

**Exploring the role attitude, perception and knowledge plays
in consumers' decision and intention to purchase pearl millet**

by

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DEDICATION

To my Heavenly Father whom made all things work for good (Romans 8:28), I give all the praise and glory. To my beloved husband, parents and in law's, thank you for every prayer and word of encouragement.

DECLARATION

I, Chantelle Fourie, hereby declare that the dissertation (**Exploring the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet**), which I hereby submit for the degree of Master of Consumer Science at the University of South Africa, is my own work and has not previously been submitted by me for a degree at this or any other institution.

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

I declare that when words from a written source were used, the words were paraphrased and referenced.

I declare that I have not copied and pasted any information from the internet without specifically acknowledging the sources and inserting appropriate references to those sources in the reference section of the dissertation.

I declare that during my study I adhered to the research ethics policy of the University of South Africa. I also received ethics approval, prior to the commencement of data gathering, and have not acted outside the approval conditions. I declare that the content of my dissertation has been submitted to an electronic plagiarism detection program before the final submission for examination.

A handwritten signature in black ink, appearing to read 'Chantelle Fourie', with a large, stylized initial 'C'.

Student signature:

Chantelle Fourie

Date: 11/02/2021

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ABSTRACT

Pearl millet, as an indigenous grain, could assist in addressing dietary deficiencies leading to malnutrition and food insecurity. Some indigenous grains, such as pearl millet, are undervalued and underutilised due to consumers' unfamiliarity with the grains. This calls for a better understanding of the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet.

A qualitative exploratory study was designed, using purposeful, convenient and snowball sampling methods to recruit 36 participants, who had at least heard of pearl millet, from Mbombela in South Africa. These participants took part in 12 small focus group discussions, sentence completion and projective technique exercise. Focus group sessions were recorded, and data were transcribed for content analysis purposes, to identify the concepts and categories emerging from each question.

Findings suggest that participants were certain about their subjective knowledge (self-assessed) of pearl millet, reflecting on its health-related features specific to high-fibre foods. Participants' objective knowledge of pearl millet was directed at either human or animal consumption. Price, nutrition and health benefits, quality, taste, packaging material and functional use, were general and specific criteria that would influence participants' decision to purchase pearl millet. Participants' need for information on pearl millet could also contain their readiness to purchase this unfamiliar product. The intention to purchase pearl millet would further be stimulated through the behavioural beliefs articulated in the actions of producers, marketers and suppliers, directed at brand awareness, product samples, differentiation between pearl millet and other products, competitive pricing, and consumer information campaigns.

Participants' normative beliefs that would direct their purchase intention of pearl millet were specific to the nutritional and health benefits, value for money and price of the grain, quality and functionality of the product, sufficient consumer product information, availability and product appeal. Control beliefs that would divert consumers' attention away from pearl millet include the expensiveness of the grain related to other products, lack of consumer knowledge, and a nutritionally poor product. Purchasing portals that may influence the positive consideration and intention to purchase pearl millet were also identified. Moreover, purchasing barriers, that may negatively influence the intention to purchase pearl millet, resulting in inhibited product-related experiences and knowledge about the product, were explored.

The study has contributed to a better understanding of consumers' perception of pearl millet, and specifically which aspects of an indigenous grain would attract them to it. The important aspects that need to be addressed when marketing pearl millet, resulting in the decision and intention to purchase the product, were also presented. Future studies may need to determine the influence that improved consumer information has on the purchase and consumption of pearl millet from a wider consumer base in South Africa.

KEYTERMS

Indigenous crops, pearl millet, consumer purchasing decision; intention to purchase, Theory of Planned Behaviour, underutilised crops.

SINIKAMONGO

Letinye tinhlavu tendzabuko, njengemgobane, awudliwa ngalokwanele ngenca yekutsi awaketyeleki kumtsengi, ngaleyo ndlela-ke bese kuvimbeleka kusebenta kwawo. Umgobane njengetinhlavu tendzabuko, tingasita ekuswelakaleni kwekudla lokubanga kungondleki kanye nekungabikhona kwekudla. Loku kusho kutsi akube nendlela yekutsandza tintfo lenenzima yekukuvisisa ncono, kubuka kanye nelwati esincumeni semtsengi kanye nenhloso yekutsenga lomgobane.

Sifundvoluhlatiyo lesiphenyako lesiphatselene nesimo sasungulwa, ngekusebentisa ngenhloso, tindlela letifanele, kanye netindlela tekusebentisa tindlela tekusebentisa labangenele lolucwaningo kutsi batwebe labangenela lolucwaningo labange-36, lokungenani labase beva ngemgobane, basendzaweni yaseMbombela eNingizimu Afrika. Lalabangenela lolucwaningo batimbandzakanya emacenjini lagcilile lamancane la-12 ekucocisana, ekucedzeleni umusho kanye nemisetjentana yelisu lekulinganisa ngaphambili. Emaseshini emacembu lagcilile arekhodwa, kwatsi emadatha abhalwa kute ahlatiwe lakucuketse, kubona imicondvo nemikhakha levele kulowo nakulo mbuto. Lesifundvoluhlatiyo sentiwa futsi sachutjwa ngengcondvo yekulandzela imitsetfomgomo yekwetsembeka. Kwatfolakala nemvume yekucinisekisa kulandzela inchubo lemukelekile ngembikwekutsi kucalwe kwentiwe lesifundvoluhlatiyo.

Lokwatfolwa lapho kuveta kutsi labo labatimbandzakanya kulolucwaningo bebanesiciniso mayelana nelwati lwabo (batihlola bona) lwemgobane, basho netimphawu tawo letiphatselene nemphilo ekudleni lokunemucu lomnengi. Lwati lwemgobane lwalabo labangenela lolucwaningo belucondziswe ekudliweni ngumuntfu nome silwane. Tilinganisosimo jikelele naleticondze ngco letingaba nemtselela esincumeni salabangenele lolucwaningo kutsi batsenge umgobane kufaka ekhatsi intsengo, umsoco netinzuzo tetemphilo, lizingasimo, kunambitseka, liphepha lekuwugocoka kanye nekuwusebentisa. Sidzingo selwatiso lolumayelana nemgobane kulabo labatimbandzakanye kulolucwaningo kungaphindza futsi sibe nemtselelela ekulungeleni kwabo kutsi batsenge umkhcito longaketayeleki. Inhloso yekutsenga umgobane ingaphindze futsi ikhutsatwe ngekusebentisa tinkholelo tekutiphatsa letishiwo bakhiciti, bakhangisi nebetfulimkhcito, lokucondziswe ekucapheliseni ngaloluphawuntsengiso, kumikhcito, umehyluko emkhatsini wemgobane naleminywe imikhcito, intsengo lechudzelanako, kanye nemikhankhaso yelwatiso kubatsengi.

Tinkholelo letetayelekile talabo labangenele lucwaningo titawuhola injongo yabo yekutsenga umgobane beyiphatselene netinzuzo temphilo netekondleka, imali ilingane naloko lokwentiwe ngayo nentsengo yenhlavu, lizingasimo nekusebenta kwemkhcito, lwatiso lwemkhcito lolwanele kumtsengi, kutfolakala kanye nekutsandzeka kwemkhcito. Tinkholelo letilawulekako letingasusa umtsengi kutsi anake umgobane tifaka ekhatsi kubita kwawo nakucatsaniswa naleminywe imikhcito, kuswelakalo kwelwati kumtsengi, kanye nemkhcito lote umsoco. Tindlela tekutsenga letingaba nemtselela lomuhle kanye nenhloso yekutsenga umgobane tiphindze futsi tabonakala. Ngetulu kwaloko, tihibe

tekuvimbela kutsenga, letingaba nemtselela lomubi ekutsengeni umgcobane, lokungabanga kutsi kuvimbele sipiliyoni longaba naso ngalomkhicito kanye nelwati mayelana nalomkhicito, tahlolwa.

Lesifundvoluhlatiyo sibe neligalelo ekwatini kancono umcondvo webatsengi mayelana nemgcobane, kanye nekutsi ngutiphi tingoni ngco talenhlavu yendzabuko letingabaheha. Tingoni letimcoka lokudzingeka kutsi kugcilwe kuto nakukhangiswa umgcobane, letingaholela esincumeni nasenhloseni yekutsenga lomkhicito, nato futsi tetfuliwe. Tifundvoluhlatiyo tasesikhatsini lesitako kutawudzingeka kutsi tincume umtselela leyenta ngcono lwatiso lwebatsengi lolumayelana nekutsenga nekudla umgcobane kubatsengi ngebubanti lapha eNingizimu Afrika.

EMAGAMA LAMCOKA

Tilimo tendzabuko, sincumo sekutsenga semtsengi, umcondvo, lwati, indlela yekutsatsa tintfo, inhloso yekutsenga, Itiyori Yekutiphatsa Lokuhleliwe, indlela yemtsengi yekutsatsa sincumosincumo.

TSHOBOKANYO

Dingwe tsa dithoro tsa tshimologo, di tshwana le mabele a phele, ga di jewe mo go lekaneng ka ntlha ya fa badirisi ba sa di tlwaela, mme seo se kgoreletsa tiriso ya tsona. Mabele a phele jaaka dithoro tsa tshimologo, a ka thusa go samagana le ditlhaelo tsa kotlo tse di bakang phepelotlase le tlhaelo ya dijo. Seno se tlhoka gore go tlhalogannngwe botoka seabe sa mekgwa, megopolo le kitso mo ditshwetsong le maikaelelong a badirisi go reka mabele a phele.

Go thadisitswe thutopatlisiso ya tlhotlhomiso e e lebelelang mabaka go dirisiwa mekgwa ya go tlhopha sampole ya maikemisetso, e e maleba le e e letlang ba ba mo sampoleng go tshitshinya ba ba ka ngokelwang go nna karolo ya sampole go ngoka bannileseabe ba le 36, ba bonnye ba kileng ba utlwela ka mabele a phele, go tswa kwa Mbombela kwa Aforikaborwa. Bannileseabe bano ba nnile le seabe mo dipuisanong tse dinnye tsa ditlhopha tse di tlhophilweng go buisanela setlhogo, ditirwana tsa go feleletsa dipolelo le dithekeniki tsa tlhagiso ya maitsholo. Dikopano tsa ditlhopha tse di tlhophilweng go buisanela setlhogo di ne di rekotiwa mme *data* e gatisiwa gore go lokololwe diteng, go supa megopolo le dikarolo tse di tlhagelelang go tswa mo potsong e nngwe le e nngwe. Thutopatlisiso e ne e rulagantswe le go diragadiwa go lebeletse dintlhatheo tsa boikanyego. Go ne go bonwe tumelelo ya maitsholo a a siameng pele ga thutopatlisiso e simolola.

Diphithlelelo di tshitshinya gore bannileseabe ba ne ba totobetse malebana le kitso ya bona (e e lekeleditsweng) ya mabele a phele, ba lebeletse dintlha tsa yona tse di amanang le boitekanelo tse di totileng dijo tse di nang le faeba e e kwa godimo. Kitso ya bannileseabe ya mabele a phele e ne e lebisitswe go jewa ke batho gongwe go jewa ke diphologolo. Ditlhokego tsa kakaretso le tse di rileng tse di ka tlhotlheletsang tshwetso ya bannileseabe ya go reka mabele a phele di akaretisa tlhotlhma, dikotla le ditshiamelo tsa boitekanelo, boleng, tatso, sephuthelo le tirisego. Go batla tshedimosetso ya mabele a phele ga bannileseabe le gona go ka tlhotlheletsa go siama ga bona go ka reka setlhagiswa seno se se sa tlwaelegang. Gape maikaelelo a go reka mabele a phele a tlaa tlhosediswa ka ditumelo tsa maitsholo tse di tlhagisiwang ka dikgato tsa batlhagisi, babapatsi, batlamedi, tse di lebisitsweng temoso ya leinakgwebo, disampole tsa setlhagiswa, pharologanyo magareng ga mabele a phele le ditlhagiswa tse dingwe, ditlhotlhma tse di gaisanang le matsholo a go sedimosetsa badirisi.

Ditumelo tsa tlwaelo tsa bannileseabe tse di tlaa kaelang maikaelelo a bona a go reka mabele a phele di akareditse mesola ya dikotla le boitekanelo, boleng jwa tshetele le tlhotlhma ya dithoro, boleng le tirisego ya setlhagiswa, tshedimosetso e e lekaneng ya setlhagiswa go modirisi, go nna teng le keletsego ya setlhagiswa. Ditumelo tsa taolo tse di ka faposang maikaelelo a badirisi go tswa mo mabeleng a phele di akaretisa go nna tlhotlhwagodimo ga dithoro fa di bapisiwa le ditlhagiswa tse dingwe, tlhaelo ya kitso ya badirisi le setlhagiswa se se bokoa mo dikotleng. Go ne ga supiswa le mafelo a theko a a ka tlhotlheletsang go akanyediwa le maikaelelo a go reka mabele a phele. Mo godimo ga moo, go ne ga tlhotlhomisiwa dikgoreletsi tsa theko, tse di ka amang bosula maikaelelo a

go reka mabele a phele, di akaretsa maitemogelo a a tlhaelang malebana le setlhagiswa le kitso ka ga setlhagiswa.

Thutopatlisiso e tshwaetse mo go tlhaloganngweng botoka ga megopolo ya badirisi ka mabele a phele, bogolo segolo gore ke dintlha dife tsa thoro eno ya tshimologo tse di ka ba ngokelang mo go yona. Go ne ga tlhagisiwa gape dintlha tsa botlhokwa tse di tshwanetseng go totiwa fa go bapadiwa mabele a phele, go go tlaa lebisang kwa tshwetsong le maikaelelong a go reka setlhagiswa. Dithutopatlisiso tsa isago di tlaa tlhoka go swetsa ka tlhotlheletso e go nna le tshedimosetso e e tokafetseng ga badirisi go ka nnang nayo mo thekong le tiriso ya mabele a phele go tswa mo badirising ba le bantsi mo Aforikaborwa.

MAREO A BOTLHOKWA

Dijalo tsa tshimologo; mabele a phele; tshwetso ya modirisi ya go reka; mogopolo; kitso; mokgwa; maikaelelo a go reka; Tiori ya Maitsholo a a Rulagantsweng; sekao sa tseoditshwetso ya badirisi

SUMMARY

South Africa is regarded as an emerging economy facing many challenges regarding malnutrition and food insecurity. Pearl millet, as an indigenous grain, could assist in addressing local dietary deficiencies. Africa is regarded as the chief food producer of numerous cereals such as pearl millet, which is used to manufacture an extensive assortment of traditional local foods, although this processing is mostly done on a small-scale. Its cultivation by smallholder farmers in South Africa is still in its infancy stage. Some indigenous grains are undervalued and underutilised, which is attributed to consumers' unfamiliarity with the grains. Therefore, the lack of consumer awareness of this grain may hamper its use, which calls for a better understanding of the role attitude, perception and knowledge plays in the decision and intention to purchase pearl millet.

A qualitative, exploratory study was designed, using purposeful, convenient, and snowball sampling methods to recruit 36 participants from Mbombela in South Africa, to participate in 12 small focus group discussions, sentence completion and projective technique exercises. Before the main study commenced, the interview guide was piloted to determine the correct questions to be used in the main study. Data gathering took place through face-to-face recorded engagements with voluntary participants who complied with the inclusion criteria; one criterion was that they should at least have heard of pearl millet. The number of focus groups was determined through the saturation of the data. The recordings of the sessions were transcribed, and content analysis of the data was performed to identify the concepts that best explained each question that was put to participants. Categories were created from the grouped concepts that held a common meaning. The data that emerged in relation to each question was presented with quotations from participants to illustrate the categories. The principle of trustworthiness was applied to the study, and ethics approval was obtained before the main study commenced.

Findings suggest that participants were certain about their subjective knowledge (self-assessed) about pearl millet, although this knowledge may reflect an interpretative opinion rather than factual knowledge. Its grain-like association also resulted in health-related attributes being mentioned, specific to high-fibre foods. Pearl millet is not well-known among consumers, contributing to consumers' unawareness of its presence in food products and retail outlets. Participants' objective knowledge of pearl millet was directed at either human or animal consumption, with specific reference to consumer uses and food replacement options,

associated tastes, and associated appearance. Participants had no product-related experience with three specific pearl millet products that were presented, although they would purchase these products if sufficient information about the products were made available. Participants expected information on health-like features, peer recommendations to support it, product uses should be explained, and benefits should be highlighted. Price, nutrition and health benefits, quality, taste, packaging material and functional use were general and specific criteria that would influence their decision to purchase pearl millet.

The indigenous nature of pearl millet resonated with participants as a locally produced product that needed to be supported. Participants' need for information about pearl millet may contain their readiness to purchase this unfamiliar product. They claimed they would only consider it if attractive publicity, affordability, nutritional value, favourable reviews and availability are communicated and endorsed by specific retailers. The intention to purchase pearl millet would further be stimulated through the behavioural beliefs articulated in the actions of producers, marketers and suppliers directed at brand awareness, product samples, differentiation between pearl millet and other products, competitive pricing and consumer information campaigns.

Participants' normative beliefs that would direct the purchase intention of pearl millet are specific to the nutritional and health benefits, value for money and price of the grain, quality and functionality of the product, sufficient consumer product information, availability and product appeal. Control beliefs that would redirect consumers' attention away from pearl millet include the expensiveness of the grain in relation to other products, lack of consumer knowledge, and a nutritionally poor product. Thus, through this study, purchasing portals that may influence the positive consideration and intention to purchase pearl millet have been identified. Purchasing barriers have also been identified that may negatively influence the intention to purchase pearl millet, resulting in inhibited product-related experiences and knowledge about the product. The study has further contributed to a better consumer understanding of pearl millet, specifically which aspects of the indigenous grain would attract them to it. Important aspects that need to be addressed when marketing pearl millet, that may result in the decision and intention to purchase the product, were presented.

The findings also assisted in amending the conceptual framework to include the influence of specific purchasing portals and barriers that emerged from the findings, specific to the pearl millet decision and intention to purchase. From the findings, specific behavioural, normative and control beliefs related to the purchase of pearl millet could be identified that would assist product developers, marketers and suppliers. In addition, the theory of planned behaviour

(TPB), together with the consumer decision-making model, was found useful in identifying key elements that needed to be explored in determining consumers' decision and intention to purchase pearl millet. Moreover, this study has provided the food industry with clear directives on what consumers are looking for in an indigenous product such as pearl millet, and what would direct them to consider the product for future purchases. The clear lack of consumer knowledge and awareness of pearl millet may need to be addressed if consumer purchases and consideration of this grain is to improve.

