealthy people are price conscious. So if these alternative products are very expensive, then people ... avoid them because they are expensive'

Value:

'needs to be competitive'

'is supposed to be a direct alternative'

'It is expensive and we acknowledge that they are not cheap products, but we are still prepared to buy them. Because of health a lot of the time'

'I realised that it is all basically like the nuts or the actual plant material, but the diluted flavours. Personally, I do not feel like paying that much ...'

'The ingredients for example, ... a lot of the almond milks ... contain something like 2% almonds and the rest is water and I do not know what else ... a lot of it is scientific names so you do worry about what is in that milk'

'that regulations allow the other ingredients'

'feels cheated, especially for the price paid'

Sub-theme 1d: Sensory Characteristics

Sensory Characteristics:

'basically normal milk'

'it's just not milk'

'it is nice'

'I like it'

'[it] tasted quite nice'

Taste:

'tasteless'

'very bland'

'not tasting like anything'

'baby-food taste'

'nutty flavour'

'some [milk alternatives] have a bit of an after-taste'

'it starts to taste rather artificial'

'possible to taste the plant'

'basically like the nuts or the actual plant material, but the diluted flavours'

'too sweet'

'sweeter taste'

'slight sweetness'

'too a pertinent flavour'

Texture:

'creamy'

'rich'

'lack creaminess in coffee'

'too thin'

'too creamy'

'less rich than dairy'

'very watery, or watered down'

'grainy'

'barley-like'

'plant-like'

'grass-like'

'having beans in one's mouth'

'made hot beverages taste like soil'

'turn thick'

'flocculate'

'skin'

'cannot be mixed into the milk again'

Smell and appearance:

'off-putting smell'

'there is some or the other smell that I do not just like'

'I did not like the smell'

'rice and oat milk does not smell nice'

'look watery'

'off-putting orange-brown colour'

Sub-theme 1e: Utility

Variety available for use:

'there were no alternatives which we were aware of'

'great variety [of plant-based milk alternatives] available makes it really easy'

'there is a range of products'

'if you go past the soy milk, there are about 14 or 15 different types of options'

'plant-milk ... I do not think that they are always available in supermarkets'

'you might find them maybe in certain shops that I might not always go to'

'I cannot go to different shops to purchase milk alternatives'

'a farming community'

'you could go to any supermarket in the area and find milk alternatives'

'based on the local demand'

'coconut and almond being two popular choices'

'often unavailable'

'plant milks ... are not easily available'

'that there were perhaps too many options available in the retail market'

Convenience of packaging:

'you normally just get the big packages, you get the one litre ... you do not get the 250 ml or the 500 ml which will be better'

'my perplexity with that is that it is usually a litre and in my recipes I never need a whole litre'

'I wanted to buy it, but they only sell it in litres'

'after a day or two it becomes thick ... then I throw it away'

'it goes off quickly'

'I don't use it as quickly as normal milk and then it becomes a sour and thick business'

'I just wish I could throw away less, because it is rather expensive. So, I have to consider carefully before opening it'

'unable to consume all before it goes off.'

'I tried to freeze it ... I could not get it in smaller containers and it did not work at all'

'you cannot freeze it at all'

'if I can find a small pack, I will rather purchase that'

'it has an influence on me, the pack size'

Suitability for use in hot beverages:

'It must actually look like milk'

'I do not like coffee with drop off something strange in it'

'there are ones that are better for coffee'

'nut milks ... I did try some of them in the coffee or tea and it just does not do it for me'

'you cannot drink any of these milks with it'

'it was very rich'

'almond [milk] is for coffee and tea.'

'almond milk does not work at all in coffee'

'not that great'

'too thin and watery ... in hot drinks'

'almond milk ... does not work in coffee ... it makes your coffee taste like soil'

'As soon as you put the almond milk into a hot liquid then it turns like sour milk'

'Like when you throw into your coffee milk that is old'

'my daughter drinks [hot beverages] with almond milk and from what I have seen, it puts me off ... As soon as she puts the milk in the coffee it turns like sour milk – it has little pieces in it and that puts me off'

'Soy milk does not do that ... at the cafeteria ... I have got soya milk there, for in case I want a cappuccino'

'you cannot put it in tea ... it curdles completely'

'if you put it into coffee, ... it looks quite funny'

'It looks like sour milk sometimes'

'coconut milk ... as a milk alternative for my coffee I am a bit sceptical to try that'

'coconut milk ... I do not use this in my coffee or my tea'

'rice milk is high in fat, so it's not nice in coffee at all'

'too thin'

'lack creaminess in coffee'

'need to add more than normal milk to have a milk experience'.

'lactose-free milk actually goes really well ... I could not actually tell the difference between the coffee when having full cream or using this alternative'

'I use it basically only in tea and coffee ... it worked really well'

Suitability to drink per glass:

'drinkable',

'my children ... will drink the coconut milk as a beverage, straight'

'loved oat milk'

'it is not something that I would drink'

'it is not a drinking milk, as a glass of milk'

'it does not taste the same at all'

'coconut milk is just too much like coconut ... I will not pour myself a glass to drink'

'I doubt that I will just drink it purely as-is'.

'I used coconut milk and it is perfect for using it in a dish but I did not drink it'

'almond milk ... will probably be for cooking ... but I will not drink it'

'[cashew] can work very nicely in cooking ..., but I will never drink it'

'coconut milk ... would be ok in your food ... in curry or something ... but for drinking I would never use it'

Suitability for baking and food preparation:

'did not see [plant-based milk alternatives] as milk'

'something you use in cooking'

'I will not use it as a milk but just in food'

'soy milk is the preference when you bake and when you make sauces'

'I always stick to the soya when I bake and cook'

'most vegan people use soy milk for baking purposes'

'[coconut milk] works well in dishes'

'it is nice and rich and makes the food tasty'

'the flavour of coconut works well with protein, such as chicken and meat and makes it creamy'

'coconut milk ... was perfect in curry dishes'

'it does make the dish taste different'

'absolutely delicious ... to cook with coconut milk'

'I would use it mostly in baking'

'if you're going to bake ... coconut milk definitely has a better texture and flavour for baking'

'I am attracted by almond milk simply because of the recipes'

'then I might try to explore with it'

'if I want to make a special food and maybe it needs almond milk or so, then I will use that'

'we use it often in our muffins ... it just brings everything together'

Suitability for use with breakfast porridge, cereal or smoothies:

'I do not want to put oat milk on my oats'

'the rice milk and coconut milk does not work with cereals ... the flavours are too prominent' 'almond milk is very nice in your breakfast or in a smoothie but then you eat it cold'

'almond milk works well as an alternative with cereal or porridge'

'[daughter] uses almond in her breakfast cereal'

Table F.2: Theme 2 – Evaluation of Product & Consumer Attitudes

THEME 2: EVALUATION OF PRODUCTS

Sub-theme 2a: Importance of Intrinsic Product Properties

Food safety:

'the first thing I look at is the expiry date and I try to take the one with the furthest expiry date'

'I always check the expiry date'

'too little information of other countries' regulations and production methods'

'a good safety record ... is something that I will look at'

Naturalness:

'if I know one is antibiotic-free I will take that one'

'I just want to know ... that there are no other growth hormones in there'

'if something is natural and has not been modified too much, I would be more likely to use it'

'try to avoid the use of processed foods'

'want to know if it is natural' and 'it must be as real as possible'

'sterile product'

'no preservatives at all'

'look at the available products to compare them'

'want to know that this is a pure'

'want to know what is inside'

'want to see what is added on and why it is added'

'The ingredients for example, I think a lot of the almond milks ... contain something like 2% almonds and the rest is water and I do not know what else ... it is all ... a lot of it is scientific names. So you do worry about what is in that milk and whether it is actually healthy for you?'

Added Sugar:

'I check if there are things that I do not understand that is in the ingredients list then I try and stay away from that'

'I see how much has been added to the milk. I like things to be as pure as possible'

'main ingredient as well as the other ingredients must be suitable for a vegan lifestyle'

'that regulations allow the other ingredients'

'always read the ingredients'

'the sugar content ... will affect which products I would choose'

'a big issue for me is the amount of sugar in the products ... I definitely look at that'

'I do not like anything that has got added sugar'

'I used to buy them and then I was horrified with how much sugar, so I actually just stopped buying them'

'These stabilizers and ... if there is artificial sweetener in the product, I will not buy it. I am very focused on getting a product that has more natural sort of ingredients'

'if they add sugar or something to kind of enhance the taste, it starts to taste rather artificial'

'[I] automatically associate a flavoured products with something that has been sweetened ... especially if it is chocolate or strawberry flavours ... then you know to stay away [from the product]'

Nutritional content:

'I do not think I will ever buy rice milk, in my perception it is just a lot of carbs and I do not know what it does for you'

'water with a little bit of milk',

'having a different hue'

'blue'

'I would drink something like lactose-free milk but would prefer it to be fat-free ... I do not like the rich, full-cream taste in milk'

'double-cream'

'the cream lies so thick on top inside the box that the milk cannot be poured out and you cannot mix the fat back into the milk ... you will die of all the fat ... it's an unpleasant experience'.

Sensory characteristics:

'In terms of taste and so forth ... well, it has got to be attractive'

'if I am not satisfied with the product I will, next time, not buy it'

'the taste sometimes is a major issue for me ... plant milks ... normally do not taste nice'

'I must say that for me the taste is very important, ... I am actually disappointed [plant-based milk alternatives] tastes very watery or watered down and it lacks this creamy texture and taste which I really enjoy in milk'

'It is just not something I like, ... it does not taste like milk'

'the taste was a big off-putting factor ... it is a bit ... disappointing to have the watered-down taste, especially if you think of it as milk'

'[the dairy blend] just tasted like water ... I decided not to buy it anymore, even if it is cheaper' 'I did try some of them and that is why I feel that the taste is actually important to me ... Is it worthwhile to buy such a product?'

Percentage content of main ingredient:

'[the] main ingredient must be ... highest percentage'

'not pure as expected ... feel cheated, especially for price paid'

'[it is] expensive ... almond milk [only contains] 6% almonds'

'no extra additives'

'more natural'

Sub-theme 2b: Importance of Functionality

Vegan or Vegetarian:

'always look at the ingredients'

'very focused on using plant-based [milk alternatives]'

Food Allergies:

'focus on what [products selected are] made of'

Fitness:

'to fill up with proteins to prevent [one's] body from losing protein when [one] have just exercised'

Sub-theme 2c: Importance of Acquired Product Properties

Price:

'is the price reasonable'

'it sounds terrible, but it will be price'

'price is still important to me'

'the price plays a big role'

'cost'

'I usually see which one is the cheapest'

'affordability'

'if the price is competitive compared to dairy milk'

'South Africans in general ... are very price conscious'

'if these alternative products are very expensive, then people [would] just avoid them'

'it will still be a small group who can actually afford to buy these products'

'normal'

'Is it worthwhile to buy such a product?'

'acknowledge that [milk alternatives] are not cheap products'

'still prepared to buy them ... because of health'

'cheaper'

'cheaper products are not necessarily better'

Availability:

'If it is in the shop and it is reasonable, I would use it'

'cannot drive to [several] shops to find suitable products'

Sampling:

'the whole box'

'just taste it and decide whether you like it or not'

Pack size:

'My perplexity with that is that it is usually a litre and, in my recipes, I never need a whole litre'

Packaging and labelling:

'look at the available products and compare them'

Sub-theme 2d: Importance of Promotion

Marketing and recommendations:

'I do not think ... there is actually a lot of marketing'

'I think if they advertise it a bit better, then we would be more inclined [to use milk alternatives]'

In-store location:

'some of the milk [alternatives are] packed with the health products and not with the milk ... you do not always go to the health products aisle'

Familiarity:

'familiarity for me is the overriding thing ... I have got to know the milk'

'you ... grab the familiar'

'I usually go for what I know'

'feel it tastes nicer'

'some of the brands do not taste really good'

'I am not terribly brand loyal ... but I do need to know them'

Label claims:

'farmer-friendly'

'I actually want to be able to see that, more than just them putting it on a little label'

'I just don't believe it ... so I do not even give attention to it'

'it does not influence my purchase intention, instead, it would make me frown'

'I'm sceptical of such things'

'claims cannot always be trusted'

'I do not think that I will look at those a lot because from what I have seen there are many ways of going around these things'

'you can say things which are actually misleading'

'I will read the label very carefully because I also know that it can say it is enriched when hardly anything is added to it'

'selling points'

'selling gimmicks'

'marketing'

'the majority thereof not true'

'I'm not impressed with things like organic ... it should have an impact on product quality, but does it really?'