Future studies may need to determine the influence that improved consumer information has on the purchase and consumption of pearl millet, from a wider consumer base in South Africa. It is acknowledged that the study was limited in terms of the exploratory design, study location and sampling strategies that were adopted. However, the purpose of the study was to explore consumers' understanding of pearl millet and what they would be looking for when considering an indigenous grain such as pearl millet for purchase and consumption purposes. This study has provided some insights in terms of what the food and retail industry could do to support, advocate and enhance consumer purchasing of pearl millet in South Africa.

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CHAPTER 1 - INTRODUCTION

This chapter aims to introduce the study, outlining the researcher's interest in the indigenous grain, pearl millet. The identified research phenomenon will be discussed, and justification will be given for the research. The research aim and objectives are briefly presented, and the research methodology and ethical clearance obtained for this study are outlined. The chapter ends with an overall layout of how information is presented in this dissertation.

1.1 OVERVIEW AND BACKGROUND

According to Van Vuuren (2014), South Africa is known as having one of the greatest biodiversity in the world. Reinten et al. (2011) support this view by pointing out that Africa has a wide variety of indigenous plants that support communities by providing staple food sources. Within South Africa itself, there is an enormous range of indigenous food crops (Directorate of Plant Production 2013). These resources are usually found in the rural regions, where poverty is most severe (Directorate of Plant Production 2013). Moreover, within emerging countries, these rural regions and communities consume primarily cereals and nutritionally poor foods due to their low-income status and poverty (Kale & Vairagar 2018).

South Africa is regarded as an emerging country with many challenges regarding malnutrition and food insecurity (Hall & Rudebjer 2016). According to the Global Nutrition Report there is one in nine people in the world hungry and Africa and Asia collectively share the largest numbers of all forms of malnutrition (Initiatives 2020). Pearl millet could be suggested as a means to prevent dietary deficiency and malnutrition among populations using millet as their basic staple food (Adéoti et al. 2017). This grain is the most widely grown in South Africa and comprises roughly 50% of the world millet production (ICRISAT 2015). Pearl millet is important for farmers, consumers and communities because this grain can be manufactured and consumed as a nutritious ingredient in a diverse range of products (Dias-Martins et al. 2018). In the international sphere, the production of this grain likely surpasses 10 million tons per year, to which India contributes nearly half (Directorate of Plant Production 2011). In Africa, pearl millet is used to manufacture an extensive assortment of traditional local foods, such as confectionery items, alcoholic beverages, flatbreads and porridge (Dias-Martins et al. 2018). However, this processing entails mostly small-scale production, or the products are produced in households (Dias-Martins et al. 2018). Pearl millet production in South Africa is still at entry level among smallholder farms, with farmers not taking full advantage of their sizeable land to grow this crop (Directorate of Plant Production 2011).

Marketers and manufacturers are dependent on consumer engagement and purchasing of pearl millet, and this study specifically intended to determine what consumers know and how they feel about pearl millet products. This grain is becoming more readily available in retail stores in South Africa. Woolworths® South Africa, for instance, launched a power grain breakfast bar range in 2017, and one of these bars contained pearl millet, dried apple and cinnamon. Health Connections Whole Foods® offers hulled or dehusked non-GMO millet, and Nature's Choice® includes millet flour within their product range. Thus, it is evident that millet products are indeed appearing in stores, and the room and potential for growth is endless.

This is a step in the right direction, yet millet has significant potential to be commercialised in South Africa, and it is therefore still undervalued and underutilised. Awareness of these products should be improved and established in food manufacturing companies and among consumers if it is to become more popular among consumers. It is therefore, vital to understand the consumer decision-making process in relation to indigenous grains, such as pearl millet, to effectively position this grain from a commercial point of view. In a study by Banerji et al. (2016), on consumers' willingness to pay for high-iron pearl millet in India, the researchers examined the nutritional information, branding and certification of pearl millet, and found that consumers prefer international branding and certification compared to state-level equals. There is a dearth of literature available regarding consumers' position relating to pearl millet, and less is written with a specific focus on the South African context that could guide consumers' understanding of pearl millet. A study by Guerrero et al. (2009) studied consumer acceptance of traditional food products, which indicated that many consumers consume indigenous crops without realising it (Cloete & Idsardi 2013), which may also be the case where pearl millet is concerned. Therefore, augmenting that consumers do not know what pearl millet is or even if they are consuming it.

In addition, consumers rarely engage in the decision-making process immediately without any former consideration; they typically search for alternatives or any information on the product prior to purchasing (Schiffman & Wisenblit 2019). Consumers generally contemplate whether or not they should buy a product before carrying out the action to establish if there are potential alternatives that would better suit their needs (Erasmus 2013). However, if they are not aware of the alternatives to pearl millet or of pearl millet itself as a consumable product, their decision-making in terms of this product may be very limited. Furthermore, consumers also have limited knowledge concerning indigenous crops and the potential health and nutritional benefits thereof, and are unaware of the possibilities of developing products from indigenous plants (Van Vuuren 2014) such as pearl millet. This grain has not been effectively commercialised (Directorate of Plant Production 2013).

Consumer knowledge involves three elements, namely objective knowledge, subjective knowledge, and consumption experience (Lee & Lee 2009). Objective knowledge offers the consumers the opportunity of linking their knowledge to a stimulus (sensory receptors), which is aligned to their subjective knowledge (Moorman et al. 2004). Subjective knowledge refers to the individual's perception regarding what they know about a subject (Moorman et al. 2004). Product-related experience is more intensely associated with subjective knowledge than objective knowledge (Whan Park et al. 1994). For this study, consumers' knowledge (which is a particular psychological influence in the decision-making process) is important in order to understand what consumers *think they know* in relation to *what they actually know* about indigenous crops.

The process of consumer decision-making has been explored through various consumer decision-making models, and in this study, the focus is placed on Schiffman and Wisenblit's (2019) model of consumer decision-making. In particular, the study focusses on the transformation phase of this model. This phase consists of all the psychological influences (motivation, perception, learning and attitude) applicable to the individual that are formed internally with the assistance of collected data. This information is stored in the form of cognitive frameworks in the individual's memory during consumer decision-making and prior buying experiences (Schiffman & Wisenblit 2019). This phase also includes the recognition of a need, pre-purchase search for information about the product, and an evaluation of alternatives (for example to pearl millet) that could be found by the consumer. Two further psychological influences of importance for this study are consumers' perception and attitude, which relate to consumers' overall knowledge of products (Schiffman & Wisenblit 2019). Consumer perception is influenced by external attributes such as perceived price, perceived quality, packaging, retail store image, and country of origin, among others. Furthermore, their perception of a product may also revolve around their perceived openness towards new products (Schiffman & Wisenblit 2019), which may apply to pearl millet as a novel product.

Fishbein and Ajzen's theory of planned behaviour (TPB) (1985) offers a view of consumers' attitudes that might drive them towards an intended purchase of pearl millet, as an example, and offer a perspective of the aspects over which a consumer has control when considering a product such as pearl millet. The TPB is therefore the potential predictor of behaviour, with perceived behavioural control, subjective norms, and behavioural attitudes noted to be the most important antecedents of an individual's intention to perform a behaviour (Fishbein & Ajzen 2011). The higher the consumer's attitude towards local food, the greater their intent to purchase (Shahtahmasbi & Rooch 2019). Also, the higher their attitude, the more positive the support they receive from friends, family and colleagues, and the stronger the perceived behavioural control, the stronger the intent to engage with that behaviour.

For far too long, marketers have placed too much focus on processed foods and ignored nutritious indigenous foods. This has led to the overconsumption of non-nutritious food, which ultimately affects human well-being (Nkondo 2015). Therefore, the focus should be placed on determining how indigenous crops such as pearl millet can be utilised further. It should be established how consumers perceive it, their attitude towards it, and their knowledge of the product, since these factors will determine how they react to it and what would be the driving elements in their decision to purchase pearl millet. The next section outlines the main problem statement of this study.

1.2 PROBLEM STATEMENT

As mentioned in the background of this study, South Africa is regarded as an emerging economy with many challenges in terms of malnutrition and food insecurity. With the emphasis marketers have placed on processed foods and the disregard that has been shown for nutritious indigenous foods, pearl millet could be suggested as a means to prevent dietary deficiency and malnutrition in populations where millet is a basic staple food. For this reason, pearl millet has significant potential to be commercialised, and awareness of these products ought to be improved and established if consumers are to be convinced to include this product in their basket of basic grains to consume. This calls for an understanding of what consumers know about pearl millet, and what their attitude and perception is thereof.

In Table 1.1, five recent studies are presented that focused on pearl millet. However, it should be noted that research on South African consumers' knowledge, perception, attitudes, and their purchasing decision towards this grain, is absent.

TABLE 1.1: RECENT STUDIES TOWARDS PEARL MILLET

Article	Description and Findings
1) Nutritional Value of African Indigenous Whole Grain Cereals Millet and Sorghum (2017)	This study placed the focus on finger millet, pearl millet, red and white sorghum, and the findings revealed fascinating nutritional profiles, including bioactive components, micro and macronutrients. The fibre content of these grains was highlighted, and findings indicated that these traditional wholegrain cereals could have a significant impact on human health due to their well-balanced nutritional composition, which can help in the management of many health disorders. Findings concluded that the food industry should work towards nutritional awareness and develop strategies to improve these products and implement them into new product development (Vila-Real et al. 2017).
2) Nutritional Value and Physicochemical composition of pearl millet produced in Benin (2017)	According to this study, the nutritional values of pearl millet varieties manufactured in Benin are not well-documented. This study aimed to evaluate the nutritional value of 22 varieties of cultivated pearl millet produced in Benin. The results within this study

Article	Description and Findings
	indicated that pearl millet could be suggested to prevent dietary deficiency and malnutrition in populations using millet as the basic staple food (Adéoti et al. 2017).
3) Changes in chemical composition and total energy as affected by fermentation and/or cooking of pearl millet flour supplemented with Moringa or Fenugreek seeds flour (2017).	This study investigated the influence of fermentation followed by the cooking of pearl millet flour, adding defatted Fenugreek flour or defatted Moringa flour to the chemical composition; total energy was also investigated. Findings indicated that the addition of raw and defatted Moringa flour increased oil contents and crude protein. However, with the addition of defatted Fenugreek flour and a 16-hour fermentation period, the crude protein and carbohydrate content was considerably increased. The results concluded that fermentation followed by cooking improved some of the chemical compositions of pearl millet flour, while the total energy content was not considerably influenced (Azhari et al. 2017).
4) Cognitive Performance in Indian School-Going Adolescents is Positively Affected by Consumption of Iron-Biofortified Pearl Millet: A 6-Month Randomized Controlled Efficacy Trial (2018)	The aim of this study was to identify the effectiveness of iron-biofortified pearl millet in improving attention and memory among Indian school-going adolescents. The results indicated that consuming iron-biofortified pearl millet enhances iron status and the cognitive performance in Indian adolescents (Scott et al. 2018).
5) Potential use of pearl millet in Brazil: Food security, processing, health benefits and nutritional products (2018).	According to this study, for the last 50 years, Brazil has been using pearl millet for animal feed and as a cover crop, but not for human consumption. The study investigated the potential for using pearl millet as an alternative security crop in Brazil, where it is not normally consumed. The study reported that pearl millet grains have immense possibilities as food products due to their minerals, dietary fibres, and high fibre content. Findings stated that pearl millet has great relevance for guaranteeing food safety, and various sweet and savoury nutrient products can be developed from this grain. This study concluded that pearl millet is a feasible cereal substitute for Brazilian consumers and has great potential to be used as a raw material in industrial products due to its health and sustainable appeal (Dias-Martins et al. 2018).

The studies presented in the above-mentioned table were mainly international studies that focused on the nutritional value and health benefits of consuming pearl millet. However, this does not reflect the entirety of what pearl millet has to offer, and it is vitally important to develop sufficient marketing approaches and increase the production of indigenous grains from Africa (Okole & Odhav 2004). Moreover, greater consumer awareness of the grain is required if it is to be successfully included among consumers' choice of food products. Little research has been done regarding pearl millet and consumers' attitude towards pearl millet, especially in South Africa, and no research has focused on consumers' intention to purchase pearl millet and what would drive their decision towards purchasing this grain.

According to a study compiled by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT 1996), millet marketing channels in numerous developing countries are undeveloped. The Directorate of Plant Production (2013) of South Africa supports this statement by reporting that numerous indigenous crops have not received much attention and have not been

commercialised. The three foremost reasons for undeveloped millet include the vast distance in terms of production areas and the central urban centres; widespread and unequal materials; and restricted demand in urban areas (Directorate of Plant Production 2013). Due to limited information, it is unclear what consumers' perception is regarding pearl millet and what external influences would affect their perception of pearl millet.

The Directorate Plant Production (2011) in South Africa stated that pearl millet is planted on 14 million hectares in Africa and 14 million hectares in Asia. However, in South Africa, millet is still produced at a sustenance level by smallholder farmers (Department of Agriculture, Forestry and Fisheries 2011). Millet occupies about five percent of the world's cereal vicinity, while accounting for only one and a half percent of the world's cereal manufacturing (ICRISAT 1996). According to Khaya (2016), in 2050 the world population will reach nine billion. Thus, it is evident that due to the increasing growth in the population, water scarcity, and the possible climate change, solutions are needed to ensure sustainable food production to meet the growing needs of our nations (Van Vuuren 2014). There is no evidence disputing consumers' knowledge of pearl millet and no studies clearly indicate what consumers know or perceive to know about pearl millet. Such information is required if any advances are to be made in the communication and awareness of pearl millet.

Only through increased consumer awareness towards purchasing indigenous grains can consumers' purchasing behaviour be adjusted, thus showing stronger support for the purchasing of indigenous grains that contribute to the local communities and sustainable development in the long run. However, it is unclear how eager consumers are to change their purchasing behaviour towards pearl millet, since very little is known about consumers' attitude towards pearl millet; for that matter, it is unclear if they know what it is.

According to a study by Denk (2016), consumer attitudes towards fermented and unfermented pearl millet flour indicated that consumers favoured fermented flour. The study also highlighted the importance of understanding and incorporating indigenous knowledge into new product development. Another study investigating the effect of malting on pearl millet reported that malting improved the nutritional, physicochemical, and functional properties (Pelembé et al. 2003). However, consumers must know these grains to determine how these functional elements can benefit them and contribute to South Africa's economic value.

The International Crops Research Institute for the Semi-Arid Tropics (2016) claimed that the United Nations has identified the need for sustainable diets and has introduced the *Smart Food Initiative* to construct a stronger scientific case towards supporting millets. This also aims to endorse the value of millets and promote the need for new products to be made from millets. It is

imperative to determine consumers' purchasing behaviour of new products such as pearl millet if food manufacturing companies are to determine the point of difference in products that attract consumers; especially potentially unfamiliar products, which may be the case where pearl millet is concerned. Based on the problem expressed in this section, the next section provides the justification for this study.

1.3 JUSTIFICATION FOR RESEARCH

As mentioned in Section 1.2, several studies have been conducted regarding pearl millet from an agricultural and biotechnology perspective. At present, the amount of research that has focused on consumer perception, attitude and knowledge of pearl millet within the context of a South African population is restricted. Therefore, this study aims to address this shortcoming by determining what the consumer knows, what their attitude and perception (idea) of pearl millet is, so that strategies can be implemented to improve consumer awareness of pearl millet. The benefit of pearl millet as an indigenous grain cannot be capitalised on if it is not clear where the consumer is positioned in terms of this grain. This is what this study is setting out to determine as far as consumer perception, attitude and knowledge of the indigenous grain is concerned. Through this understanding, pearl millet product manufacturers will have more consumer information to establish pearl millet as a feasible dietary option for South African consumers.

South Africa currently has many challenges centred around malnourishment, food insecurity, water scarcity and climate change. Therefore, sustainable food production is necessary and requires new and innovative resources, such as the indigenous grains of South Africa. Pearl millet is still mostly produced on a small scale by smallholder farms. However, this product has been identified as an up-and-coming ancient grain with various advantages, already seen in pharmacies and health stores. Although these products are seen in certain stores, consumers' knowledge, perception and attitude towards this product is still unclear and is explored through this study. This study will thus bring about a better understanding to illustrate what consumers look for in food products typically, and specifically in terms of pearl millet. Without such a consumer understanding, it will be difficult for pearl millet marketers and producers to market this grain in such a way that it speaks to the important aspects consumers look for in unfamiliar products.

The study aims to present these factors stemming from literature to evaluate how these influence the purchase decision where pearl millet is concerned. The study also offered participants the opportunity to give their opinion about the aspects that are more likely to influence their decision and intention to purchase pearl millet products. indigenous grains in a more meaningful way that

addresses the aspects important to consumers. For companies and marketers, this information is indispensable to correctly target consumers and create awareness of this product.

By defining how consumers perceive these products in terms of extrinsic attributes, it creates the opportunity to develop strategies to improve awareness and thus create better consumer acceptance towards pearl millet and, potentially, other indigenous grains. In particular, consumers' attitude towards a particular product is a critical element in the successful purchasing of the product, since much of their attitude is based on what they know about a product. It is therefore important to explore consumers' attitude and knowledge of pearl millet if behavioural intentions are to be addressed in favour of pearl millet purchases.

1.4 RESEARCH AIM AND OBJECTIVES

This study aimed to explore the **role attitude, perception, and knowledge play in consumers' decision and intention to purchase pearl millet**. To achieve this aim, the following objectives were formulated:

Objective 1: Identify consumers' knowledge of pearl millet in terms of their:

- 1.1 Subjective knowledge (self-assessed) of pearl millet in relation to the extent of their knowledge about pearl millet.
- 1.2 Objective knowledge about pearl millet through an exploration of the product characteristics and use of pearl millet.
- 1.3 Product-related experience of pearl millet, whereby the attributes consumers search for and the purchase experience of the product will be determined.

Objective 2: Determine consumers' perception of pearl millet in terms of the external attributes that influence their decision and intention to purchase:

External attributes influencing consumers' intention to purchase:

- Perceived quality
- Perceived price
- Packaging
- Retail store image
- Country of origin
- Consumer openness to new products

Objective 3: Explore consumers' attitude towards pearl millet in terms of the influence of normative beliefs, behavioural beliefs and control beliefs.

Objective 4: Propose a conceptual framework of the attitudinal, perceptual and knowledge factors that influence consumers' decision and intention to purchase pearl millet.

1.5 RESEARCH DESIGN AND METHODOLOGY

A qualitative research paradigm was applied for this study, in which an exploratory design was implemented. This approach was considered the most suited to explore the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet as an indigenous grain in South Africa.

Non-probability sampling techniques were implemented through purposive, convenience and snowball sampling of participants for this study. Study participants were located in the province of Mpumalanga, in the city of Mbombela, previously known as Nelspruit, in South Africa. Participants were conveniently recruited if they were available at the time of recruitment and willing to participate in the study. Participants were purposively selected by implementing specific inclusion criteria (Maree & Pietersen 2007a), as this allowed the researcher to decide who should be included in the study (Etikan et al. 2016). Participants were selected according to the following inclusion criteria:

- The participants had to be older than 18 years.
- The participants had to be the main person responsible for purchasing food products within their household.
- Participants had to have heard of pearl millet previously.
- Participants had to be customers of either pharmacies, retail outlets, or any health stores that sell pearl millet products. It is assumed that consumers who shop in these stores are more exposed to health-orientated food, which will increase the likelihood that the participants might have bought or seen pearl millet previously.

Within this study, a qualitative paradigm was implemented, and the primary data-gathering technique that was used in focus group interviews. These were visually aided by using an interview guide. Participants were recruited in the city of Mbombela (Nelspruit), where the researcher resided. Participants were also asked to share the names of friends who would be able to take part in the focus group interview in order use a snowball sample. According to Krueger and Casey (2014), people are likely to share personal information when they perceive they share common interests, such as age, gender, occupation, marital status or attitudes regarding a certain topic. Numerous marketers thus prefer focus group interviews to attain information since they feel there is a dynamic interaction between participants in focus groups, which then yields a greater extent of new ideas and insights (Schiffman & Wisenblit 2019).

For this study, focus group interviews included 36 participants who were divided into groups of three participants per group (12 groups were held in total). The focus group interviews were conducted face-to-face and lasted between 45 and 60 minutes. Complimentary to the focus groups that were held, projective and sentence completion activities also formed part of the data collection strategy. After gaining consent from participants to willingly take part in the study, consent forms were sent to them via email that included a short piece requesting their demographic information. Once these letters were returned, the researcher scheduled meeting time slots for the groups to gather. Most groups gathered during lunch breaks, and the limited number of participants per group ensured that the time limit was kept. Participants were again made aware of what the study is about through a short introduction from the researcher, and participants were informed that their answers would be recorded. Next, the researcher followed her interview guide that was set up to indicate the operationalism of the focus groups and asked participants questions according to this guide, probing where necessary.

The recordings were transcribed into word documents once the researcher completed each focus group session. Member checking was performed, where the transcribed data set was sent back to the participants of the particular focus group to ensure they approved what was said and that the researcher had not added anything or took away anything that was important to ensure the trustworthiness of data presented. Content analysis was performed on the data by analysing each question. The concepts expressed by the participants as key words or phrases (forming the codes) that emerged from the data were identified. Concepts were then grouped into categories that best described the ideas related to each question. The categories were tabulated, and the findings were discussed in relation to other studies to establish any similarities or contradictions. The data were also presented through quick referencing diagrams that indicated the main categories that emerged from the data in relation to each question.

1.6 ETHICAL CONSIDERATIONS

Ethical clearance for this study was obtained from the Health Research Ethics Committee of the College of Agriculture and Environmental Science (CAES) at the University of South Africa (UNISA) prior to the commencement of the study. The CAES Ethics Approval is attached as Appendix A (Reference Number: 2020/CAES_HREC/016). The data were only collected after ethical clearance was received. UNISA sanctions internationally acknowledged principles of ethics as the foundation for research, which includes justice, beneficence, non-maleficence, and autonomy (University of South Africa 2013).

In the focus group interviews, the researcher stated the purpose of the study prior to the interview. On the day of the interview, the researcher provided the outline of the topics that would be covered, discussed the way in which the focus group would be conducted, and provided an indication of how long it would take to complete. Potential benefits or risks were explored, and the researcher indicated what would be done with the collected data (Sim & Waterfield 2019). This was to ensure that the participants understood what would be required of them and to ensure full transparency so that they could make an informed decision to partake or not. The researcher also communicated that they were free to leave at any time and that their anonymity and confidentiality would be regarded as the highest importance. They were informed that their information would be kept strictly within the confines of the focus group, and data would not be shared with anyone other than the research supervisor. The names of the participants would also not be used in any data analysis or presentation of data analysis.

Prior to the focus group interview, the participants received a consent form that was represented in Afrikaans and English to ensure optimal communication and prevent any potential misunderstanding or certain expectations from the participant. The information shared by the researcher was captured in the consent form that the participants signed (as seen in Appendix B). The researcher used the boardroom office at her place of work to conduct interviews, which was deemed convenient for all participants, and gained permission from her employer to conduct the interviews during her lunch hour. The duration of the interviews was between 30 min - 45 min and the participants did not receive compensation for taking part in this focus group study. Due to the fact that participants were responding to the questions without becoming agitated or giving short responses, it was not necessary for the researcher to break the interview to compensate for possible exhaustion of the participants.

1.7 OUTLINE OF THE DISSERTATION

This dissertation is presented in six chapters:

Chapter 1: This chapter introduces the overview of this study, outlining the researcher's interest in the indigenous grain, pearl millet. The problem statement is discussed, and a justification for the research is given. The research aim and objectives are briefly discussed. Furthermore, the research methodology and ethical clearance obtained for this study are defined, and an outline of the dissertation is presented.

Chapter 2: The chapter provides insight into the latest literature and some of the most important opinions from researchers regarding pearl millet.

- Chapter 3: The chapter offers insight into the consumer decision-making process by using Schiffman and Wisenblit's (2019) consumer decision-making model in combination with Fishbein and Ajzen's TPB (1975) model to establish how consumer knowledge, perception and attitude can influence behavioural intention and, ultimately, actual behaviour.
- Chapter 4: The chapter presents the research design and methodology that was implemented, which aligns to the research objectives. It includes the geographic location of the study, the participants' inclusion criteria, sampling strategies, data instrument, data collection method, as well as the trustworthiness of the quality of the data presented in the study.
- Chapter 5: This chapter presents the descriptive results from the focus group interviews and the concepts that emerged from the findings. The results are presented and discussed in relation to the aim and objectives of the study.
- Chapter 6: This chapter concludes the research and makes recommendations for further research. The findings are presented in the context of the conceptual framework, along with the contributions and limitations of the study. Recommendations are made to the pearl millet industry based on the research findings, specifically pertaining to consumers' knowledge, perception, and the attitude consumers have towards pearl millet food products and the factors that influence their purchasing decision. This chapter also suggests where further research is needed.

1.8 ACADEMIC-RELATED INFORMATION

In this dissertation, the Harvard referencing style was used. This dissertation was also submitted through the Turn-it-in plagiarism software program, and the certificate is included in Appendix C. The study has not been presented at any national or international conferences. A publication will be prepared and submitted to an accredited journal of the most important findings from the study.

1.9 CONCLUSION

In this chapter, the researcher presented an overview of the study's context, the problem statement, justification for the research, research aim and objectives, brief methodology, ethical clearance obtained for this study, the dissertation layout, and academic-related information. The following chapter will present the literature review, which covers the background of indigenous crops, food insecurity and malnutrition, offers an overview of pearl millet, nutritional value and

health benefits, as well as biofortification, application and consumer acceptance towards traditional food products.

CHAPTER 2 - LITERATURE REVIEW

The chapter provides insight into the latest literature and some of the most important opinions from researchers regarding pearl millet.

2.1 INTRODUCTION

This chapter aims to provide an overview of pearl millet, outlining interest in it as an indigenous grain. Firstly, background information of indigenous crops is provided by defining what they are and their importance as a nutritional food source. Next, two well-known problems are discussed, namely malnutrition and food insecurity, and indigenous crops are deemed to be a viable solution to assist in addressing these issues in the context of South Africa. Clarity regarding millet species and pearl millet are also presented. The production of pearl millet is discussed, and the areas in which this grain is grown in South Africa are specified. Furthermore, pearl millet's benefits relating to crop productivity are reviewed.

Following the discussion on crop and nutritional benefits, the health benefits of pearl millet are explored, elaborating on the crop's current benefits and limitations, and how it can be further developed through biofortification to improve its iron status and digestibility. Different applications of pearl millet are presented to reflect traditional uses and the relatively small commercialised uses thereof. The potential of using pearl millet in nutritional bars is also investigated based on research that has been conducted to this effect. Lastly, consumer acceptance of traditional food products is discussed to establish whether consumers are likely to purchase products made of indigenous crops.

2.2 BACKGROUND TO INDIGENOUS CROPS

South Africa is known for having one of the greatest biodiversities in the world (Van Vuuren 2014). Reinten et al. (2011) point out that Africa has a wide variety of indigenous plants that support communities by providing staple food sources (Directorate of Plant Production 2013). Generally, indigenous crops are ethnically known native varieties and traditional food crops widely consumed by specific regions and groups of individuals (Nelson et al. 2019). However, within the South African context, indigenous crops can be defined as crops that originated in Africa (Mathews 2010). The Water Research Commission of South Africa (WRC) has been methodically financing research with the goal to distinguish underutilised drought-tolerant crops. They also categorise these underutilised indigenous and traditional food crops as indigenous or indigenised within South Africa (Mabhaudi & Modi 2016). The term 'indigenous' is defined as having genuine South

African origin, whereas 'indigenised' indicate that the crops originated elsewhere but were introduced by settlers decades ago and have undergone extensive domestication locally (Mabhaudhi et al. 2017).

These indigenous foods consist of cereals (pearl millet, sorghum, cowpea, Bambara groundnuts), vegetables (amaranth, blackjack, leaves, young shoots, etc.) and fruit crops (red milkwood, marula, kei apple, etc.) that are used primarily as a staple food, flavouring, cosmetics, and for medicinal and decorative purposes (Van Vuuren 2014; Directorate of Plant Production 2013). For the purpose of this chapter, it is important to differentiate between two important terms, namely cereals and grains. Grains are defined as the fruits or seeds of various food plants, including cereal grasses (Merriam-Webster's collegiate dictionary 2019). Thus, cereals are grains that are part of the grass family; for example, pearl millet, corn, rice, wheat, sorghum, barley, oat, rye, and triticale (McKevith 2004). Africa is regarded as the chief food producer of numerous cereals, including millet, maize, rice and sorghum (Papageorgiou & Skendi 2018). These cereals are usually found in the most rural regions where poverty is most severe (Adéoti et al. 2017), and these indigenous crops form an essential part of rural societies' nutrition (Directorate of Plant Production 2013; Hall & Rudebjer 2016).

The advantages of these crops and indigenous practices include being environmentally friendly by reducing the carbon footprint, they are less hazardous to humans and animals (Nelson et al. 2019), and the cultivation of indigenous crops can make agriculture more genetically sustainable, available and diverse (Husain & Sundaramari 2019). Even though indigenous crops have multiple advantages, there are several challenges in terms of modern technologies. These typically fail due to not fitting in with the local culture and conditions of people, which has led to numerous environmental problems resulting in a growing imbalance between urban and rural areas (Husain & Sundaramari 2019). Samuel and Peerkhan (2020) indicated in their study – on the nutritional, digestible, organoleptic, in-vitro protein and starch digestibility of a pearl millet protein bar – that since 2012, the domestic supply of millets has decreased due to the lack of technologies for effective processing and utilisation. Another challenge within the current context of South Africa relates to malnutrition and food insecurity (Hall & Rudebjer 2016). Therefore, indigenous crops need to be investigated as a crucial source of nutrients to address food insecurity and malnutrition in South Africa.

2.3 FOOD INSECURITY AND MALNUTRITION

Two continuing challenges worldwide, and particularly in South Africa, are the provision of sustainable and nutritious food for all. Rolfes et al. (2015) define malnutrition as the result of insufficient nutritious food to eat. According to the World Health Organisation (WHO) (2021), when

considering malnutrition, in all its forms, includes undernutrition (wasting, stunting, underweight), inadequate vitamins or minerals, overweight, obesity, and resulting diet-related noncommunicable diseases. The WHO reported that nearly one-third of infant deaths worldwide and one-half in developing countries are caused by malnutrition (Tako et al. 2015). The Food and Agricultural Organisation of the United Nations (FAO) (2015) defines food security as when all individuals have social, physical and economic access to adequate nutritious and safe food that meet their dietary needs for a healthy and active lifestyle. To ensure future food security, it is essential to promote the cultivation of major crops and naturally adapted crops similar to millets, which can withstand severe environmental circumstances (Chanwala et al. 2020). Global warming has a significant impact on crop sustainability, and due to the climate variability associated with environmental problems (soil erosion, high temperatures, drought, flood), agricultural production is becoming more vulnerable (Chanwala et al. 2020).

In addition to global warming, the increasing growth in the population and water scarcity require solutions to ensure sustainable food production to meet the growing needs of South Africa (Van Vuuren 2014). Since there is an ever-increasing population growth worldwide and a demand for nutritious and safe food, millet production has a major role in strengthening food security (Kumar et al. 2018). Pearl millet could be suggested to prevent dietary deficiency and malnutrition in populations using millet as the basic staple food (Adéoti et al. 2017); it is also highly resilient to severe abiotic stress such as drought, soil pH, and temperature (Chanwala et al. 2020). Due to these agricultural conditions, specifically in semi-arid regions of Asia and Africa, pearl millet has established itself as a vital staple cereal in areas that are harshly affected by malnutrition (Adéoti et al. 2017). Thus, indigenous crops' potential can be investigated as a likely source of food with high nutrient content (Azhari et al. 2017). The next section presents an overview of pearl millet, and the vitality of this cereal is highlighted.

2.4 OVERVIEW OF PEARL MILLET

2.4.1 Contextualisation of pearl millet

Millet grains consist of numerous small grain species, which have been a source of food for human beings for over 10 000 years (Dias-Martins et al. 2018). These 140 small-seeded grain species belong to the *Poaceae* (*Gramineae*) family and have established themselves as one of the most drought-resistant grains grown in over 40 countries; mainly in Asia (35%) and Africa (60%). It is deemed a vital food grain, protein source for humans, as well as a source of construction material, fuel, fodder and feed for livestock (Berhanu et al. 2020; Ibidapo et al. 2019; Khan et al. 2019; Lawal 2017). Globally, millet production is divided into 50% pearl millet, 10% finger millet, and 40% 'other millet' (proso millet, little millet, barnyard millet, kodo millet) (Berhanu et al. 2020; International Crops Research Institute for the Semi-Arid Tropics 2015; Tako et al.

2015). According to FAO (2012), statistics reflect global millet production is at 32 million tons annually, with India being the leading manufacturer and Nigeria following at a close second.

Pearl millet is the sixth-most significant cereal crop grown in the semi-arid and arid regions of the world (Nandini et al. 2020; Ibidapo et al. 2019). The grain is known as *Pennisetum glaucum* (Figure 2.1 and 2.2), a millet crop that is cultivated for its stover and grain (Jukanti et al. 2016). Pearl millet originated in central tropical Africa and has become widely distributed across Asia and Africa. In South Africa, the main areas of production include the Free State Province, KwaZulu-Natal and Limpopo Province (ICRISAT 2015).



FIGURE 2.1: PEARL MILLET PLANT (GREEN COVER SEED 2018)



FIGURE 2.2: DEHUSKED PEARL MILLET (FARMVILLA 2018)

2.4.2 Pearl millet benefits to crop productivity

Currently, two major limitations within crop productivity are salinity and drought, causing abiotic stress. Damage results in 50% agricultural production losses (Chanwala et al. 2020). Pearl millet also has xerophilic potential that gives it the ability to adapt to saline environments due to the length of its leaves, higher height, panicles, and better water uptake (Medici et al. 2018). Pearl millets can adapt not only to saline environments but also to aluminium toxic and acidic soils (Lawal 2017). Hence, the cereal is cultivated as a major cereal crop species for individuals living in the drier areas of the Indian subcontinent, and it is used as forage (green-chop, hay, silage) (Beserra de Lira et al. 2020).

Pearl millet has been used since ancient times as a dryland-adapted food crop with high yield potential, even under limited rainfall conditions (Jukanti et al. 2016). Since pearl millet is mainly grown in areas with low rainfall and sandy soils, with exceptionally low organic substance, they have low water-retentive abilities (Debieu et al. 2018). The annual rainfall in Ethiopia between 250 to 300 mm is adequate for pearl millet production (Chanwala et al. 2020). Pearl millet is typically sown just before or after the rainy season's first rain, and due to the rain pattern, the grain can cope with drought stress early on, if the first rains of the season are adequately spaced over time (Berhanu et al. 2020). Thus, pearl millet is perfect for the dry areas of Ethiopia based on its high-water efficiency and good ability to tolerate drought (Debieu et al. 2018).

The plant's wide and fibrous root system enables effective nutrient and water withdrawal from deeper soil layers (Alix et al. 2019). Pearl millet is also known for its tolerance of soils with low organic matter, high nitrogen and water-use efficiencies. These attributes are invaluable against negative consequences caused by global warming, such as increased temperatures and miscellaneous distribution of annual precipitations (Chanwala et al. 2020). Most other crops such as maize, rice, sorghum and wheat would fail under those circumstances, and global attention is thus drawn to focus on the cultivation of pearl millet to manage food insecurity and climate change (Vila-Real et al. 2017).

Since pearl millet can thrive in harsh habitats, it can be considered one of the best life-supporting grains (FAO 2015). As a resilient cereal crop that is grown mostly in marginal environments, it produces the largest seeds and is also the variety most used for human consumption (Tako et al. 2015; Ibidapo et al. 2019; Malik et al. 2019). However, pearl millet production in South Africa is still at the subsistence level, and farmers should more readily take full advantage of their sizeable land to grow this crop. The international production of this grain possibly surpasses ten million tons per year, to which India contributes nearly half (Directorate of Plant Production 2011). In India, pearl millet is cultivated in a seven million hectares area and produces 9.25 million tons per annum (Nandini et al. 2020).