'GMO is not necessarily a bad thing ... some products need to be modified [for increased availability]'

'when it comes to the other milks ... I am a bit of a sceptic ... they are being advertised as this and that so I am sceptical of various health benefits'

'it might be good for your growth ... how do I know?'

'will not pay more for something like that'

'when I go to the shop I just take the milk off the shelf ... it is really something that I am not too worried about'

Sustainability:

'there are awesome [dairy] products [available] ... that ... follow sustainable farming practices'

Animal welfare:

'I do not want to support animal agriculture'

Origin:

'would rather choose a South African product'

'want to know where it comes from'

'I do tend to look at the country of origin because I do not think it is quite appropriate for us to import milk ... just from a carbon footprint point of view'

'would check that it is actually made in South Africa'

'will try to buy South African products'

'it is the right thing to do'

'to support the local farmers'

'It is not easy being a farmer in this country'

'I really feel that they are the backbone of our economy in many ways'

'being able to support South African farmers, I think it is very important'

Sub-theme 2e: Evaluation of Products and Categories

UHT Milk Alternative Product Category:

'I did not know much about it, that is the fact'

'I do not like the taste of alternatives ... I drink ... normal ... cow milk'

'I always thought [milk alternatives] taste bad ... so I will simply not purchase it again'

'watery, tasteless and not enjoyable'

'aftertaste'

'go into the experience looking for differences'

'always trying to figure out how it is different from ordinary [cow] milk'

UHT Plant-based Milk Alternatives:

'did not see it as milk'

'something you use in cooking'

'it is definitely not milk'

Almond Milk:

'you want to try it when you are on a diet'

'almond milk ... is a good alternative for some of the diets'

'nutty'

'rich, nutty taste'

'then you eat it cold'

'almond milk ... was best to use it when it was ... refrigerated'

'As soon as you put the almond milk into a hot liquid then it turns like sour milk ... [like] milk that is old'

'almond milk does not work in coffee at all ... it makes the coffee taste like soil'

'I drink my coffee black, but my daughter drinks it with almond milk and from what I have seen, it puts me off. As soon as she puts the [almond] milk in the coffee, it turns like sour milk – it has little pieces in it.'

'black'

'barista almond milk'

'the fat lies so thick at the surface inside the box, the milk cannot be poured ... and you do not get the fat mixed into the milk again'

'remains floating on top'

'is not a pleasant experience'

'absolutely delicious'

'bring everything together'

'tried to freeze it ... and it did not work at all'

'only 6% almonds'

'quite more expensive than normal milk'

'some of the brands do not taste really good'

'a bad aftertaste'

'a plant-like taste and smell'

'a terrible taste'

'a plastic taste'

'no substance'

'no mouthfeel in tea'

'watery'

'too sweet'

'tasting thinner than water in tea'

'smelling like baby food'

'creamy mouthfeel'

'curdling in tea'

'it tasted very bad'

'didn't like it'

'not as great as expected'

'it is not milk ... [it] is a plant product'

'would not use it again'

'almond milk is nice'

'it tastes lovely ... I love it'

'unsweetened almond [milk] ... I am very happy with the product'

'I am crazy about nuts ... that texture and aroma when you open it ... the whole concept of nut milk'

'I am now using the [brand] almond milk just because it tastes ... it is really delicious'

'is probably a healthier alternative'

'associate ... almond milk with an active lifestyle'

Soy Milk:

'soy is not for people'

'it is not actually good for you'

'the name 'soy' is off-putting'

'very much against using soy'

'do not think it is good for my body'

'I just do not think that soy is a very healthy product'

'would not use it again'

'way too watery'

'grainy'

'grass-like'

'lacking creaminess'

'beany taste and mouthfeel'

'looks like sour milk'

'plant-like'

'powdered milk taste in tea'

'better ... in tea than when consumed as is'

'baby porridge aftertaste'

'tasting like laboratory-created milk'

'it tastes horrible'

'cannot imagine ... drinking soy milk'

'know it tastes bad'

'a lot better than rice milk'

'less of an aftertaste'

'being smoother'

'the closest to normal [cow] milk'

Rice Milk:

'they really couldn't use anything else'

'had no reason to try it'

'just a lot of carbs'

'no nutritional value'

'not in their frame of reference'

'strange'

'not ... with milk'

'foreign'

'Chinese origin'

'watery'

'grainy'

'bland'

'tasteless'

'neutral'

'baby food taste'

'aftertaste'

'does not taste like anything'

'soapy taste'

'brownish'

'clay-like'

'is not particularly appealing'

'it just was not milk'

Oat Milk:

'never had any experience with oat milk'

'I probably would have just passed it ... I probably would not have bought it'

'Why would I want to have oat milk? I can eat oats and then I do not want to put oat milk on my oats!'

'watery'

'grainy'

'malt-like'

'it will turn thick in your mouth'

'drinking the milk left over in a bowl of [high-fibre cereal]'

'diluted oats'

'something that one harvested and combined with water'

'drinking water out of a glass after drinking milk out of the same glass'

'do not like the taste at all'

'did not understand the milk concept behind it'

'creamy in colour'

'oat milk is very good'

'just to try it'

Coconut Milk:

'often use coconut milk'

'coconut milk makes dishes creamy'

'much nicer than the texture of soy milk'

'lovely taste and texture that it can give to ... meals'

'rich'

'never thought of it as a milk alternative'

'ingredient'

'no mouth feel'

'tasting thinner than water'

'tasting like sour yoghurt'

'coconut milk on its own as sort of a beverage is quite nice'

'watery'

Cashew Milk:

'rich'

'nutty'

'too sweet'

'will not taste nice'

'is ... basically ... the nuts or the actual plant material, but the diluted flavours'

'would not necessarily buy it'

UHT Dairy-based Milk Alternatives:

'because it is so heat-treated'

'less healthy than normal milk'

'long-life milk'

'could switch easier'

Lactose-Free Milk:

'unnecessary'

'close enough to normal milk'

'I could not actually tell the difference between the coffee when having full cream or using this alternative'

'If you did not know you put it in [hot beverages], you would not taste the difference'

'basically be normal milk'

'creamy'

'sweet'

'rich'

'smelling good'

'similar to evaporated milk'

'too creamy'

'too sweet'

'off-putting orange-brown colour'

Functional, Enriched and Fortified Milk Alternatives:

'unnecessary'

'gimmicks'

'growth milk'

'just seem to be more expensive'

'what kind of weird things did they put in there'

'what is safe to give to children and what is in that growth milk?'

'too creamy'

'having a UHT taste'

'leaving a film in one's mouth'

'very sweet'

'brownish in colour'

'tastes good'

'just normal milk'

'creamy'

'velvety'

'sweet'

'rich'

'evaporated milk-like taste'

'pale'

'chocolate milk, or chocolate milk-like-products, are an excellent post-run or post-race recovery drink'

'notion'

'nice and creamy'

'rich'

'tasting like milkshake'

'having a pleasant aroma'

'very nice'

'too creamy'

'too sweet'

'thick'

'having an artificial taste'

'sticky in mouth'

'tasting synthetic'

'a very protein-like, thick taste'

'tasted like drinking yoghurt'

'unpleasant as a milk'

Dairy Blend Milk:

'lack creaminess in coffee'

'too thin'

'need to add more than normal milk to have a milk experience'

'ingredients puts [one] off completely'

'bad expectation already'

'it was not as bad'

'too rich'

'artificial taste'

'cooked taste'

'taste similar to powdered milk or curdled milk'

'not tasting like real milk'

'the milk blend just tasted like water ... I decided not to buy it anymore, even if it is cheaper' 'not bad'

'having a similar appearance to milk'

'like cream or evaporated milk'

Sub-theme 2f: Evaluation of Product Preferences

'I did not enjoy plant-based UHT milk alternatives, but I like dairy-based UHT milk products'

'[I] do kind of view them differently, ... maybe in a more negative sense towards the plant-based products whereas I might feel more open towards the dairy-based products'

'cow milk is normally available'

'I still prefer my real milk'

'I will choose the normal milk'

'I don't like the taste of the alternatives ... so ... I am on the normal cow milk'

'I prefer my milk as natural as possible'

Sub-theme 2g: Impact of Familiarity and Experience on Product Evaluation

Limited or no familiarity:

'not familiar with most of these 'new' types of milks'

'did not know much about it'

'have no idea what that is'

'only familiar with a few'

'have not tried it'

'the only one I was more familiar with was the almond milk ... I did not really know any of the other alternatives'

'have noticed them'

'definitely aware of it ... but never purchased it'

Experimental or occasional purposeful use:

'did try'

'have tasted'

'but do not use it often'

'tried it just to see what it tastes like'

'used it in cooking'

'used it often'

'use it in specific things like making some curry dishes'

'I used it for about six months while I was pregnant.'

High familiarity and exclusive use:

'do not use the normal milk'

'use the alternatives'

'have stopped using [cow] milk completely.'

'normally use soy milk and almond milk'

'make any type of food with it that [the participant] used to make with normal milk'

'a solution in terms of what [the participant] can use'

Familiarity, past experience and future purchase intentions:

'If you go past the milk aisle and you see there is all these loads of milk and then there are just a few other boxes of alternatives you will grab the familiar ...'

'I have tasted soy milk and it was not pleasant at all'

'I tasted rice milk once and did not like the taste'

'I tasted oat milk ... it is not very nice'

'almond milk was not very nice'

'so I did not do it again'

'I have preferred to go without it'

'I have used some of the products, but I choose not to use them'

Consumer Attitudes

Attitude toward Plant-based UHT Milk Alternatives:

'I will buy the others only if it is part of a recipe'

'I think maybe some of the plant-based alternatives I could use for cooking but not really for just drinking'

'I am not really convinced that it is more healthy'

'Soy milk, no. Because I know it tastes bad'

'I did taste soy milk, I will not use it again'

'Soy ... it will not happen again'

'soy milk ... I do not think I would buy that one.'

'almond milk I have also used in cakes'

'I will purchase almond milk again'

'looking at almond milk ... especially if you look at the different dieting crazes where they try to reduce your overall carbohydrate intake'

'did not like the taste'

'I think the cashew milk is interesting. I certainly would like to try it because I am very fond of cashews ...'

'I love cashews'

'Cashews I would be a little bit suspicious of because I like cashew nuts but I do not see why you would need to make milk out of them or how you could even make milk out of them'

'I would be very tempted by the oat drink ... I love oats'

'[I] see no need for [oat milk]'

'Oats milk, no'

'Why would I want to have oat milk? I can eat oats and then I do not want to put oat milk on my oats!'

'not in their frame of reference'

'a last resort if there's nothing else'

'use it in cooking and baking'

'rich taste'

'genuinely tasty Asian cuisine'

Attitude toward Dairy-based UHT Milk Alternatives:

'I will stick with the dairy-based'

'dairy-based ones were nice, I would buy them'

'if I had the choice I would still be using dairy-based'

'It is a milk alternative, but it is still a milk'

'will not want to use the dairy ones'; and were 'not going to buy the dairy-based alternatives'

'lactose-free ... definitely has its place in the sense of lactose intolerance'

'will continue to purchase lactose-free milk'

'I like the look of the simple-looking lactose-free milk because it does not sound gimmicky at all ... It just says it is lactose-free milk. ... I would go for that one'

'Lactose-free, no I do not have a problem with lactose'

'Lactose-free milk ... I am indifferent to it'

'I don't have a problem with lactose, so I am not going to drink lactose-free'

'growth milk ... it is probably for toddlers'

'I think it is for young growing individuals'

'would not purchase it'

'it is unnecessary'

'a bit suspicious of what is in that growth milk?'

'unnecessary'

'a gimmick'

'would not associate that with milk'

'not too keen to buy that'

'protein-enriched sports recovery ... is that a lot of nonsense they are talking?'

'dairy-blend ... I am quite curious ... I will try it'

'Milk blend ... I know and it is not bad'

'I still prefer my real milk'

'I am used to normal milk'

'I like too much dairy'

'you will always use the basic milk'

'If I am buying milk I will try to keep to the real product'

'[From] what is currently available, nothing has impressed me so much that I can say 'Yes! I am going to sacrifice the milk that I am currently using and replace it completely by one of these products'

'I do not think I will move on to something like this on a permanent basis'

'I would not try to buy a substitute or a sweetened thing'

'I just want to know that it is milk'

Table F.3: Theme 3 – Expected Outcome

THEME 3: EXPECTED OUTCOME
'other milks'
'those people'
'people like that'

Sub-theme 3a: Health Needs

'some people cannot drink ... cow milk'

'they use it for medical reasons'

'I cannot use dairy products ... I'm allergic to milk'.