Pearl millet is a good substitute for maize in the production of chicken feed due to its higher protein content per kg at a lower cost (Medici et al. 2018). However, although pearl millet is a nutritionally notable cereal, it is not widely consumed. It can go through a variety of production processes, such as milling, roasting, fermentation, popping and malting (Rani et al. 2018). The consumption of nutrition bars containing pearl millet-based protein has gained momentum in recent years, based on a study by Samuel and Peerkhan (2020). The authors determined that protein bars are nutritionally beneficial and appealing, and the study supported the production of pearl millet-based convenience foods that will raise the consumption pattern of pearl millet at the household level (Samuel & Peerkhan 2020). Also, according to the Mintel Report (2019), senior innovation analyst

Amrin Walji confirmed significant global opportunities to produce functional snack bars that offer a holistic appeal. Snacks that offer satiety is recommended and can be achieved by formulating bars with soluble fibres; the freshness of the bars can be promoted by natural ingredients and minimal processing. The report also stated that ethical claims on food are likely to give consumers the impression that the products are of better quality, higher nutritional value, and worth paying more than products without ethical claims.

2.4.3 Nutritional value of pearl millet

Pearl millet is nutritionally a rich source of energy, vitamin B, fibre, as well as micronutrients such as copper, potassium, zinc, phosphorus, iron, magnesium, manganese (Dias-Martins et al. 2018), folic acid and riboflavin (Samuel & Peerkan 2020). As mentioned, pearl millet is important for farmers, consumers and communities because this grain can be manufactured and added as a nutritious ingredient in a diverse range of foods (Dias-Martins et al. 2018). The product can be cooked like rice, used in granolas, cereal bars and also in flour-based products like bread, pasta, pancakes, nachos and Roti's (Chanwala et al. 2020).

The nutritional value is higher in comparison to other cereals (maize, wheat, sorghum and rice) (Ibidapo et al. 2019), and for that reason, it has a higher potential in contributing to food and nutrition security (Alix et al. 2019). It is also noted to be significantly higher in fibre and fibre digestibility than maize (Tako et al. 2015). Table 2.1 provides a comparative view of the nutritional composition between pearl millet and maize, reflecting pearl millet's nutritional superiority (Malik 2019, USDA Food Composition Databases 2019).

TABLE 2.1: TYPICAL NUTRITIONAL INFORMATION OF PEARL MILLET VS MAIZE

	Pearl millet	Maize
Typical Nutritional Information		
Per 100g		
Average values		
Energy	1580kJ	1528kJ
Protein	11.0g	9.42g
Carbohydrates	123g	74.26g
Total fat	4.2g	4.74g
of which saturated fat	0.7g	0.7g
of which trans fat	0.0g	0.0g
of which monounsaturated fat	0.8g	1.25g
of which polyunsaturated fat	2.2g	g 2.16g
Cholesterol	0g	g 0mg
Dietary fibre#	8.5g	g 2.4g
Sodium	5g	g 35mg

(Malik 2019, USDA Food Composition Databases 2019)

According to Table 2 (Malik 2019), pearl millet cereal provides 11 g of protein per 100g serving. Pearl millet can vary between 8-19% protein, which means that it qualifies as a source of protein, according to South Africa's Labelling and Advertising of Foodstuffs Act 54 (Chanwala et al. 2020; Government Gazette 2010). Pearl millet has a better protein quality than finger millet and sorghum (Figure 2.3), due to its higher content of the essential amino acid, lysine (Vila-Real et al. 2017). Finger millet, also known as ragi, an important staple in parts of eastern and central Africa and India; it is a red-coloured variety of the millet family and is a good source of nutrients (Singh & Raghuvanshi 2012; Chethan & Malleshi 2007).



FIGURE 2.3: FINGER MILLET AND SORGHUM (TODAY 2018)

According to South Africa's Labelling and Advertising of Foodstuffs Act 54, pearl millet is also high in fibre since it contains 8.5g per 100g dietary fibre (Government Gazette 2010; Malik 2019; Chanwala et al. 2020). The consumption of food high in fibre has been linked with positive health benefits (Rolfes et al. 2015). The nutritional quality of pearl millet makes it a vital source of soluble and insoluble fibres. Moreover, the presence of resistant starch and dietary macronutrients offers economical solutions in fighting micronutrient deficiency.

Pearl millet is also a gluten-free grain that is consumed directly as porridge or couscous, or can be used to make flour and produce flatbread (Debieu et al. 2018). Baking and snack industries are taking notice, focusing on creating quality gluten-free items to meet growing demand (Ngemakwe et al. 2014), especially for individuals with celiac disease (Slama et al. 2019). Findings in a study conducted by Hajiani et al. (2019) – to compare regimes that contain gluten and regimes without gluten, and its influence on patients with irritable bowel syndrome's symptoms – indicated that a gluten-free diet has a considerable effect on the reduction of symptoms in irritable bowel syndrome. In recent years, there has been much devotion to the issue of food intolerance, namely celiac disease, and the treatment for this disease is a strict gluten-free diet (Iorgachova et al. 2016). According to a study conducted by Bascunan et al. (2015), investigating celiac disease and a gluten-free diet, a balanced gluten-free diet ought to be based on combining processed gluten-free products with naturally gluten-free products.

Another study by Slama et al. (2019) investigated the extraction of pearl millet oils to determine its composition of carotenoids, lipids, phenolic compounds and its antioxidant potential. The

authors found that pearl millet can be used in the future to create a new source of edible oil due to the presence of numerous essential and unsaturated fatty acids. Cereal lipids represent a valuable source of essential fatty acids and vitamins, along with essential nutrients for human life (Rolfes et al. 2015). Due to the broad nutritional boost pearl millet provides, it also offers several health benefits (Slama et al. 2019).

2.4.4 Health benefits of pearl millet

Pearl millet is regarded as food medicine. Known as nutraceuticals, these are products in medicine format obtained through any food sources that provide beneficial nutritional value to individuals' health (Rolfes et al. 2015). Nutraceuticals contain bioactive compounds crucial to human health since they display numerous physiological activities, such as antioxidants, antimicrobial, and anticarcinogenic properties (Khalid et al. 2015). Moreover, pearl millet is not only acknowledged as a nutraceutical food but also a functional food (Rolfes et al. 2015). Functional foods are consumed as part of a standard diet (Ibidapo et al. 2019). It consists of bioactive components that can enrich health or decrease risks of diseases (Kale & Vairagar 2018).

Pearl millet is an excellent source of antioxidants, such as glycosylated flavonoids and phenolic acids (Rolfes et al. 2015). These antioxidants have properties that prevent oxygen formation from free radicals and protect the human body from inflammation (Ibidapo et al. 2019). Antioxidants are defined as elements that substantially reduce the harmful effects of free radicals on normal physiological functions (Rolfes et al. 2015). Free radicals are extremely reactive chemical substances that have the ability to attack healthy cells in the body that can allow cellular damage of lipids and proteins (Ibidapo et al. 2019). According to Ibidapo et al. (2019), extensive research has proven that polyphenol compounds offer health-promoting properties, such as reducing and preventing the occurrence of degenerative diseases (cardiovascular diseases and cancer), lowering blood pressure, decreasing tumour occurrence and other diseases. Diets that consist of high protein and fibre intake aids in lowering blood cholesterol levels and reducing risks of heart disease. Protein allows for muscle formation, growth, and boosts the immune system and structure of the human body (Rolfes et al. 2015). However, within pearl millet, there are various antinutrients, for example, tannin, phytic acid, poorly digestible protein and carbohydrates, which have been limiting the industrial use of this grain (Ibidapo et al. 2019). Pearl millet plays a crucial role in food security, yet it lags behind other cereals in terms of genetic improvement (Debieu et al. 2018). Thus, there is an opportunity to improve this cereal through biofortification, which is discussed in the next section.

2.4.5 Biofortification of pearl millet

There is no universally accepted definition of biofortification. Generally, it is defined as the production of micronutrient-enhanced crops by either genetic modification or conventional plant breeding using recombinant DNA technology (Mejia et al. 2017). Alix et al. (2019) stated that pearl millet could be categorised into subgroups of composite varieties, local varieties, and hybrid varieties. Composite varieties are the varieties whose seeds are created by mixing different varieties taken from various parts of a seed lot (Govindaraj et al. 2019). Local varieties are a mixture of different types, and are also developed to a local environment (considered organic) (Hama-Ba et al. 2019). Thirdly, hybrid varieties are the offspring from a cross of various strains and are typically developed to contain more fermentable sugars for ethanol production (Liang et al. 2021).

A study on consumers' acceptance of the different varieties of pearl millet was conducted. Two basic recipes (khichada and chappati) were used, and their sensory attributes, such as texture, flavour and appearance, were then evaluated. The results of this study indicated – by using a consumer acceptability test – that the khichadi and chappati were all made from different varieties of pearl millet, and although all were deemed acceptable, the hybrid cultivars were preferred (Bhati & Goyal 2017). In addition, in terms of consumer acceptance, Sekhara and Nuthalapati (2020) explored how malnutrition could be addressed through micro-nutrient-dense biofortified foods, and found that numerous food products are developed from high-iron pearl millet and zinc wheat. The study proposed that by generating demand through private retailers and processors, and by including the product into food schemes and publicly distributing these, hunger in India might be addressed to a significant extent. This study also suggested that the way forward is to elevate research into the development of appropriate labels to attract consumers.

This view was supported by a study by Meier et al. (2020), who investigated non-farming consumers' willingness to pay a good price for iron-biofortified finger millet. The findings suggested that the acceptance rate for these new crop varieties was 98%, together with supplementing the health-related information (Liang et al. 2018). Another study focusing on pearl millet biofortification acceptance and potential contribution identified that biofortified millet was well-accepted and could complement food diversification strategies to increase iron and zinc intake (Hama-Ba et al. 2019). Singh and Raghuvanshi (2012) also determined that although finger millet is highly nutritious and well-accepted in Colombia, the grain lacks adequate marketing, resulting in insufficient production and consumption.

Biofortification aims to enhance micronutrient content in staple crops without forgoing agronomic yield, therefore manufacturing new varieties that appeal to farmers (Boy et al. 2017). It is being

introduced into numerous countries as a strategy to decrease micronutrient deficiencies. Iron deficiency is the most common nutritional deficiency globally, particularly in low-income countries due to the overall absence of the intake of animal products, together with the high intake of cereal grains and legumes that contain antinutrients that inhibit iron-bioavailability (Boy et al. 2017). Staple crops that have indicated the best potential to enhance dietary iron intake through plant breeding are pearl millet, cowpea, common beans, chickpea, lentils and pigeon pea (Mejia et al. 2017). Plant breeders have thus effectively cultivated varieties of common staples with iron quantities between two and five times higher than normal varieties (Tako et al. 2015).

A study conducted by Tako et al. (2015), to compare iron-biofortified pearl millet with standard pearl millet in terms of its capacity to deliver iron for haemoglobin-synthesis, concluded that pearl millet is a promising vessel for increasing iron-bioavailability. As an excellent source of bioavailable iron, pearl millet can thus tremendously increase the iron status and decrease the prevalence of iron deficiency in high-risk groups, for example, school-aged children, young children, and women of reproductive age (Boy et al. 2017). However, further research is required to determine the efficacy of iron-biofortified pearl millet when introduced into the general population. There are currently various applications for pearl millet, and the opportunities to expand pearl millet products through new product development are countless. Therefore, it is vitally important to establish its potential and determine whether it is economically feasible to pursue its increased use, based on the discussed crop's nutritional and health benefits.

2.4.6 Application of pearl millet

Malik et al. (2019) conducted a study relating to *Pennisetum glaucum* and the aqueous extract that suppresses the growth of some weed species. Their study concluded that pearl millet has a strong allelopathic effect on weeds' germination, indicating pearl millet's aqueous extract might be used in higher concentrations, acting as a biological control agent for different weeds, to ensure decreased weed-crop competition and enhanced productivity.

In Africa, pearl millet is used to manufacture an assortment of traditional local foods such as confectionery items, alcoholic beverages, flatbreads and porridge (Dias-Martins et al. 2018). Alcoholic beverages such as *Omalodu* (Figure 2.4) is a traditional beer in Namibia made from pearl millet (Misihairabgwi & Cheikhoussef 2017). In traditional households in Nigeria, a dough-based product known as *Fura* (Figure 4), which is made from fermented and non-fermented pearl millet flour, is shaped into a ball and cooked (Dias-Martins et al. 2018). However, this processing is mostly small-scale production or produced in households (Dias-Martins et al. 2018; Misihairabgwi & Cheikhoussef 2017).



FIGURE 2.4: OMALODU AND FURA DA NONO (AFRICAN KITCHEN 2018)

In general, rural and urban areas have baked products that are commonly used for their convenience, ready-to-eat nature, extended shelf life, and sensory abilities. However, these products might also be a sufficient carrier for bioactive materials and, in future, baked goods may assist in increasing the consumption of certain nutrients (Kale & Vairagar 2018). Since refined wheat flour is the base ingredient of baked products, it can ideally be substituted either partially or completely with pearl millet flour. The flour from these grains is a key ingredient that is not only well-accepted but also a low-cost commodity. It is therefore important that these enriched baked products should be accessible and affordable (Azhari et al. 2017; Kale & Vairagar 2018).

In Nigeria, *Mumu* is another traditional cereal food produced from millet, sorghum and maize, but for the purpose of Aande et al's. (2020) study, it was made with sesame seed, Irish potatoes and pearl millet to increase protein content. There was no apparent sensory difference, although the nutritional profiles increased between the blends and the control. Thus, consumers, and especially the local people, can improve their nutritional intake, and such blends should be encouraged to be formulated and manufactured. Pearl millet can also be used to produce sweets, namely *Dakuwa* and *Ladoo* (Figure 2.5), consumed in Nigeria and India, and pearl millet flour can be used to make puffed cereal, which can be further used in bars, granolas and snack mixes.



FIGURE 2.5: LADOO AND DAKUWA (NITHA KITCHEN 2018;1Q FOOD PLATTER 2018)

Pearl millet is becoming more available in retail stores in South Africa (Figure 2.6). As an example, Woolworths® South Africa launched a power grain breakfast bar range in 2017, and one of these bars was comprised of pearl millet, dried apple and cinnamon. Health Connections Whole Foods® offers hulled or dehusked non-GMO millet, and Nature's Choice® includes millet flour within their

product range. Although this is a step in the right direction, millet has greater potential to be commercialised in South Africa, and it is therefore still underutilised. Food manufacturing companies should create increased awareness of these products.



FIGURE 2.6: DEHUSKED PEARL MILLET, MILLET FLOUR AND MILLET, APPLE & CINNAMON BAR (HEALTH CONNECTIONS WHOLEFOODS 2018; NATURE'S CHOICE 2018; WOOLWORTHS 2018)

In order to encourage the consumption of pearl millet, commercial and domestic product development should be promoted (Slama et al. 2019). Ready-to-eat products have gained much attention from consumers since it is convenient and suits the palatability of a majority of consumers. For instance, nutrition bars are typically made of cereal grains, nuts and fruit (Constantin & Israti 2018). Young consumers are also showing keen interest in indigenously made nutrition bars, yet there are several processing challenges, limited choices of delicious food products, and urbanisation that affect its consumption (Samuel & Peerkhan 2020). Therefore, a greater variety of ready-to-eat products that use pearl millet could promote the consumption thereof.

2.5 CONSUMER ACCEPTANCE OF TRADITIONAL FOOD PRODUCTS

Traditional food products are defined as products made in accordance with gastronomic heritage. These products usually hold positive images due to nostalgia, superior taste and ethnocentrism (Balogh et al. 2016). The key cause for the low consumption of some indigenous and traditional food crops is the unfamiliarity of certain crops (Cloete & Idsardi 2013), and consumers' willingness to pay for these products remains uncertain (Balogh et al. 2016).

Consumers tend to evaluate traditional food products based on their legitimacy, and want to ensure that they purchase authentic products. Indigenous and traditional food crops (Balogh et al. 2016), for example, cowpeas, sweet potatoes and sorghum, are being consumed without even realising that these products are Indigenous and traditional food crops (ITFC's). Consumers' product-related expectations could also potentially impact their willingness to consume traditional food crops (Sulthana 2014). The natural content of food and the familiarity thereof are crucial and

positive factors related to consumer consumption and attitudes towards traditional food products (Balogh et al. 2016). In addition, in terms of familiarity, a noteworthy relationship has been established between the degree to which consumers value price sensitivity and sensory attributes, related to attitude towards the consumption of traditional food products in Kenya (Okech et al. 2016).

Demographic and socio-economic factors are crucial when determining the key influencers of food consumption, and Abdallah (2013) explored ways to increase the demand for pearl millet. Results showed that the age and education level of the household, price, occupation, as well as the food priorities within the household are key influences in the consumption of pearl millet. Consumer demand is further described as the number of products and services individuals are willing to buy at various prices within a certain period of time (Safuillin et al. 2015).

ICRISAT (1995) states that most of the Kavango and Ovambo population in Namibia favour the taste of pearl millet over that of maize. Another study on enhanced cookies' nutritional profile (with pearl millet and green tea) found that adding pearl millet to cookies with oats, using various green tea ratio's, resulted in a sensory profile that was well-liked by all. Pearl millet's high nutritional profile in combination with green tea extract antioxidants was appreciated among participants (Anand et al. 2018).

To solve the problem of deep-rooted food insecurity and malnutrition, dietary quality should be taken into consideration (Singh & Raghuvanshi 2012). Quality can be defined as the degree of excellence and usefulness of the product (Bhati & Goyal 2017). However, the elements of food product quality include sensory attributes, namely aroma, texture, taste, appearance, also functional, nutritional, chemical features and the lack of defects (Bhati & Goyal 2017). A study that investigated consumers' financial evaluation of traditional food products' attributes – Hungarian mangalitza salami – determined that the retail channel, meat source, quality certification and retail price were identified as crucial factors in consumer decision-making (Balogh et al. 2016).

From a study on consumers' acceptance of traditional food crops by Balogh et al. (2016), three conclusions were drawn relating to consumers' willingness to purchase traditional food products. Firstly, traditional food products demand a considerable price premium compared to other products. Secondly, the retail outlet is important, with farmer's markets and butchers demanding higher price premiums compared to supermarkets. Thirdly, successful certifications are required to enable higher mark-ups and protect the integrity of traditional food products (Balogh et al. 2016). Consumer preferences and perceptions towards traditional food thus illustrate that consumers do not perceive traditional food as expensive but would be willing to pay premium

prices to receive them (Brunsø et al. 2002). When consumer expectations are met upon product consumption, it will lead to satisfaction and ensure future purchasing of the product (Contò et al. 2016).