'the doctor suggested milk alternatives'; 'it will obviously be because of some or other medical reason'

'trying alternative milk products because of allergies'

'there are definitely people who are allergic to milk ... a plant-based product ... might work for them'.

'if somebody [use milk alternatives] because of health needs ... they will totally replace milk [with] these other products'

'there are definitely people who are allergic to milk they might replace it totally with ... a plant-based product which might work for them'

'everything will be replaced by such people'

'I have given up drinking milk'

'[milk alternatives] is all I can use now'

'most people who are lactose-intolerant cannot handle soy either'

'I would never purchase nutty alternatives or coconut, because I am allergic to it'

'[I'm] also allergic to nuts, consequently almond [milk] does not work at all'

'[milk alternatives are] for people who are lactose-intolerant'

'it is a genuine concern that there are so many lactose-intolerant people'

'people who are lactose-intolerant might find these lactose-free milk alternatives ... useful'

'many people are lactose-intolerant, especially in certain population groups'

'there are many more people than just my daughter who need [lactose-free alternatives]'

'I tried to get more enriched milk for ... the children'

'[I] would probably use the enriched milk especially when your children change from breastmilk, or from bottle milk to normal milk'

'my daughter has lactose sensitivity ... she does use the lactose-free milk products'

'my son is lactose-intolerant and uses rice milk'

'My husband drinks normal milk ... I use lactose-free to avoid sinus ... [the] children use various plant-based milks for health reasons'

'my eldest daughter and sister-in-law is lactose-intolerant'

'it is for specific people'

'when someone really cannot drink milk'

'those people'

'some people'

'people like that'

'other milks'

'for those people'

'if it is for health ... they will support it'

Sub-theme 3b: Vegan or Vegetarian Lifestyle

'[we] use plant-based ... [we are a] vegan household'

'alternatives are useful ... for a vegan lifestyle'
 'she uses this because of her being vegan'
 'I read ... milk can cause cancer'
 'my reasoning is just that I do not want to support animal agriculture'
 'the poor cows that continually produce milk'
 '[I] consider environment, animal welfare, health'
 'more and more people use milk alternatives ... the reason ... is being sensitive to the environment
 – in other words, the so-called green issues'
 'definitely more environmentally friendly'
 'stewardship is important'
 'I think there is some sort of status in well-off social circles that drinking plant-based milk alternatives
 is better'
 'some people do it for the status of using plant-based milk alternatives'
 'the products might be available, but it will still be a small group who can actually afford to buy these
 products'
 'discern very specifically between what is plant-based and what is animal-based'; 'there's no need to
 use dairy'
 'I am vegan so I do not use the normal milk, I use the alternatives'

Sub-theme 3c: Weight Control

'I would not use it purely for drinking - except if I wanted to do it as part of a weight-loss diet'
 'if you do Keto or Banting type of diets ... [one] would use it'; and 'use it for a specific diet'
 'read quite a lot about the different products'
 'if you look at the different dieting crazes where they try to reduce your overall carbohydrate intake
 ... if it is less kilojoules or something then you want to try it when you are on a diet'
 'I turn around the box to check the carbs ... then I compare'
 'carbs-wise ... it's why I use almond milk'
 'there are different ways of eating - like the Paleo and Banting and all of these different diet types ...
 certain diet types promote these alternatives'
 '[there are] different views of the perfect diet'
 'those against dairy say that almond milk is a much better option'
 'many diets condemn cow milk'
 'I used soy milk ... they said normal milk leads to weight gain'
 '[one needs to] find something that fits into your diet'
 'if you are on a diet, you might decide for that period of time, to use ... almond milk'; 'if you are on a
 specific diet ... not on a permanent basis'
 '[I] will not buy it for the whole family ... just add on what I need'

Sub-theme 3d: Lifestyle

'fitness fanatics'
 '[I] think of a ... healthier, safer product to consume'

'it is a trade-off between going to see a doctor or putting something that is safer for your body ... into your system'
'your health matters'
'use it for health'
'people are much more health-conscious'
'people drink it to increase their protein intake'
'a chocolate beverage after running works really well ... one wants the protein and sugar after exercising'

Sub-theme 3e: Experimental

'milk alternatives can be used in baking'
'almond milk ... will probably be for cooking'
'[I] definitely have used almond milk ..., even the coconut milk, in recipes'
'[I] used coconut milk in Indian cuisine'
'[I] use it for certain dishes'
'I will definitely buy [milk alternatives] ... it is good to try new things'
'[I'm] willing to explore with it for baking'
'[I'm] willing to try it in different situations'
'something like coconut milk tastes good in cooking'
'almond milk is very nice in your breakfast or in a smoothie'
'coconut milk ... is perfect in curry dishes'
'some restaurants make cappuccino with almond milk which is tasty'
'it can quite enhance your cooking'
'[milk alternatives] are wonderful for cooking and baking'
'[I] might use some of these products ... as add-on to milk'
'I will not necessarily ditch normal milk'
'I think I would try it'
'[I] use it mostly in baking ... but would not use it in daily life'
'just a curiosity that some people want to try out'

Sub-theme 3f: Purist Dairy Milk Only

'fad'
'I will be a bit sceptical. I will not try it easily'
'you start wondering if all of these are really needed or are some of them being marketed as ... gimmicky stuff?'
'I will not drink it'
'there is always a bit of a funny taste ... an artificial taste that I do not like'
'I will not cut out dairy. I love dairy and I think it is quite healthy, so I consume milk'
'most of my family do not have a good perception of alternative milk'
'I think the typical South African, most of them, think it's nonsense'
'[I] like normal milk'
'I'm not a big fan of all the alternatives'

'I like too much dairy'

'that is such a gimmick'

'milk is such a staple food'

'it is something you use a lot ... you will always use basic milk'

'[society] sometimes think it is a fad – especially if they do not have health issues or kids with health issues'

'I want to know that this is a pure product'

'I want to know ... that the product is really the real thing not added ... other stuff'

'I actually read the labels ... I want to see what is added and why it is added ... I do not like a lot of stuff that is added to make it last longer'

'the more natural, the happier I will be with the product'

'normal'

'real'

'[I] firmly believe in the benefits of normal dairy milk'

'I use real milk. I use full cream milk and I use cream. I use dairy products'

'knowing where your food is coming from ... is very important'

'I actually prefer milk from the farm'