There is no important variance between non-consumers and consumers of ITFCs in terms of household income and the consumption of these products as they are driven by affordability. Therefore, there is great potential for effective interventions to inspire the consumption and production of less typical indigenous and traditional food crops in South Africa. These interventions include policies, research, promotion, and supply chain development. A good way to start is to include indigenous and traditional food products within South Africa's food security strategy, for example, among institutional buyers and school feeding schemes (Cloete & Idsardi 2013).

2.6 CONCLUSION

This chapter concluded that there are various challenges, in South Africa and across the world, related to malnutrition, food security, and crop productivity. These challenges can be linked together by determining how to meet the established needs by cultivating and manufacturing an indigenous grain, such as pearl millet.

The importance of cultivating indigenous grains to support rural communities and sustain the history of these indigenous practices is invaluable. Pearl millet consists of a good nutritional composition which leads to multiple health benefits, and its nutritional status can be further improved through biofortification. Not only is this grain beneficial to human health, but it also aids the environment by offering a sustainable solution in crop productivity due to its ability to withstand harsh conditions.

There are various traditional applications for this grain, and there has been some improvement in manufacturing with this product; it can now be bought in stores such as Health Connections Whole Foods®, Nature's Choice® and Woolworths®. However, there is still a long way to go for manufactures to develop new products. Ultimately, consumer acceptance towards traditional food products was evaluated, and it was established that as long as consumer expectations were met upon product consumption, it would lead to satisfaction and ensure future purchasing of the product.

Thus, in the next chapter, consumer knowledge, attitude and perceptions are discussed to establish how consumers react to new products. A schematic presentation of the conceptual framework adapted from Fishbein and Ajzen's TPB (1985), and Schiffman and Wisenblit's (2019)

consumer decision-making model, is discussed in studying how consumers' knowledge, perception and attitude can influence behavioural decision-making and intention, and ultimately, actual behaviour.

CHAPTER 3 - CONCEPTUAL FRAMEWORK

The chapter provides insight into the consumer decision-making process through the application of Schiffman and Wisenblit's (2019) consumer decision-making model, in combination with Fishbein and Ajzen's TPB (1985) model. These models are used to explore how consumers' knowledge, perception, and attitude can influence their behavioural intention where pearl millet is concerned.

3.1 INTRODUCTION

Within Chapter 2, the various challenges relating to malnutrition, food security and crop productivity were discussed in relation to pearl millet. These challenges were presented by also proposing from literature how these needs could be met by cultivating an indigenous grain such as pearl millet. An in-depth overview relating to pearl millet and its benefits has been discussed to establish why this grain has the potential to be developed even further. However, marketers must understand consumers' needs and motivation for purchasing pearl millet to successfully position their products in such a way that consumers' needs are fulfilled more successfully than by those of competitors (Schiffman & Wisenblit 2019).

There is minimal research on the preferences for indigenous crops in developing countries such as South Africa, and the behaviour of local food consumers has not been well understood (Shahtahmasbi & Rooch 2019). The interest in consumer behaviour has always been important for marketers to understand how and why consumers act in a certain way (Stankevich 2017). Consumer behaviour focusses on the decision-making process and the factors influencing the buying process (Oke et al. 2016). Marketers need to understand how to influence purchasing behaviour in favour of their products and services (Stankevich 2017). Therefore, in this chapter, the consumer decision-making process is used to explore the role attitude, perception and knowledge play in consumers' decision and their intention to purchase pearl millet. To that end, Schiffman and Wisenblit's consumer decision-making model (Schiffman & Wisenblit 2019) and Fishbein and Ajzen's TPB (1985) are employed.

An alternative approach to understanding consumer decision-making is provided by the TPB (Ajzen 1991), one of the main intention theories used in consumer behaviour research. The importance of the TPB lies in its potential predictive ability to identify the relevant attributes consumers consider when forming an attitude (Bray 2008) towards a product. The TPB model is a processing model that suggests individuals' attitudes are shaped after cautious deliberation on accessible information (Conner & Norman 2005).

A few previous studies that implemented this behavioural model will also be reviewed to propose what elements work together to possibly lead to the intention to purchase or make a possible decision about a product. Within this study, a conceptual framework is proposed that focusses on the transformation phase in Schiffman and Wisenblit's (2019) model; it suggests it is the attributes in the consumer decision-making process that matter (Stankevich 2017). Within this phase, the psychological field influences consumers' need recognition phase (motivation, learning, perception, attitude, and personality), whereas the psychological field is influenced by consumers' experiences with decision-making, offering a series of events in decision-making. The conceptual framework will propose how the elements 'attitude', 'perception' and 'knowledge' come together by offering a better understanding of how these three factors affect consumers' decision-making and the intention to purchase pearl millet. Perception is discussed first, along with the extrinsic attributes that influence consumers' perception. Second, consumer attitudes are discussed, and finally, consumer knowledge is presented. In addition, the TPB is proposed to work together with Schiffman and Wisenblit's (2019) model and align with the psychological attribute of attitude, by using attitude to further explain consumers' intent to purchase pearl millet. The rest of the conceptual framework's key points will then be discussed based on need recognition, pre-purchase search, an evaluation of alternatives and experience that also influence overall purchase behaviour. In the next section, the background is presented into consumer behaviour and the decision-making process.

3.2.1 Background to consumer behaviour and decision-making

Consumer buying behaviour is defined by the Merriam-Webster collegiate dictionary (2019), as the *"method by which people select, purchase, use and dispose of goods and services in fulfillment of their needs and wants"*. Consumer behaviour focusses on the decision-making process and the factors influencing the buying process (Oke et al. 2016). This process of decision-making has been explored through various consumer decision models over the decades. Stankevich (2017) conducted a study explaining the consumer decision-making process by investigating decision-making models that included the Simon model (1960), the Nicosia model (1966), and the Engel, Kollat and Blackwell model (1968), among others. The author investigated an additional nine models but focuses on the core of all these models, which is known as the traditional model of the decision-making process. It comprises a five-stage model that illustrates the five steps consumers move through when purchasing a service or product, as illustrated in Figure 3.1 (Stankevich 2017). Another study that researched the different decision-making models and their applications to marketing strategies (Panwar et al. 2019), highlighted that satisfaction is the final output of any decision process that determines the consumer's future behaviour. The below figure provides the foundation towards understanding the core of decision-making models, and is discussed in relation to Schiffman and Wisenblit's (2019) model of consumer decision-making.



FIGURE 3.1: FIVE-STAGE MODEL OF THE CONSUMER DECISION-MAKING PROCESS

This model comprises three stages, namely the input stage, transformation stage (also referred to as the process – in Figure 8), and the output stage (Schiffman & Wisenblit 2019). These stages include various factors that form a wide-ranging frame of research and the thought process related to consumer behaviour that replicates the emotional and cognitive aspect of consumer decision-making (Schiffman & Wisenblit 2019). The first aspect of the model in Figure 3.1 indicated the need consumers have for purchasing a product. In other situations, need recognition relates to the realisation of dissatisfaction concerning a product after a product has failed to meet a consumer's needs and expectations (Hanaysha 2017). Needs can arise immediately and can be a very straightforward impulse – this is called an internal stimulus – whereas an external stimulus happens when a person is affected by any outside influences (Stankveich 2017). Within this stage, consumers encounter the difference between perception and actual satisfaction level (Oke et al. 2016).

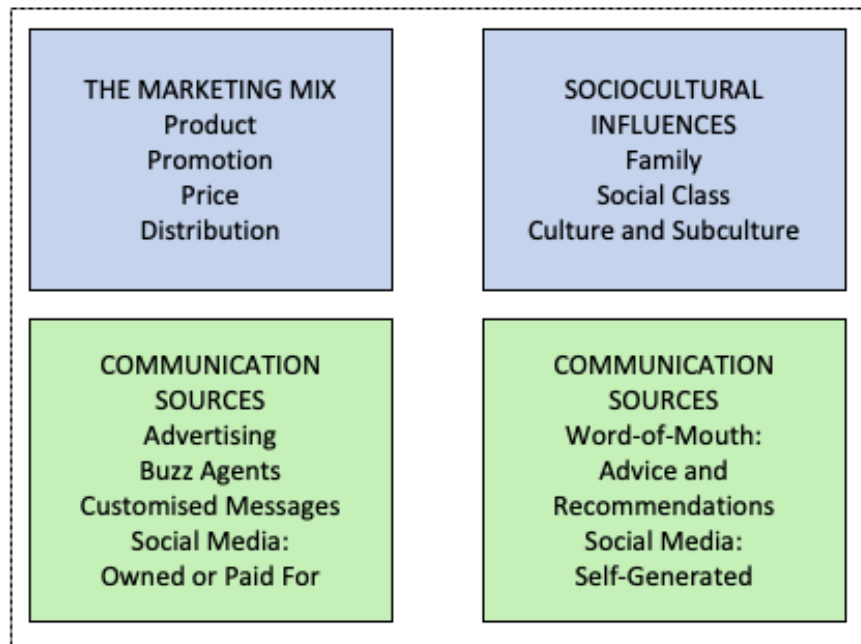
Once the consumer has developed this need, they ought to start searching for more information (external or internal) about the product and alternatives to assist them in making a decision (Stankevich 2017). The internal information is when the consumer looks within their memory for information such as previous experiences, and external searching requires asking family or friends and public resources for their opinion, and reviewing any other informational aspects (Stankveich 2017). Consumers rarely make decisions without any former consideration; they typically search for alternatives or any information on the product prior to purchasing the product (Schiffman & Wisenblit 2019). They generally then assess whether they should buy a product before carrying out the action to establish if there are potential alternatives that would be better suited for them (Erasmus 2013). Once consumers have created a preferred set of products to evaluate, they switch to the buying process, and once bought, they evaluate it and give a review post-purchase to evaluate their experience with the product (Stankveich 2017).

Consumer behaviour is determined by numerous factors in the psychological, personal, social and cultural spheres (Valaskova et al. 2018). Marketers therefore need to understand how to influence this purchasing behaviour by focusing on the factors that affect consumers, to create favour for their products and services (Stankevich 2017). As consumers have many options to choose from on a daily basis, there is merit in pinpointing consumer behaviour towards certain products (Kumar et al. 2018). It is imperative to explore consumers' purchasing behaviour to

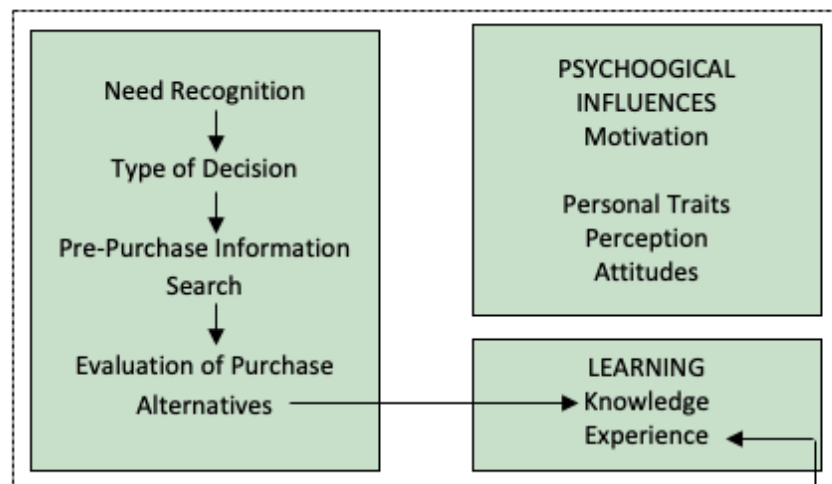
determine which features consumers are affected by that eventually influence their final purchasing decision (Auf et al. 2018).

Within this stage, all the psychological influences applicable to the individual are formed internally with the assistance of the data collected and stored in the form of cognitive frameworks in the individual's memory (Schiffman & Wisenblit 2019). The two psychological influences of importance for this study are consumers' perception and attitude, which relates to consumers' overall knowledge of products (Schiffman & Wisenblit 2019). In a study conducted by Hashmi, et al. (2012), on consumer perception and purchasing behaviour of organic food products, consumers' perception and knowledge were found to be a vital element that contributes to their intention to purchase and consume the product. Thus, it is important to establish a clear understanding of consumer perception, attitude and knowledge towards indigenous grains to determine the important elements within each of these that would drive the decision and intention to purchase these products.

INPUT



PROCESS



OUTPUT

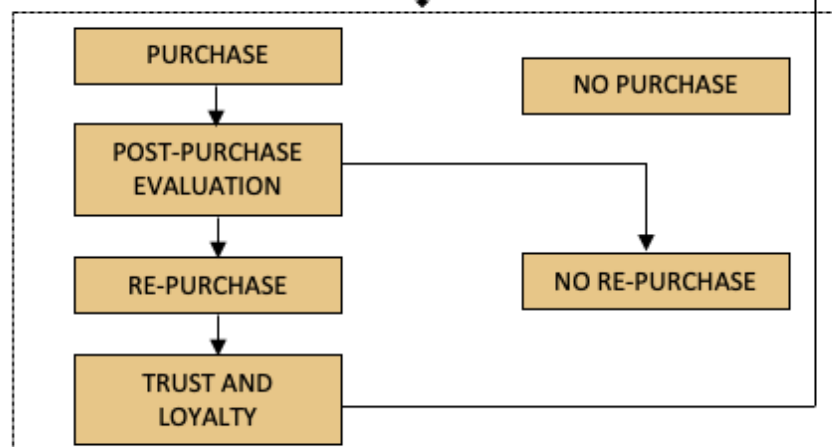


FIGURE 3.2: SCHIFFMAN AND WISENBLIT CONSUMER DECISION-MAKING MODEL (SCHIFFMAN & WISENBLIT 2019)

The Schiffman and Wisenblit (2019) consumer decision-making model is an analytical model that provides a framework of the key elements that are purported to explain consumers' behaviour (Bray 2008). According to the study by Bray (2008), these types of models identify influential factors and the relationship between these factors and consumer decision-making. A study by Rodrigues and Borges (2015), investigating the relationship between consumers' perceptions of corporate responsibility and buying behaviour, found that by implementing the consumer decision-making process, knowledge of social responsibility and perceptions thereof were revealed to influence consumers' purchasing behaviour. Another study by Achar et al. (2016) explored emotions' influence on consumer decision-making, and they reported that the effectiveness of emotional stimuli on consumer behaviour was dependent on consumer-related factors such as self-identities and culture; among other person-related factors. These studies were deemed effective in establishing consumer behaviour. By understanding the behaviour and consumer shopping experience, companies can benefit by identifying additional consumer-connection moments before, during, and after the purchase (Stankevich 2017).

In addition to the analytical model of consumer decision-making, the prescriptive model was also included in the conceptual framework. The generally referenced and used prescriptive model is the TPB (1985), which reflects the framework and guidelines to organise how elements of consumer behaviour should be structured. Moreover, the prescribed effect that should be observed during casual factors (Bray 2008) are discussed within the next section.

3.2.2 Background to Fishbein and Ajzen's TPB (1985)

The theory of reasoned action was first established by Ajzen and Fishbein in 1975, and further revised in 1980. The theory is rooted in the positive or negative consequences that reveal favourable or unfavourable reactions that would potentially change the individual's behavioural, normative and control beliefs, therefore affecting future intentions and actions (Fishbein & Ajzen 2011). The most significant element that differentiates these two models is the behavioural intention that was added. This indicates the individual's willingness to perform certain behaviours. The intentions are supposed to capture the motivational influences that affect behaviour, indicating how hard individuals would try to perform a certain behaviour (Ajzen 1991).

Ajzen (1985) defined intention, in terms of the TPB, as the effort of carrying out certain behaviour, rather than in relation to actual behaviour and the actions that deal with the actual performance of the behaviour. The TPB varies from the theory of reasoned action by adding an element known as perceived behavioural control (Ajzen 1991). This partially accounts for the extent to which individuals have control over the actions that are necessary to perform a given behaviour (Mpiganjira 2013). This not only affects intentions but also the implementation of intentions

(Gieurea et al. 2020). Perceived behavioural control relates to opportunities and resources available to an individual that must, to some extent, prescribe the possibility of behavioural accomplishment (Ajzen 1991).

The TPB (Figure 3.3) focuses a wide-ranging combination of attitude elements into a structure that is intended to lead to mutually improved explanations and improved predictions of behaviour (Schiffman & Wisenblit 2019).

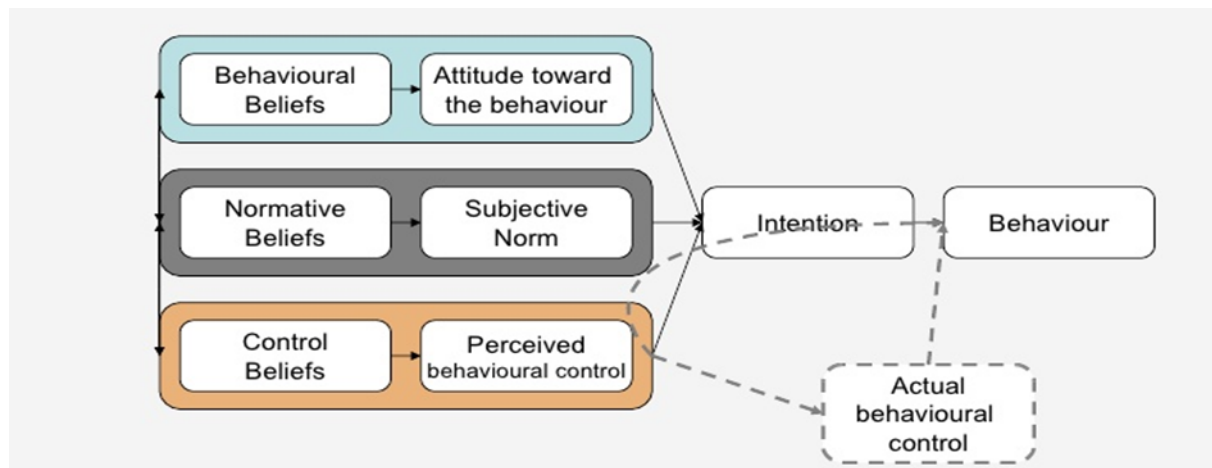


FIGURE 3.3: THE THEORY OF PLANNED BEHAVIOUR (AJZEN 1985)

The TPB is the key predictor of behaviour, with perceived behavioural control, subjective norms and behavioural attitudes noted to be the most important antecedents of an individual's intention to perform that behaviour (Fishbein & Ajzen 2011). Over the years, several theories that intended to understand the connection between behaviour and attitude have been established. Attitudes describe individuals' behavioural intentions, feelings and beliefs towards products, issues and events (Mpinganjira 2013). It has been noted that higher consumer attitude towards local food results in greater intent to purchase (Shahtahmasbi & Rooch 2019). Attitude is also described as the assessment of a concept, object, or behaviour (Fishbein & Ajzen 1975). These attitudes influence the way in which people assess and react to things. Thus, marketers continually investigate consumer attitudes towards products and find ways to positively encourage them to purchase their products over competitors' offerings.

According to this theory, behavioural intention refers to the role of an individual's attitudes towards the behaviour and subjective norms (Ajzen 1991). Behavioural attitude and beliefs relate to an individual's assessment of the behaviour, which includes beliefs about the outcome, as well as their positive and negative opinions about completing the behaviour (Scholtz & Mloza-Banda 2019).

Subjective norms are motivated by normative beliefs and the person's motivation to comply with the partialities from related people (Schiffman & Wisenbilt 2019). Normative beliefs are described as the individual's trust in whether other people believe they should or should not perform that behaviour (Fishbein & Ajzen 1975). These people are considered important, such as family, friends, colleagues and others (Ajzen 1985). Reference groups like family and friends are highly influential in consumers' mental norms, therefore it is important for marketing plans to target such groups of people (Shahtahmasbi & Rooch 2019). Moreover, normative beliefs that are readily accessible in memory combine to produce a perceived social pressure to perform the behaviour (Ajzen 2015).

Perceived behavioural control discusses individuals' perception of the strain or ease of acting out the behaviour of focus, and usually varies across situations (Mpinganjira 2013). It explores how much control an individual has over their own behaviour and how confident they are in performing such a behaviour (Scholtz & Mloza-Banda 2019). For example, within the context of becoming an entrepreneur, it will refer to the perception of strain or ease of taking the necessary action to become an entrepreneur (Gieurea et al. 2020). If the perceived behavioural control is low, intentions to behave will remain low, regardless of positive attitudes and favourable subjective norms. This is caused by a lack of information, acting as a barrier to perceived behavioural control (Aitken et al. 2020).

Therefore, it can be noted, according to Figure 3.3, that the higher the attitude is, the more positive the support from friends, family and colleagues, and the higher the perceived behavioural control, the stronger the intent to engage in that behaviour. There are several studies implementing the TPB model, and a few recent studies are discussed in Table 3.1.

TABLE 3.1: RECENT STUDIES IMPLEMENTING TPB MODEL

Article	Description and Findings
The positive role of labelling on consumers' perceived behavioural control and intention to purchase organic food (2020).	Findings from the study that explored the role of product information in understanding the gap between consumer attitude and behavioural intention to purchase organic foods, indicated that improving labelling systems to include more information such as environmental, health, societal benefits etc. would increase perceived behavioural control and increase intention to purchase organic products (Aitken et al. 2020).
The entrepreneurial process: The link between intentions and behaviour (2020).	The study used TPB to examine the role of students and prospective entrepreneurs' skills and capabilities. It indicated that in terms of subjective norms, it is vital in becoming an entrepreneur to have individuals or groups that support the creation of a business and the extent to which they support or fail to support is tremendously important to whether or not they will move to action. Findings also indicated that individuals showed an attitude towards starting a business when they had knowledge, skills and the capacity to do so (Gieurea et al. 2020).
The impacts of perceived moral obligation and sustainability self-identity on sustainability development: A TPB purchase intention model of sustainability labelled coffee and the	The TPB model was also used to investigate the Taiwanese public's attitude towards purchasing sustainably labelled coffee and their purchase intentions. The outcome of this study determined that it was more effective to establish attitude towards purchasing rather than attitude in the ethical consumption context. The moral obligation perception and sustainability self-identity positively influenced purchase intention (Chen 2020).

Article	Description and Findings
moderating effect of climate change scepticism (2020).	
Sustainable consumption in organic food buying behaviour: the case of quinoa (2019).	The study investigated the antecedents of organic quinoa-based food buying intention, and stipulated that positive attitudes influenced consumers' intention to buy organic quinoa-based food. The extent of the influence was high, and it was concluded that behavioural intention was the most influential factor (Nosi et al. 2020).
Understanding online gamers' intentions to play games online and effects on their loyalty: An integration of IDT, TAM and TP (2019).	The study established that individuals who believed that the particular activity or product would provide benefit, that they would receive support from others who already engaged in that activity, and that they would also achieve proficiency in the behaviour, indicated a stronger intention to perform the behaviour, which led to actual performance. Within the study to predict consumer intentions in online games, it was discovered that social interaction, compatibility, and attitude determined the intention to play online games (Agag et al. 2019).
Graduate applicant intention and behavioural beliefs (2018).	The study differentiated between graduate applicants based on legally protected group status, compared to how applicants' intention to apply for a job is shaped by their beliefs about applying. The study concluded that there is a positive relationship between attitude towards applying beliefs, subjective norm beliefs and perceived behavioural control beliefs relating to applying and intending to apply for a job (Adams et al. 2018).
The use of planned behaviour theory in predicting cigarette smoking among Waterpipe smokers (2017).	The study evaluated the potential of water pipe smoking leading to cigarette smoking by using the TPB. It established that indirectly subjective norms influenced intentions through perceived behavioural control and attitude. The findings indicated solid explanations of intention to use cigarettes among water pipe smokers (Alanazi et al. 2017).
Predicting pharmacy students' intention to apply for a residency: A systematic TPB (2017).	The study predicted students' intention to apply for residency through the TPB and significantly predicted intent. By applying interventions that target attitude, subjective norm and perceived behavioural control, their intention to pursue residency training increased (Hickerson et al. 2017).
Can the TPB explain walking to and from school among Australian children? A social marketing formative research study (2016).	TPB was also successfully implemented to establish decisions regarding allowing children to walk to and from school in Australia, and findings indicated intentions among the guardians were associated with higher incidences of walking to and from school by children in Australia (Pang et al. 2018).
Exploring the intentions of pharmacy students towards pharmacy ownership by using TPB (2016).	The study explored pharmacy students' intentions towards pharmacy ownership through the TPB. It was found that normative beliefs, control beliefs and behavioural beliefs were negative towards owning a pharmacy, but implementing an entrepreneurship course might transform these beliefs towards ownership (Khan et al. 2016).

From the above-mentioned studies, it is evident that the TPB model is sufficient in establishing individuals' attitude towards certain products and services, and determining their intent to purchase. However, there are various obstacles. To illustrate: there are barriers that influence the relationship between consumers' positive attitude towards sustainability and their actual consumption behaviour. It has been argued that addressing consumers' perceived behavioural control is a core element in addressing this gap. Therefore, although consumers might be positive and excited about trying pearl millet, their actual behaviour does not purchase it, thereby reiterating the gap between intent to purchase and actual purchasing behaviour.

Another main barrier is lack of access; for example, in a study on local honey, the honey producers had to move through this obstacle by supplying directly to stores to ensure their product is at the consumer's disposal. Therefore, by increasing the availability of the food, local food purchases

will gradually increase, resulting in a higher positive attitude (Shahtahmasbi & Rooch 2019). The same could be said for pearl millet; increasing the availability of pearl millet could increase the likelihood of consumers' purchasing it and increase consumer attitude towards pearl millet in a positive manner.

3.3 CONCEPTUAL FRAMEWORK

A conceptual framework is a system of intertwined notions that together deliver a complete understanding of a phenomenon (Tamene 2016). A conceptual framework aims to set objectives and reflect fundamental concepts that will be the basis for the development of a theory or study (Gornik-Tomaszewsji & Choi 2018). The following conceptual framework was created to illustrate the role attitude, perception, and knowledge might play in consumers' decision and intention to purchase pearl millet. This schematic presentation of the conceptual framework in Figure 3.4, is adapted from Schiffman and Wisenblit's (2019) decision-making model. During the transformation phase within this model, all the influences that might be applicable during consumer decision-making, as well as prior purchase experiences, are depicted internally with the help of data stored in the form of cognitive frameworks (Erasmus 2013). Therefore, these cognitive frameworks help consumers recognise and understand stimuli, which then influence consumers' new buying experiences. In contrast, a lack of prior experiences complicates the decision-making process, since the consumer has nothing in their memory to help with the purchasing decision. Therefore, it is of great importance to identify whether the consumer has prior experience with pearl millet or has any knowledge of the product, since it will influence the decision-making process (Schiffman & Wisenblit 2019).

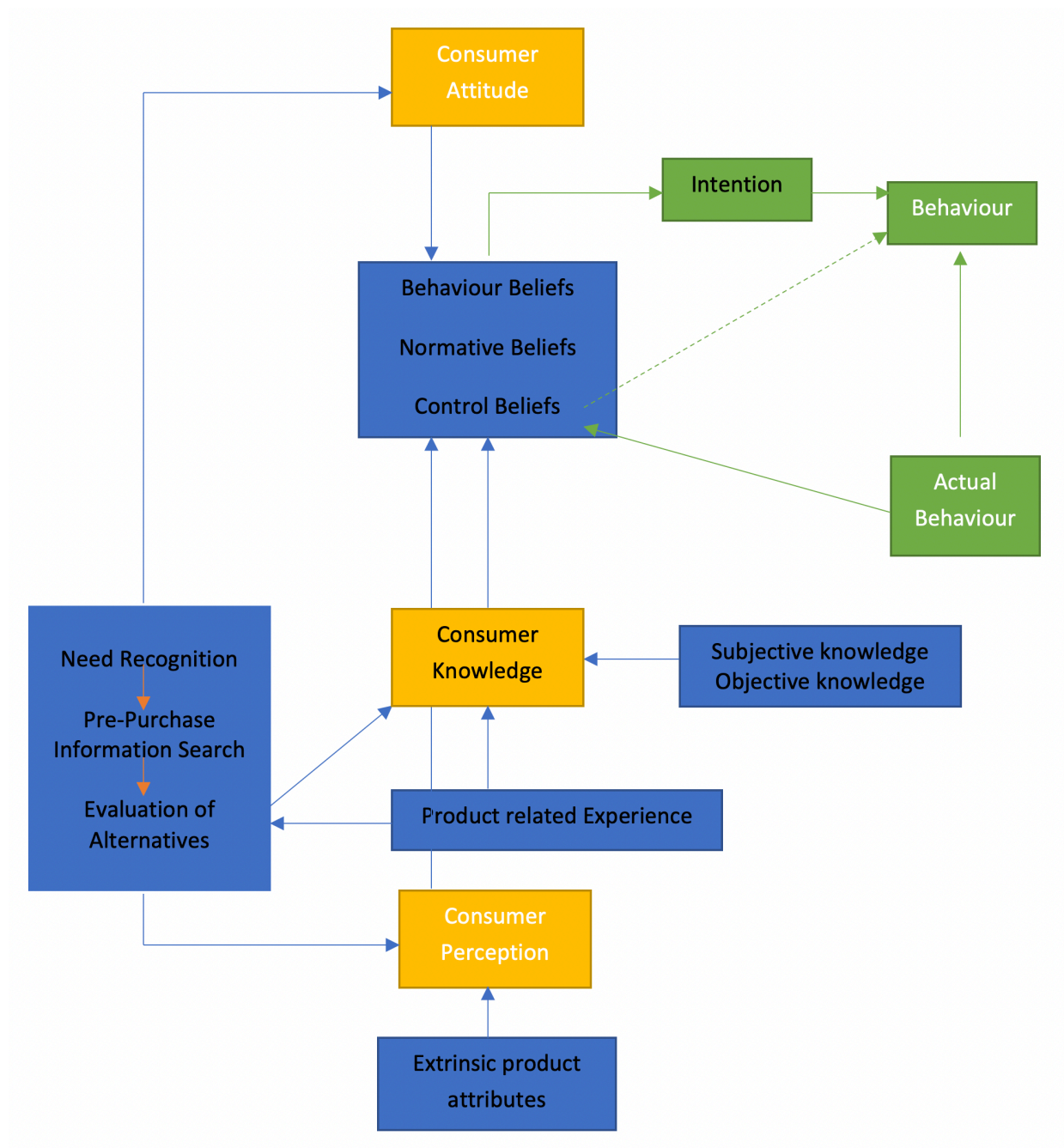


FIGURE 3.4: SCHEMATIC PRESENTATION OF THE CONCEPTUAL FRAMEWORK, ADAPTED FROM FISHBEIN AND AJZEN'S TPB (1985) AND SCHIFFMAN AND WISENBLIT (2019) CONSUMER DECISION-MAKING MODEL

3.3.1 Consumer perception

Perception is well-defined by Schiffman and Wisenblit (2019) as the process by which a person selects, organises and interprets stimuli into an expressive and clear image of the world. It is also considered the development by which sensory receptors are activated by stimuli, which is defined as any physical element to which an individual is exposed (Du Toit 2013). Perception could also be simply put as the way in which an individual thinks about a certain aspect and their notion of

what something is like (Qiong 2017). Perception and the perceptual decision-making process are strongly facilitated by prior knowledge or lack thereof (De Lange et al. 2018).

There are three important stages in the perception process, namely selection, organisation and interpretation (Schiffman & Wisenblit 2019; Qiong 2017). Within the selection stage, consumers are subconsciously exposed to stimuli (Schiffman & Wisenblit 2019). The environmental stimuli are then converted into a meaningful experience (Qiong 2017), where individuals may look at some things and ignore other things, and they therefore only receive a small fraction of the stimuli to which they are subjected (Schiffman & Wisenblit 2019). In the organisation stage, the individual has selected information from the outside world and now moved forward to organising it in some manner that creates meaningful patterns and provides structure (Qiong 2017), and simplifies the individual's life considerably (Schiffman & Wisenblit 2019). The third stage is interpretation, and refers to the process of attaching meaning to the selected stimuli. This is different for all individuals due to cultural, social and economic attributes that affect the perceptual lens by which individuals view the external stimuli (Qiong 2017). This stage is also unique to every individual as it is based on what they expect to see in relation to their previous experiences, their motives and interests at the time of purchase (Schiffman & Wisenblit 2019).

The psychological factors (consumers' subjective knowledge, perception and attitudes) are fundamental tools during the interpretation phase of external stimuli (Erasmus 2013). Sensory receptors affect the extent to which consumers perceive the stimuli as visually, audibly, tangibly, and pungently acceptable. This also indicates that perception is subjective, as everyone will react to stimuli in their own unique manner. By examining the physiological and psychological elements of an individual's perception, marketers can achieve a better understanding of consumer behaviour (Schiffman & Wisenblit 2019). Also, by accentuating the role of social media communication and marketing methods, it helps strengthen the consumer community by encouraging trust in horizontal relations (Bucataru et al. 2017).

Marketers must therefore understand consumers' needs and motivations to position their products in such a way that that these needs are fulfilled more successfully than those of their competitors (Schiffman & Wisenblit 2019). They also ought to facilitate several business marketing strategies to ensure their continued existence (Yasa et al. 2020). This positioning of products is successful when consumers trust that the brand will deliver a service or product benefit, which gives the brand a competitive advantage (Schiffman & Wisenblit 2019). This consumer trust has been found to play a significant role in shaping purchase intentions among consumers (Oliveira et al. 2017). Consumers thus act and respond based on their perceptions and their perceived level of trust in trying a new product, regardless of whether their perceptions are correct (Schiffman & Wisenblit 2019). Consumers' perception of reality is rooted in their

individual value, desires, needs, as well as their own personal experience (Schiffman & Wisenblit 2019). They therefore make decisions based on their perception of reality of whether the product will be of good quality and overall a good purchase.

When evaluating a product according to its attributes, it can be set apart into two groups of factors: intrinsic factors and extrinsic factors (Asioli et al. 2016). Intrinsic attributes are the physical elements of the product, for example, appearance, flavour and form; and extrinsic attributes are concerned with the packaging, price, brand name, store, stamp of quality, country of origin and production information (Brunsø et al. 2002). Freshness, nutritional value, as well as taste are also intrinsic indicators of perceived quality (Li & Zhu 2017). The extrinsic attributes have no real effect on the quality of the product, but they have a significant influence on consumers' perception of product quality (Veale & Quester 2009). Furthermore, the focus should be placed on extrinsic attributes, which can help determine what consumers search for when choosing new and unfamiliar products, to establish what would motivate them to purchase pearl millet-related products.

3.3.1.1 Consumer perception towards product extrinsic attributes

External product attributes are the features of products through which brands are recognised and distinguished (Bukhari et al. 2020). It is aspects not related to the physical product and can be changed without altering the product itself (Ardeshiri & Roseb 2018). It can also be described as the descriptive aspect of a marketing plan that characterises the consumer's evaluative standards when selecting specific goods or services (Bukhari et al. 2020). Extrinsic attributes therefore include brand, price, country of origin and retail outlet (Veale & Quester 2009). Further mentioned extrinsic characteristics contain stamp of quality, production information, and packaging (Espejel et al. 2007). Consequently, several external product attributes exist, which could influence a consumer's perceived acceptability of food products. The five different extrinsic attributes are discussed next in relation to consumer perception as it has been identified as some of the key pillars for increasing food products' potential success in the market (Asioli et al. 2016).

3.3.1.1.1 Perceived quality

Perceived quality is defined as the consumer's judgement about the superiority or excellence of a product (Zeithaml 1988). The perceived quality of products and services are based on a variety of informational cues that consumers associate with the offerings (Schiffman & Wisenblit 2019). Consumers' perceived quality of a product or service serves as a predecessor to satisfaction and behavioural intent, that will potentially lead to purchasing decisions. This would not be equal to the product's real quality, but only their perception thereof (Wang et al. 2017). It is important that

retailers and marketers pay attention to aspects such as high quality, tastiness, as well as health aspects of products (Shahtahmasbi & Rooch 2019), which would ultimately influence consumers' perceived quality of products. Quality expectation is an important factor during consumer choice behaviour (Grunert et al. 2004). When actual experience of a product is lacking, consumers tend to assess the quality of a product based on its external attributes (Schiffman & Wisenblit 2019).