'I am one of those people that ... will take the product as straight as possible from the cow'

'I use raw milk ... and prefer something that is unprocessed'

'[I] always want to know where the product came from'

Table F.4: Theme 4 – Social Norm

THEME 4: SOCIAL NORM

Sub-theme 4a: Support from Significant Others

'from friends that are the same age as me, there is a lot of support ... a lot of them are doing the same thing'

'when we talk about dairy-free products they are not very positive ... in the circles that I go about, they do not have a positive connection to it'

'milk alternatives are not generally used in South Africa'

'a lot of people are quite conservative ... [they] stick with the dairy side because that is what they grew up with'

'the typical South African ... think it is nonsense'

'many people ... will not really go for these things'; 'people ... are set in their ways'

'[South Africans are a] traditional nation ... they grew up with cow milk'

'If it is for health benefits, I think they will support it'

'lack of knowledge'

'people don't always understand milk alternatives'

'if you don't have a problem [with milk] then you wonder who drinks all these thousands of [alternative] boxes'

'I would not say there was support, but there was also not really any negative feedback from them'

'the rest of my family will not even say anything about it'

'my family is very open to things like that, it will not matter'

'definitely a turn in attitudes to be more positive towards milk alternatives'

'Yes, I think so. If I ... I am doing this because I radically have to lose weight or something, they will support me'

'[due to] medical reasons ... [they are] very supportive'

'friends and people around you are relatively supportive'

'[they are] very supportive and understanding'

'my mom kept it in the house for when I visit'

'everyone was very supportive ... they just didn't want to drink it too'

'people that gym and are engaged in an active lifestyle, are definitely more aware of the milk alternatives'

'quite a few runners are aware now that chocolate milk or chocolate milk-like-products are an excellent post-run or post-race recovery drink'

'people are very critical'

'[it] is not well accepted'

'scepticism'

'lack of understanding from friends'

'strange'

'milk alternatives are becoming ... a more upmarket product and it is expensive'

'they think you are stuck-up'

'[they] do it for the status of using plant-based milk alternatives'

'people cannot understand it'

'in my direct environment, my friends and family, it is not very accepting'

'[I] surround myself with people whose opinions I value'

'[I] try to find support in similar groups on social media'

'[They are] very interested, or they are doing it themselves as well'

'many people around here also use milk alternatives themselves'

'Our families are very supportive'

'my mom ... takes exceptional effort to accommodate [his lactose intolerance]'

'fine with it ... if each one use their own preference'

'they can purchase their own milk'

'prepare their own meals'

Sub-theme 4b: Importance ascribed to Opinions of Significant Others

'will try not to offend hosts'

'decline foods with dairy, but not create issue around it'

'conviction is more important than friends' approval'

'health is more important'
 'if my friends were to give me their opinions based on my situation, then I think that it will really matter'
 'their opinions would not really matter'
 'this is my choice'
 'it is my choice and I have got my reasons for doing it'
 'my biggest challenge is my husband who is very stuck in his ways ... we will end up having quite heated discussions'
 'my mother-in-law ... thinks that I am just crazy'
 'my husband looked at me like I'm crazy ... there is absolutely no support'
 'it will not have any influence on me'
 '[I] will not really care about their opinions if I want to use milk alternative products'
 'these things don't bother me at all ... I'm doing it for my own good'

Table F.5: Theme 5 – Control

THEME 5: CONTROL
<p> 'I do not really see a need for myself to utilise them very much' 'would not be a good choice personally' 'I would be willing to explore with it, ... I will not necessarily ditch normal milk' 'I would not exchange normal milk for plant-based alternatives – then I would rather go without' </p>
Sub-theme 5a: Practical Limitations
<p> <i>'We tasted it, it is working and we adapted'</i> <i>'I do not think I will be able to sustain it'</i> Affordability: <i>'the reason why [I] would not purchase milk alternatives is affordability'</i> <i>'the price plays a big role'</i> <i>'price is a problem though'</i> <i>'normal milk'</i> <i>'what is the price when you compare it to something like normal dairy milk'</i> <i>'is the price competitive compared to dairy milk, it needs to be competitive'</i> <i>'some of the milks like almond milk ..., is quite expensive compared to other milks'</i> <i>'Some of the milk is packed with the health products and not with the milk. You do not always go to the health products aisle ... you automatically think it is more expensive, this is the expensive stuff we are passing by'</i> <i>'the products might be available, but it will still be a small group who can actually afford to buy these products'</i> <i>'it is difficult to sustain the cost and find a suitable product within a budget'</i> <i>'the most important consideration is affordability'</i> <i>'it sounds terrible, but [the determining factor] is price'</i> </p>

'is the price reasonable'

'It is expensive and we acknowledge that they are not cheap products, but we are still prepared to buy them ... because of health'

Availability:

'sometimes we find it a little difficult to get hold of [milk alternatives]'

'[we] need to travel to the city to find it'

'sometimes you do not get hold of it'

'we cannot simply buy what we want at our closest retailer, since all the options are not there'

'[I] used to purchase from a specific retailer and they had a big variety, it's a pity, they have removed it'

'if I do not find it at this shop, I am not going to drive to another shop to go and find it'

'it makes it hard; you have to drive to a specific retailer to find it'

'when on holiday, you are not guaranteed that you will find something suitable'

'we have to drive rather far ... to purchase these things'

'I don't use it fast enough ... then it goes off'

'I will move away from the milk alternative and not purchase it, if I can't find a small pack size'

'I tried to freeze it. I know it says on the box not to freeze it, but I tested it because I could not get it in smaller containers and it did not work at all'

Sub-theme 5b: Product Sensory Limitations

'the hardest ... is the taste and texture'

'it is something completely new to which one needs to become accustomed to'

'it just tastes different'

'it is a taste to which you need to become accustomed to'

'It is simply different'

'the most important consideration is its taste in tea'

'If I find a product not good, I will change it for something else'

'I know it is a plant milk ... so my expectation is what it is'

Sub-theme 5c: Medical Limitations

'she's allergic to milk'

'some people cannot drink cow milk'

'we did not have a choice; he was very ill and we had to make drastic dietary changes'

'a milk allergy is not so difficult to manage, since there are many alternatives available to replace milk in the diet'

'I read the label ... then I find whey or soy included'

'[there are] lots of banting options, [but it's not suitable] for other needs, allergens are still included'

'I have an allergy of soy'