Food labelling is instrumental in informing potential consumers about the commodity's quality (Wang et al. 2017). For example, a study focusing on consumer's perceived quality towards organic food in Malaysia, found that consumers perceived the quality of organic food to be higher when accompanied with an organic certification logo (Lian & Rajadurai 2020). Therefore, consumers rely on what they believe determines quality and evaluate products based on price vs product value, packaging functionality vs how aesthetically appealing and how environmentally friendly it is, retail store image and country of origin.

3.3.1.1.2 Perceived price

Perceived price can be defined as a consumer's subjective judgements of the reasonableness of the price for a product or service in comparison with competitors' reference prices (Zietsman et al. 2018).

How consumers perceive product pricing has a strong influence on purchase intention and purchase satisfaction (Schiffman & Wisenbilt 2019). For example, in a study conducted by Yin et al. (2010), consumers preferred to consume certified food products but were dissuaded by the high cost thereof. Another study regarding perceived price and service quality in business banking relationships found that price fairness and perceived price could lead to higher levels of customer satisfaction (Zietsman et al. 2018). Suhaily and Darmoyo (2017) are also in agreement and found that product quality, brand image, and the perceived price had a significant positive effect on overall consumer trust and satisfaction.

Consumers typically make decisions based on their perceived product value, which is an exchange between the perceived product benefits and the perceived sacrifice to obtain it (Schiffman & Kanuk 2019). In the absence of product knowledge, consumers tend to rely on the price of the product as an indicator of quality (Schiffman & Wisenblit 2019). Manufacturers therefore ought to be aware of consumers' perceived value towards products as they are inclined to associate high prices with high quality (Maree 2013). Consumers will not typically move on to actual purchasing if the product's perceived value does not add up to the price of the product (Schiffman & Wisenblit 2019). Consequently, if consumers perceive an unfairness in pricing, it will influence their enthusiasm to purchase and support a store (Schiffman & Wisenbilt 2019).

Price fairness corresponds to the evaluation conducted by the purchaser of the seller's price (De Toni et al. 2018). Another factor predicting the actual purchase of the product is the individual's income (Alalwan 2018), as consumers will be more inclined to only purchase their basic staple food when they have a lower income. Therefore, consumers tend to make purchases in relation to their income, and consumers in lower-income households make necessary purchases and buy staple foods that last longer and satiate their hunger. On the contrary, a study on organic food in India found that consumers are more likely to pay a premium price for food products that provide perceived benefits for health (Singh et al. 2017). In summary, it can be concluded that consumers link product price to product quality, and their income and the perceived benefits from the product vs the price of the product influence their behaviour and will determine their intent to purchase.

3.3.1.1.3 Packaging

Packaging serves numerous functions in the supply chain, such as protecting contained products from external elements, enabling product distribution and use, and communicating regarding the contained products (De Koeijer et al. 2017). Packaging has become more than merely a function to preserve and protect the product for the duration of its distribution (Rundh 2013). Packaging is considered very important in portraying the image that the brand wishes to communicate to buyers (Schiffman & Wisenblit 2019).

In a study examining how gluten-free labels in packaging impact the evaluation of food products, it was concluded that all was dependent on the participants' positive belief in a gluten-free diet as well as their low self-reported knowledge about gluten-free products (Prada et al. 2018). This creates a positive effect for perceived healthiness among companies that provide any information regarding nutrition and health in some form on the packaging (Plasek et al. 2020). Another study regarding the colour and perceived healthiness and attractiveness of food products found that the packaging of healthier alternatives should be warmer and use less bright colours (Tijssen et al. 2017). Packaging and packaging design are also regarded as a successful way of distinguishing between product offerings from those of opponents (Rettie & Brewer 2000). Product packaging calls attention to a product and influences the consumers' purchase decision (Wang 2017).

Consumers mostly base their perception of food packaging on the functional aspects (recyclability, clever wording, purposive factors and also physical attributes [quality and being hygienic]) (Schiffman & Wisenblit 2019) that help build brands and drive sales (Rundh 2013). Literature from Shah et al. (2013) revealed that packaging elements are, for the most part, important to influence the consumer's purchasing decision. Consumers rely on sensory aspects

when there is little or no experience with the product; they purchase based on the product's aesthetic appeal vs functionality, while keeping in mind how it will affect the environment.

3.3.1.1.4 Retail store image

Store image relates to the total consumer's perception of a store and their experience of shopping in that store (Khan 2018). The image thus reflects the store's identity and personality (Fuentes-Blasco et al. 2017). Customers will also spend more time in a store if it has a pleasant environment (Fauzi et al. 2018).

The retail store image comprises a collection of factors such as the level of service, brands sold, physical environment, stock in-store, prices, and typical customers (Schiffman & Wisenblit 2019). The store image can be grouped into both intangible (psychological) attributes and tangible (functional) attributes (Alic et al. 2017). These intangible attributes (Sherman et al. 1997) are well-trained salespeople, cleanliness, lighting, ambiance, pleasurable music, and brands sold in the store (Fauzi et al. 2018; Nkaabu et al. 2017); these make customers feel better and contribute to positive purchasing behaviour. The tangible attributes involve the physical store layout and facilities available in-store, location of store, and others (Burlison 2018). These factors are crucial to consumers as the more welcoming the store is in terms of these factors, the more approachable they are to new customers and the more willing customers will be to try new and innovative products.

Retail stores have their own image, which they portray in order to influence the perceived quality of products (Schiffman & Wisenblit 2019). In a Malaysian study aiming to understand the relationship between consumers' perception of store image and their purchasing intention of private label brands, it was found that store image, together with product quality and price consciousness, influenced the purchasing decision (Norfarah et al. 2018). In support, another study investigating the influence of store image on customer trust in organic vegetables, reported that a good store image could be used to improve customer trust (Alamsyah et al. 2017). Gabriel and Bonuke (2017) found in their study on the direct and indirect effect of store awareness and store perceived quality that store choice is enhanced by the influence of perceived store quality and store recognition. This plays the most important role in enhancing consumers' purchase intention. Thus, it can be noted that in order for a product or product brand to thrive in stores, the retail image is crucial, especially when it is an unfamiliar product or brand. The more appealing the retail store image, the higher perceived quality it will hold in a customer's mind.

3.3.1.1.5 Country of origin

Country of origin can be defined as the stereotype, reputation and images that consumers and manufacturers attach to the products of a specific country based on history, economic and political circumstances (Nagashima 1970). Consumers are inclined to use a product's country of origin as an extrinsic cue to make decisions concerning the quality of products (Hsu et al. 2017). When consumers purchase imported products, they create product images, purchase attitudes, as well as purchase intentions based on the image of the country of origin (Xin & Seo 2019). The products' country of origin is thus important because the product is from a region with geographical conditions, tradition, knowledge and climatology (Calvo 2001). All these factors enhance consumers' desirability in buying the products (Fandos & Flavian 2006).

Conversely, traditional products have been perceived as higher quality due to their extrinsic attributes (Espejel et al. 2007). When using a familiar brand, the consumer uses the image of the country to review the product characteristics and henceforth the country image supports the complete perception of the brand. Thus, consumer knowledge has an influence on their use of country of origin products (Alex & Abraham 2015). However, in a study conducted by Herz and Diamantopoulos (2017), it was determined that although there is evidence that a brand's country of origin affects consumers' perception and behavioural intentions, consumers are often reluctant to admit this influence (subconsciously) to maintain an acceptable self-image. Based on a study examining the importance of country of origin for organic food consumers, it was found that country of origin knowledge is typically low among consumers, but it does play a role if they use it as a marginal cue towards judging product quality (Thøgersen et al. 2017). An estimated twenty-five percent of consumers are influenced by the product's country of origin when making a purchase decision (Alex & Abraham 2015).

Another element of importance is the fact that unique products prevent replication of products and thus ensure competitive advantage (Espejel et al. 2007). According to Espejel et al. (2007), product differentiation is a progressively significant objective within traditional food markets. Studies indicate that trading patterns display that exports from emerging economies will increase up to sixty percent by 2030 (WTO 2011). This would positively influence countries such as South Africa and offer more opportunities for indigenous grains to be utilised and exported. In conclusion, it can be noted that the country image is a key attribute for consumers. South African consumers might be prone to purchasing local products, and a competitive advantage can be gained by evaluating how consumers in South Africa and globally perceive these products based on their perception of South Africa's country image.

The above-mentioned section discussed the five extrinsic attributes that were defined and explained in reference to their importance on how consumers perceive a product's quality and value. This ultimately provides substantial information as to what is regarded as important factors when looking at a new product from a consumer's perspective, and enables marketers and companies to keep in mind what attributes they need to focus on to successfully position these products. Once an understating of consumer perception and the external influences thereof is gained, it is important to establish consumers' attitude as a psychological influence to purchasing behaviour.

3.4 CONSUMER ATTITUDES

An attitude is a learned predisposition to behave in a consistently favourable or unfavourable way towards a given object (product, person, brand) (Fishbein & Ajzen 1975). Therefore, attitudes are learned and formed whenever people are asked to express whether or not they like or dislike certain products, services, brands, and other external product attributes (Schiffman & Wisenblit 2019). Consumer attitudes vary from person to person due to inherent factors such as their emotional feelings, psychological attributes and external factors such as their cultural status, social and family preference (Lin et al. 2018). It is also clear that attitudes provide a predisposed manner in which someone will behave, thus linking their attitude with behaviour (Szmigin & Piacentini 2018). Also, attitude does not stay the same, but changes over time (Guido 2013).

Schiffman and Wisenblit (2019) discuss the tri-component attitude model that explains attitudes' cognitive, conative and affective components. Cognitive components refer to knowledge and perceptions of the features of an attitude that a person might have acquired from direct experience with a product. The affective component refers to an individual's feelings or emotions regarding the attitude object, whether or not the person has a positive or negative perception thereof. Lastly, the conative component reflects the possibility that an individual would undertake a specific action or behave in a certain way through expressing an intention to purchase a product. These three components are regarded as important when considering pearl millet, as consumers might have either direct experience of the product, or have a feeling about it based on similar products, or they might form a positive image thereof because it is "new" or "healthy", or provides some benefit that will lead them to have a positive inclination of purchasing it. In Section 3.5, consumer knowledge is discussed as the third psychological influence on purchasing behaviour.

3.5 CONSUMER KNOWLEDGE

There are a few key concepts that should be clearly differentiated where knowledge in general is concerned. To be exact, the distinction needs to be made between indigenous knowledge,

indigenous crops, and consumer knowledge. Indigenous knowledge is considered the local knowledge that has been developed and collected over time and has been passed down through generations (Mugnwisi 2017). The Department of Agriculture, Forestry and Fisheries (DAFF 2012) defines ITFCs in South Africa as crops that initially started to grow in the country or was introduced into the country from somewhere else and are now accepted as traditional crops and is identifiable to the consumer. Consumer knowledge can be described as a mixture of experiences, values, as well as known information acquired throughout the course of transactions and exchanges between the retailer and consumer (Roderick et al. 2013).

Knowledge assessment is considered the practice of judgement, where individuals scan their memory for indications that will assist in evaluating their level of product-class knowledge (Whan Park et al. 1994). Consumer knowledge involves three elements, namely objective knowledge, subjective knowledge, and consumption experience (Rowley & Hartley 2008). Consumers' objective knowledge is the information that the consumer memorises, and it can be gained through education or previous experiences (Lee & Lee 2009). It is defined as individuals' long-term memory that indicates accurate information about the product and involves product features, characteristics, usage processes, as well as brand names. Therefore, consumers can determine how knowledgeable they are based on their assessment of the overall product-class data that are stored in their long-term memory. Stored product-class data are more intensely associated with objective knowledge than subjective knowledge (Whan Park et al. 1994).

Objective knowledge offers consumers the opportunity of linking to a stimulus that is aligned with their subjective knowledge. Subjective knowledge refers to what the individual's perception is regarding what they know about a subject (Moorman et al. 2004). Subjective knowledge is also more closely linked to purchase decisions and, in particular, consumers' confidence in choosing products using product attributes rather than their objective knowledge thereof. Product-related experience is more intensely associated with subjective knowledge than objective knowledge. The model of experience is another cue towards knowledge assessment and defines product-related experiences as the product in relation to information searches and product usage (Whan Park et al. 1994). The individual's memory of product experiences influences their subjective knowledge since consumers will conclude that they have used the product and therefore perceive to know a lot about it. This will also influence consumers' objective knowledge through being stored in their memory (Xin & Seo 2019).

For this study, consumers' knowledge is important in order to understand what consumers' perception and attitude are towards indigenous crops, which have not received much attention and have not been commercialised (Directorate of Plant Production 2013). Having the right to be informed empowers consumers to act in line with their attitudes and knowledge relating to the

particular subject (Aitken et al. 2020). Marketers have placed focus on processed foods and ignored nutritious indigenous foods (Van Vuuren 2014); this has led to the overconsumption of non-nutritious food, which ultimately affects human well-being (Aitken et al. 2020). Consumers have limited knowledge of indigenous crops and its potential health and nutritional benefits, and they are unaware of the possibilities of developing products from indigenous plants (Aitken et al. 2020). Product-specific information at the point of purchase is an important element of action knowledge and an important link in translating consumer attitudes and intentions into actual consumption behaviour through its role in perceived behavioural control (Nkondo 2015).

3.5.1 Consumer subjective knowledge

Subjective knowledge can influence consumer decision-making by enhancing the possibility that consumers will seek within locations they frequently visit and is dependent on subjective knowledge (Wang et al. 2017). For example, if a consumer believes they are knowledgeable about health and indigenous grains such as pearl millet, this would increase the probability that they would find themselves near stimuli related to that knowledge, such as stores' health departments. Therefore, consumers' subjective or perceived knowledge of products could affect the quality of their choices by changing where they seek certain products. Moreover, perceived quality refers not only to consumers' subjective perception but also to the inherent quality of a product or service, which appeals to consumers and eventually results in their purchase decision (Moorman et al. 2004).

Subjective knowledge is firmly linked to product-related experiences and consumers' assurance of their ability to make successful decisions (Parker et al. 2011). Consumer research differentiates between individuals' actual knowledge and their evaluation of their knowledge (Brucks 1985). Consumers are knowledgeable of an investment (high objective knowledge), but if they believe they have inadequate knowledge (low subjective knowledge), they would likely opt for a safer alternative, whether or not that option is best suited to their needs (Hadar et al. 2013). For example, if consumers are knowledgeable about pearl millet but feel they have insufficient information concerning the product, then they would most likely choose a well-known grain instead. When consumers feel that they know a lot about certain products (high subjective knowledge) but their actual knowledge of the product is limited (low objective knowledge), they are more prone to make risky or impulsive decisions.

Another influence on consumer decision-making is the personality trait, consumer dogmatism. This trait measures the extent of rigidity versus openness that consumers present towards unfamiliar products and information that is different from their own customary beliefs. For

example, consumers who are low in dogmatism are more likely to choose new and innovative products (Schiffman & Wisenblit 2019).

The more subjective knowledge consumers have, the more confidence they have in their purchase choice and purchase behaviour, which creates a positive purchase attitude. Reportedly, consumers' subjective knowledge of olive oil has more relevance to the frequency with which they consume olive oil than their objective knowledge (Xin & Seo 2019). Generally, if consumers have sufficient subjective knowledge about a product (components of the product, how to use it, product effect, and how to buy the product), they tend to think the purchase is valuable because they are confident about the purchase choice. For example, the more subjective knowledge Chinese consumers have about Korean functional foods, the more likely they will be to have a positive attitude towards such purchases (Xin & Seo 2019).

3.6 NEED RECOGNITION

The first step in any decision-making process is need recognition, when problems are identified by customers and their motivation arises (Yuechan & Xue 2017). Individuals realise that they have an unfulfilled need or want (Hoyer 2020) and become conscious of the purchase problem, which must be satisfied or resolved (Schiffman & Wisenblit 2019). Needs can occur immediately and can be a basic impulse which is known as an internal stimulus, whereas an external stimulus is an individual being affected by outside influences (marketers, family, friends). Thus, marketers help consumers realise their need by advertising to activate a need or want (Stankevich 2017). This is especially important when introducing new products into the market. For example, numerous consumers have restricted knowledge concerning pearl millet and, as a result, do not identify the need and function of indigenous products.

There are two ways need recognition typically occurs; first, when either faced with an *actual state type* problem, which is where consumers realise that the product currently on hand is failing. The second is the *desired state type* problem, that occurs when consumers recognise a need through their desires to have something (Hoyer 2020). Consumers are also considerably influenced by pre-existing needs and preferences (Carver & Scheier 1990). Consequently, food purchases are based on the similarity among products and the similarity between products and consumers' current purpose, such as sustainable living. Therefore, marketers need to be proactive in creating product awareness to ensure that the psychosocial core is raised in the problem-recognition stage; the search begins by getting more information (Hoyer 2020).

3.7 PRE-PURCHASE SEARCH

The information search begins once a consumer has detected a need that might be satisfied with a service or product (Majamäki 2019), and the process involves searching for information once the need has been recognised (Hoyer 2020). When consumers experience needs that could be fulfilled by a certain product, they search within their own memory, namely the psychological field, before searching for external sources of information. Prior experiences are regarded as internal influences, and as consumers' experiences increase concerning pearl millet, the less external information would be required. It also depends on whether the product is a low or high-risk purchase (Schiffman & Wisenblit 2019).

Consumers might be exposed to substantial information, and this stage also reflects their level of involvement in a purchase (Hoyer 2020). Low involvement purchases are those of low risk such as buying bread and milk, whereas high involvement reflects purchases with a perceived higher risk, and therefore they require a substantial amount of information (Stankevich 2017). The availability of and access to certain products and brands limits consumers' choices as well. When there are many choices, customers start to evaluate the value of the product itself and its added value; this involves a consideration of various consequences and possible risks generated from the purchase (Yuechan & Xue 2017). Situational factors that are potentially able to increase the pre-purchase search include first-time purchases, unsatisfactory experiences within a product category, and no former experience because of product newness (Schiffman & Wisenblit 2019). After the consumer has dug deep internally (ask themselves if they have had previous experiences) and consulted external sources (asked family or friends), they would move on to evaluating the alternative they have found.