'many people allergic to milk are also allergic to soy'

'[I am] allergic to coconut and almond milk'

'[I am] allergic to nuts, consequently almond milk does not work at all'

Sub-theme 5d: Household Arrangement

Solitary living arrangement with complete own control:

'I am just on my own'

'I am the one deciding'

'[I] have total control of the products chosen'

'No one else influences the decisions'

'luckily, I can make my own ... decision as to what type of food or drinks I want to consume'

'[I] would be able to use milk alternative products, if [I] wish to do so'

'[I] have the final say and ... responsibility of picking anything'

'since I live alone, I can do as I please'

Shared living arrangement with overriding control:

'I normally do the groceries, so whatever I decide they have got to fall in with'

'I would be the one buying, so they would just have to take what they get'

'Complete control, I make the purchases'

'I do all the shopping, basically, [he] does not really have a say ... he just has to eat and drink whatever I have in the house'

'I am definitely in control of what products I choose to purchase'

'[I] believe very strongly in vegan food ... if he wants his own milk then he has got to buy his own milk ... If he does not want to eat my food, that is not my problem! That is what we have in the house'

'my opinion carries the most weight ... I purchase what I like'

'my husband will only purchase exactly what I tell him to purchase'

'I'm luckily married to a husband who listens'

'[I] make most of the decisions but ... I consider what they want'

'I am the one who does most of the shopping but members of the family ... can make requests'

'I am the one who does the groceries most of the time'

'they do not really give too much comment on the milk I buy'

Shared living arrangement with shared influence and control:

'We are all very much on the same page'

'In my home we both have the same vision so in terms of shopping we are both in control of what products we are using'

'both ... have equal control more or less about the decisions'; 'it is normally mutual'

'There is only the two of us and no children or anything like that, so it definitely gives you the freedom to know what you want and that is what you get'

'We all contribute to the shopping list'

'I actually try to accommodate preferences but we do not differ on the milk'

'we will make sure that we purchase something everyone likes'

'whoever goes on the day has the freedom to choose'

'if [husband] shops, he purchases what we normally use ... which is actually something your parents used ... because you know it works'

'I do the shopping, but will consider the other people's preferences'

'we are at least now in a space where we all know what must be purchased and what not'
'everyone's needs will be considered when we are shopping ... the alternative is only used for me'
'We all contribute and if somebody wants to try something different it is not difficult ... we will do that'
'since our diets are so diverse, everyone has a say'
'[I] do purchases myself and purchase different products for household'
'My husband buys his dairy milk and I buy my plant-based milk ... whoever buys the groceries will buy for both ... we have got an understanding'

Shared living arrangement with minimal own control:

'it is not my personal choice'
'I am residing with family members'
'my sister's choices will carry the most weight, she is quite influential'
'my husband always makes it difficult'
'I do not have all that much choice'
'my current close family with whom I reside, do not agree ... it is better to come to some agreement ... they feel rather strongly against it'
'if I had stayed all alone by myself, my choices would definitely have been different'

Household with children:

'My son's and my daughter's opinions matter a lot ... it will influence my choices'
'the children are the reason for our shift to plant-based'
'I was buying soy milk for my child'
'normally I do, but my husband came forward with almond milk and suggested that we try it'
'there is an on-going fight with my husband, but we do win, especially now with my one daughter as well'
'[we] teach our daughter to know by herself what products contain'
'occasionally we buy something new for her to taste ... then she can find out what she likes'

F.2 Data Analysis – Progression of Codes to Sub-themes and Themes

Table F.6: Code List

Data Analysis – Progression of Codes to Sub-themes and Themes				
Emerging initial codes	Expanded codes	Description of expanded codes	Categories (used as Subthemes in presentation of findings)	Theme
Beliefs	Sa	health / allergies / weight loss	1a - Health	1 - Consumer Product Beliefs
	Se	lactose intolerance		
	Sh	negative health impact of cow milk on body		
	Sp	nutritional content		
	Ss	fitness related		
	Sf	discern clearly plant- vs dairy-based	1b - Associations with Plant-based vs Dairy-based Milk Alternatives	
	Sr	not milk / cannot be associated with milk / cannot replace milk		
	Saa	milk alternatives associated with plant-based options		
	Sb	safe	1c - Associated Product Category Properties	
	Sc	environmentally friendly		
	Sd	animal welfare		
	Si	novelty / foreign		
	Sj	fad / marketing gimmick		
	Sq	UHT long shelf life		
	Su	expensive		
	Sy	highly processed / additives		
	Sk	grainy / flocculation / poor texture	1d - Sensory Characteristics	
	Sl	creamy / rich		

	Sw	nutty		
	Sx	watery		
	Sbb	bland/tasteless		
	Sg	variety available	1e - Utility	
	Sm	suitable in hot beverages		
	Sn	convenient packaging available		
	St	suitable to drink per glass		
	Sv	suitable for baking / cooking ingredient		
	Sz	suitable with cereal		
Product evaluation	Er	food safety importance	2a - Importance of Intrinsic Product Properties	2 - Evaluation of Products
	Ev	importance clean ingredients list / limited processing / natural/ no additives		
	Ew	sugar content importance		
	Ex	calorie content importance		
	Ead	importance fat content		
	Eae	importance sensory characteristics		
	Ef	sensory		
	Eal	importance content percentage of expected main ingredient		
	Eu	importance base of product (dairy/plant/allergies)	2b - Importance of Functionality	
	Ed	plant health / weight control		
	Ee	dairy health / weight control		
	Eam	importance suitability for intended purpose/type of use		
	Es	price importance	2c - Importance of Acquired Product Properties	
	Eag	importance quality/health vs price		
	Et	availability importance		

	Eak	importance availability of test samples prior to purchase		
	Ez	convenient packaging importance		
	Eah	importance attractive/acceptable packaging, proper labelling, nutritional info		
	Ean	importance marketing, product knowledge and info available, in-store location	2d - Importance of Promotion	
	Eaf	importance brand / familiarity		
	Eai	importance of past experiences/significant other's recommendations in choice		
	Eaa	importance and believe - claims		
	Eab	importance sustainability / animal welfare		
	Eaj	importance origin / local farmer support		
	Ec	generic all alternatives	2e - Evaluation of Products and Categories	
	Ea	generic plant		
	Eg	almond		
	Eh	soy		
	Ei	rice		
	Ej	oat		
	Ek	coconut		
	El	cashew		
	Eb	generic dairy		
	En	lactose-free		
	Eo	functional / enriched / fortified (dairy)		
	Ep	sports recovery / protein enriched		
	Eq	dairy blend		
	Ey	preference product x over product y	2f - Evaluation of Product Preferences	
Experience / Familiarity / Use	Um	soy	2g - Impact of Familiarity and Experience on Product Evaluation	

	Un	almond		
	Uo	coconut		
	Ur	cashew		
	Us	oat		
	Uu	rice		
	Ux	plant-based chocolate milk		
	Uaa	coffee creamer		
	Up	lactose-free		
	Uq	growth (enriched/fortified)		
	Ut	cow milk (normal)		
	Uv	protein enriched (dairy) sports recovery		
	Uw	dairy blend		
	Uy	dairy cream		
	Uz	goat		
	Ucc	flavoured milk (dairy)		
	Ui	use with cereals		
	Uj	drink as glass of milk		
	Uk	use in hot beverages		
	Ul	use in cooking / recipes		
	Ug	past experience positive		
	Uh	past experience negative		
	Ua	not aware of MA		
	Ub	aware of MA, but never used		
	Uc	experimented with MA few times		
	Ud	use MA occasionally		
	Ue	regular use of MA		
	Uf	exclusively use MA		
	Ubb	MA not good choice personally		

Attitude toward products	Aa	generic dairy-based alternative	Attitude toward Dairy-based UHT Milk Alternatives	Consumer Attitudes - not theme on its own, but additional quotes linking Beliefs and Evaluation in first two themes
	Ad	cow milk (original)		
	Af	selective - certain dairy-based		
	Ab	generic plant-based alternative	Attitude toward Plant-based UHT Milk Alternatives	
	Ae	selective - certain plant-based		
	Ac	all alternatives (plant- and dairy-based)	Attitude towards Plant- and Dairy-based alternatives	
Expectations	Xa	health needs (milk allergies / lactose intolerance / growth needs) - regular/only use MA	3a - Health Needs	3 - Expected Outcome
	Xb	vegan / vegetarian lifestyle (environmental / animal welfare / animal derived product concerns) - regular/only use MA	3b - Vegan or Vegetarian Lifestyle	
	Xd	weight control (selection based on dietary recommendations / recipes) - temporary to regular use of MA	3c - Weight Control	
	Xf	lifestyle (in support of perceived benefit for active, healthy lifestyle for self/family) - purposeful occasional to regular use - not eliminating cow milk	3d - Lifestyle	
	Xe	experimental (desire to try something different/new, use in cooking/baking) - occasional use of MA, not eliminating cow milk	3e - Experimental	
	Xc	purist dairy milk only (firm belief / desire to consume pure, natural cow milk only, sceptical of MA) - non-use of MA	3f - Purist Dairy Milk Only	

Norms	Na	SO positive and participate in behaviour	4a - Support from Significant Others	4 - Social Norm
	Nb	SO supportive but non-participation in behaviour	4b - Importance Ascribed to Opinions of Significant Others	
	Nc	SO neutral - no concern about behaviour		
	Nd	SO non-supportive - ridicule behaviour/create conflict/consider MA as fad		
	Ne	SO allow behaviour - participate in opposite behaviour		
	Nf	SO cannot agree to mutual behaviour - participate in opposite behaviour		
	No	other		
Controllability	Ca	influenced by price	5a - Practical Limitations	5 - Control
	Cb	influenced by availability		
	Cc	sustainable in personal circumstances		
	PBa	possible/viable to use MA in personal circumstances		
	PBb	not possible/viable to use MA in personal circumstances		
	Cd	influenced by product perceived acceptability quality/sensory	5b - Product Sensory Limitations	
	Ce	influenced by allergies/medical reasons	5c - Medical Limitations	
Self-Efficacy	Fa	solitary living arrangement - complete own control	5d - Household Arrangement	
	Fb	shared living arrangement - overriding control		
	Fc	shared living arrangement - shared influence and control		
	Fd	shared living arrangement - minimal own control		
	Fe	household with children - influenced by needs/preferences of children in household		

Attitude toward behaviour			<i>Attitude toward use of dairy-based milk alternatives</i>	Consumer Intentions toward UHT Milk Alternatives - not theme on its own, but additional quotes linking five themes specifically to intentions
	TBb	would use MA dairy		
	TBe	would recommend MA dairy		
	TBj	enriched/fortified/growth		
	TBl	protein-enriched (dairy) sports recovery		
	TBm	lactose-free		
	TBp	dairy blend		
	TBa	would use MA plant	<i>Attitude toward use of plant-based milk alternatives</i>	
	TBd	would recommend MA plant		
	TBg	almond		
	TBh	soy		
	TBi	cashew		
	TBk	coconut		
	TBn	liquid coffee creamer		
	TBo	rice		
	TBr	oat		
	TBc	would use MA all	<i>Attitude toward use of milk alternatives</i>	
	TBf	would recommend MA all		
	TBq	would experiment with some MA		
Behavioural Intention	Blc	use all dairy MA	<i>Intention to use dairy-based alternatives</i>	
	Bld	use selection of dairy MA		
	Bla	use all plant MA	<i>Intention to use plant-based alternatives</i>	
	Blb	use selection of plant MA		

	Ble	use all plant- and dairy-based MA	<i>Intention to use milk alternative product category</i>	
	Blf	use selection of plant- and dairy-based MA		
	Blg	non-use of all MA		

APPENDIX G: CERTIFICATE FOR ENGLISH LANGUAGE EDITING



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20 January 2023

TO WHOM IT MAY CONCERN

The thesis "An integrated attitude-intention model describing the essence of South African consumer attitudes toward UHT milk alternative products" by Anjolize Wassenaar has been proofread and edited for language by me.

I verify that it is ready for publication or public viewing regarding language and style and has been formatted per the prescribed style.

Please note that no view is expressed regarding the document's subject-specific technical content or changes after this letter's date.

Kind regards

Anna M de Wet

SATI MEMBER 1003422

BA (Afrikaans, English, Classical Languages) (Cum Laude), University of Pretoria.
BA Hons (Latin) (Cum Laude), University of Pretoria.
BA Hons (Psychology), University of Pretoria.

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File size: 17.74M
Page count: 358
Word count: 115,522
Character count: 656,651
Submission date: 24-Jan-2023 07:30AM (UTC+0200)
Submission ID: 1998286531