3.8 EVALUATION OF ALTERNATIVES

Consumers gather information about different alternatives and use this information to select among competing brands for the solution best suited for their needs (Stankevich 2017). When product characteristics and quality preferences are considered based on expectations (Schiffman & Wisenblit 2019), alternatives can be narrowed down. Several elements influence the consumer's selection, for example, price, benefits, and green promotions (Schiffman & Wisenblit 2019). Participants evaluate the potential alternative prior to making the actual purchase. However, if the consumer has had previous experience with this product, they then repeat the purchase based on their level of prior satisfaction (Hoyer 2020). Consumers in this stage might ask themselves questions on whether they actually need this product or whether there are better alternatives (Stankevich 2017). Consumers typically evaluate the alternatives by making a list of possibilities and the criteria they use to evaluate each possibility (Majamäki 2019). When

evaluating pearl millet, consumers might compare the indigenous grain to similar grains or similar brands that they might know. Once this stage is complete, the consumer will move forward by choosing a product and the purchasing experience begins.

3.9 PURCHASING EXPERIENCE

Once the consumer chooses which brand or product they will buy, they still need to implement the decision to make the actual purchase to close the deal (Stankvich 2017). Once the alternatives are evaluated and the consumer feels that the right product has been found, it is time to make the purchase (Majamäki 2019). A lack of experience complicates the purchase experience since the consumer has no information to help them decide (Erasmus 2013). If consumers do not have previous experience with pearl millet, they would have no reference against which to repeat the purchase, but if they make a first-time purchase, they would be able to evaluate their purchasing experience afterwards.

3.10 CONCLUSION

In conclusion, this chapter provided background information about the consumer decision-making process. It focused on the transformation phase of the model in relation to consumer perception, attitude, and knowledge. Consumer attitudes were discussed based on Fishbein and Ajzen's TPB (1985). Through the model, it is evident that consumers' attitude towards behaviour, their subjective norms, and perceived behavioural control all influence their intent to purchase, which will determine actual behaviour. Therefore, consumer attitude towards purchasing new, unfamiliar products such as pearl millet, their subjective influences who will support the product purchase or not, and also the consumer's perceived behavioural control would determine intent to purchase.

Previous studies that used the behavioural model provided support in determining consumer attitudes. Perception was defined, and the extrinsic attributes, namely perceived quality, perceived price, packaging, retail store image and country image, were discussed to indicate which factors affect the decision-making process in the absence of knowledge. It was evident that all factors are applicable when consumers have no previous experience or knowledge relating to the product.

Next, consumer attitudes were discussed in terms of what they are and how they are formed as psychological influence. Then, consumer knowledge was discussed, and consumers' subjective knowledge was emphasised as it links with consumers' perception and attitudes in determining overall knowledge of a product. Lastly, the conceptual framework was developed based on the two models mentioned above, and the need recognition, pre-purchase search, evaluation of

alternatives, and experience that influence overall purchase behaviour were discussed. In Chapter 4, the research methodology that was implemented in this study will be discussed, addressing the qualitative research paradigm and explaining how the research was conducted.

CHAPTER 4 – RESEARCH METHODOLOGY

The chapter presents the methodology that was implemented in order to address the research objectives of this study.

4.1 INTRODUCTION

The former chapters discussed the theoretical background to this study and an overview of the indigenous grain, pearl millet. Chapter 3 presented the conceptual framework that reflected the researcher's understanding of the components of this study, and suggested relationship beliefs, expectations and assumptions that guided the research. These concepts, in essence, define or present an outline of the topic of the study (Tamene 2016).

The conceptual framework was constructed to reflect why a study on pearl millet was important and what contributions these findings will make to what is already known in the body of knowledge (Varpio et al. 2019). A conceptual framework was developed to provide a theoretical approach to the study, that included the decision-making process and intention theory, as well as the key components the research explored. These included consumer perception, attitude and knowledge of pearl millet, and how these elements potentially relate to each other. This chapter's research methodology illustrates the systematic process the researcher followed to explore the different components of the research, set out in the conceptual framework.

Kothari (2004) differentiates between research methodology and research methods by defining research methods as the techniques researchers use to conduct research, whereas research methodology is understood as the science of studying how research is conducted on a scientific basis. According to Rajasekar et al. (2013), research methodology is defined as an organised system to resolve a challenging situation. For this study, the challenge was to explore the way in which consumer perception, attitude and knowledge influenced consumers' decision and intent to purchase pearl millet. As a result, the fundamental influences of each of these attributes needed to be addressed. Kivunja and Kuyini (2017) define a methodology as a broad term referring to procedures, methods and approaches used within a study to find information relating to the subject. In this instance, the selected methodology would assist the researcher in addressing the objectives of the study.

This chapter briefly presents the research aim and objectives, and the methodology that was used to determine the role that attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet. The research paradigm within which the methodology was framed is also presented. Therefore, the research paradigm implemented in this study assisted

the researcher in exploring consumer attitude, knowledge and perception in depth, and will be explained in the context in which it assisted. The study location and sampling strategies are also provided, followed by the data-gathering method that was used and the data analysis process that was applied to the qualitative data. The trustworthiness elements that were considered in this study, and the ethical approval received for the study, are ultimately discussed.

4.2 RESEARCH AIM AND OBJECTIVES

The aim of this study was to **explore the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet**. To achieve this aim, the following objectives were formulated:

Objective 1: Identify consumer's knowledge about pearl millet in terms of their:

- 1.1 Subjective knowledge (self-assessed) of pearl millet in relation to the extent of their knowledge about pearl millet.
- 1.2 Objective knowledge about pearl millet through an exploration of the product characteristics and usage of pearl millet
- 1.3 Product-related experience of pearl millet whereby the information attributes consumers search for and the purchase experience of the product will be determined

Objective 2: Determine consumer's perception of pearl millet in terms of the external attributes that influences the decision and intention to purchase:

External attributes influencing consumer's intention to purchase:

- Perceived quality
- Perceived price
- Packaging
- Retail store image
- Country of origin
- Consumer openness to new products

Objective 3: Explore consumers' attitude towards pearl millet in terms of the influence of normative beliefs, behavioural beliefs and control beliefs.

Objective 4: Propose a conceptual framework of the attitudinal, perceptual and knowledge factors that influence consumer's decision and intention to purchase pearl millet.

4.3 PROPOSED PARADIGM

A qualitative research paradigm was followed for this study. Qualitative research is defined as a research methodology that involves an understanding of the procedures, cultural and social circumstances that motivate certain behaviour patterns (Creswell et al. 2018). It begins with assumptions, as a view through a theoretical lens, and is the study of a research problem inquiring into a group of individuals or social problems to establish patterns or themes (Cresswell 2016). This paradigm provides insight into sources of complex behaviours and motivations and is appropriate in areas of limited research (Walsh et al. 2015).

The aim of qualitative research is to develop a theory that would explain what was experienced through the interpretation and observation of reality (Creswell et al. 2018), particularly looking into consumers' experiences where pearl millet is concerned. The goal of qualitative research is not statistical representation but rather phenomenological exploration, involving multi-faceted and thorough research of complex social realities. These are then reconstructed and portrayed in themes and patterns (Lenger 2019). The aim of phenomenology is to capture experience in its essence without explanation, interpretation, or theories (Hysserl 2014). The phenomenological term 'lived experience' does not discuss any kind of deep fundamental event, experience, or hidden source of meaning, but is defined as the name for everyday life experience as it carries us on in its lived everyday current (Van Manen 2017). Therefore, through qualitative research, consumers' knowledge of pearl millet, their attitude towards it, as well as their perception thereof, could be explored through the consumers' every day lived experience of making decisions on purchases related to pearl millet.

Furthermore, qualitative research methods are described in a descriptive manner, through interpretation of perceptions, signs, expressions, attitudes (Macías & Contreras 2019). For the purpose of this study, the qualitative research method allowed the researcher to gain a deeper understanding into consumers' attitude, perception and knowledge towards their everyday purchases, and determine their decision and intent to purchase indigenous grains such as pearl millet.

The key attributes of this paradigm include general and broad questions to seek and understand participants' experience with the particular phenomenon (Ivankova et al. 2006). It involves establishing the who, what, where and why of certain experiences (Turale 2020). Rahman (2017) emphasises several advantages related to qualitative research. Firstly, this method involves gaining an in-depth description of the participants' opinions, feelings, and experience. It also translates the meaning of why they do what they do and feel the way they do. Secondly, this method holistically recognises the human experience in certain settings. Thirdly, qualitative

research allows researchers to discover participants' inner experience and enables them to determine how certain meanings are formed through culture. Lastly, qualitative research has a flexible structure as the design can be formed and reformed to a greater level (Rahman 2017).

For the study on pearl millet and consumers' decision and intent to purchase it, participants had to be probed for answers in relation to their attitude towards pearl millet, how they perceive it, and what knowledge they have; whether it be subjective, objective or actual product-related experience. If the participants had limited or no experience with pearl millet, then it would further add to the need for more awareness of the product. Also, if they had experience, the researcher could establish how they make purchases and what influences their intent to purchase products, specifically new products, such as pearl millet. If the participants had experience of the product, the researcher could also explore what their attitude was towards pearl millet, their perception thereof, as well as any knowledge that could contribute and establish whether they would repeat the purchase. Participants might be unaware of their motives, and qualitative research was thus used to delve into consumers' unconscious or hidden motivations (Schiffman & Wisenblit 2019), opinions and reasoning. Therefore, by using a qualitative research paradigm, it allowed the researcher various options to gather data, which is of great value when formulating an exploratory study (Neil 2007).

Research frequently transpires in a natural, unmanipulated and non-bias environment which aids the continuing process of exploration, as well as discovering novel and auspicious findings. It provides the prospect for a close connection to develop between the researcher and participants (Curtin & Fossey 2007). Due to this continuing process, more and more research could be conducted regarding pearl millet and consumers' response to it through additional external attributes, and could lead to future studies.

Subsequently, the qualitative paradigm was chosen as the most appropriate paradigm for this study. The advantages of qualitative research helped the researcher achieve the objectives of this study by gathering information on what consumers currently know, perceive, and what their attitudes are towards pearl millet, based on their lived experiences. Therefore, the qualitative paradigm allowed the researcher to establish whether consumer knowledge, perception and attitude can offer some indication of intended purchases in future.

4.4 RESEARCH DESIGN

The research design forms the foundation for the total research project and helps to complete the selected task in an organised and effective way (Burns et al. 2016). An exploratory design (Kivunja & Kuyini 2017) was adopted to qualitatively explore the role that attitude, perception, and

knowledge plays in consumers' decision and intention to purchase pearl millet. An exploratory research design is defined as an informal manner of collecting information (Rajasekar et al. 2013). This design is appropriate when researchers only know a little about the research problem being studied (Alvi 2016). According to the researcher's evidence provided in Chapter 1, no prior research could be found regarding consumers' perspectives of pearl millet, especially not in South Africa. This reiterates the need to discover and explore how the proposed external attributes would influence consumers' intent and decision to purchase, since nothing is known regarding the topic being researched.

It is imperative for exploratory research to be honest, transparent, and reliable (Reiter 2017). Exploratory research involves defining the research problem, and the results might lead to a future study and improve the practice of a specific discipline (Silayoi & Speece 2004). Therefore, by conducting this study, more research can follow as it is a continuing and evolving process as consumers become more knowledgeable about products and as their patterns of behaviour evolve. Exploratory research is the initial stage in the research process that opens the door to more information on the subject, and can be supplemented by descriptive research going forward (Bhat 2019). This allows the researcher to collect detailed information while enhancing the productivity and depth of investigations that could follow (Key 2002). Therefore, due to the limited research done on this phenomenon, and lack of information relating to this subject, the exploratory approach allowed the researcher to initiate the research process.

By implementing an exploratory design, it enabled the researcher to gain more insight into consumers' perception, attitude and knowledge of pearl millet, to understand what would influence their decision and determine their intent to purchase the product. The collected data might support further research studies to enable further development of pearl millet. By defining the research problem presented in the study, it can also improve the practice of consumer research towards new and unfamiliar products.

4.5 STUDY LOCATION

For this study, participants originated from the province of Mpumalanga, in the city of Mbombela, previously known as Nelspruit. According to Ehlanzeni District Municipality (2020), the population of Mbombela is 110 159 citizens. The participants were recruited by approaching employees from a local food company where the researcher worked. The participants were also asked to willingly nominate other individuals they knew who would also fit the inclusion criteria, as discussed in Section 4.6. This presented a sample of over 36 participants for the study.

In qualitative research, data are typically collected in a natural setting by talking directly to participants and seeing them behave within their context (Creswell 2016). Therefore, this area is where the researcher resided, which made it easily accessible to conduct focus group interviews. The researcher made use of the boardroom office at her place of work after gaining consent from her employer. This provided a comfortable yet professional area to conduct the interviews, that was easily accessible to all participants.

4.6 SAMPLE STRATEGY

The sample strategy is defined as a combination of a sample design and an estimator of a population quantity (Schreuder et al. 2001). Sampling is a method used by a researcher to methodically select a moderately smaller number of individuals from a distinct population to serve as observation, as per the objectives of the specific study (Sharma 2017). Thus, a sample is a portion of a universe or population (Alvi 2016). For the purpose of this study, non-probability sampling techniques were implemented as random sampling was not a feasible option (Vehovar et al. 2017); due to the nature of this study requiring specific inclusion criteria, randomness would not be tolerated. Non-probability sampling is based on judgement (Sharma et al. 2017), and participants needed to be selected according to inclusion criteria and had to be willing to sign up to participate (Lamm et al. 2019). Within non-probability sampling, randomisation is not important in the selection of a sample from the population of interest (Etikan et al. 2016). The benefits of using these methods include requiring less effort, less time to complete, and they are more cost-efficient (Etikan et al. 2016). For the purpose of this study, there was a set of criteria that participants had to meet in order to participate in the study.

One of the non-probability sampling strategies that was used in this study is convenience sampling, which is described as sites or individuals from which data can easily be collected and where access is convenient (Maree & Pietersen 2007b). Convenience sampling describes members of the target population that adhere to practical measures, such as geographical proximity, easy accessibility, willingness and availability to participate (Creswell 2013). Convenience sampling is described as a quick and cost-effective way to obtain results in situations where respondents are chosen since they are conveniently available (Etikan et al. 2016). The researcher made use of participants who were available at the time of recruiting participants and who were willing to take part in this study. The researcher also recruited participants from her place of work after getting authorisation from the company. This made the study geographically more convenient for many participants, and the company's boardroom office was used for focus group interviews.

The data were gathered during the time of COVID 19 in 2020, making it difficult to recruit from all possible contexts. The researcher thus asked many of her colleagues who were in the food industry in different departments (procurement, accounting, design, logistics, quality, product development) to participate and refer potential participants who would match the inclusion criteria. These referrals did not work in the food industry but in other non-food related companies.

The second non-probability sampling strategy that was used to recruit participants for this study was purposeful sampling. In this instance, participants were purposively selected through the implementation of specific inclusion criteria (Maree & Pietersen 2007a). Purposive sampling, also known as judgement sampling, is used when there is a particular purpose in mind (Etikan et al. 2016). Purposive sampling signifies strategic choices relating to where, with whom, and how research will be conducted to purposefully inform and understand the research problem (Creswell 2016). This technique is a well-thought-out decision on who should participate because of the attributes the participants hold (Ames et al. 2019). Purposive sampling is a viable sampling technique when obtaining data from a group of individuals (Creswell et al. 2018) who meet the inclusion criteria set out by the researcher. By using purposive sampling to recruit participants, the researcher was able to justify inferences from the research sample (Sharma 2017) to the broader target population. The researcher decided what is required to be known; for this study, the attitude, perception and knowledge that play a role in consumers' decision and intention to purchase pearl millet. Based on the aim and objectives of the study, specific inclusion criteria were stipulated:

- The participant had to be older than 18 years.
- The participants had to be the main person responsible for purchasing food products within their household.
- Participants had to have heard of pearl millet previously.
- Participants had to be customers of either pharmacies, retail outlets, or any health stores that sell pearl millet products. It is assumed that consumers who shop in these stores are more exposed to health-orientated food, which will increase the likelihood that the participants might have bought or seen pearl millet previously.

Snowball sampling, also known as chain referral (Naderifar et al. 2017), was also used in this study as a supplementary strategy to purposive sampling to increase the quantity of participants meeting the inclusion criteria (Maree & Pietersen 2007a). Snowball sampling can be described as the process of identifying participants, who are then used to refer the researchers to other participants (McDaniel & Gates 2010), or making use of the connections of participants (Harris et al. 2009) through which more participants can be recruited. Furthermore, the technique is used when the target sample is hard to find. By making contact with a few participants in the target

population, they then approach people they know who fit the inclusion criteria and who would be able to fit the context of the study to also participate (Creswell et al. 2018). This method was applied by asking participants to take part and, upon their consent, they were asked if they would consider asking 2-3 friends that meet the inclusion criteria to take part. This was quite effective and worked for the majority of the focus groups.

4.7 DATA COLLECTION

Data collection often involves processes of self-reflection and making clear how researchers' value guided or limited the formation of analytic questions (Creswell 2018). Numerous methods could be used to collect data for this study, and a multi-method data-gathering approach was ultimately selected. This multi-method approach provides additional visual aids that can keep participants focused, as using only one data collection method might become tedious and repetitive for participants (Maree & Pietersen 2007b). The main data-gathering technique that was used is focus group interviews, which was enhanced through the use of an interview guide. Data were collected between October 2020 and November 2020.

The interview guide included open-ended questions which gave the participants the opportunity to provide their own thinking and ideas related to the question. A sentence completion exercise was the second instrument used in this study, and was presented to the participants to assist the researcher in gaining an in-depth understanding of pearl millet in terms of normative beliefs, behavioural beliefs, and control beliefs. Questions related to these beliefs are indicated in Table 4.4. A projective technique using photographs of pearl millet products, as indicated in Table 4.2, was also applied; the photographs were handed to the participants to discuss their product experience. The questions pertaining to the pictures are also indicated in Table 4.2.

4.7.1 Data-gathering instruments

As indicated in the previous section, this study made use of three data-gathering instruments, namely focus group interviews, projective techniques, as well as a sentence completion exercise to gather data for this study.

4.7.1.1 Projective techniques

Projective techniques are defined as a data collection method that allows participants to expose their subconscious perceptions, thoughts and also their beliefs through the use of images, objectives and connotations (Pinto et al. 2018). These methods are frequently used in marketing and consumer research by acquiring indirect as well as direct, subconscious opinions and

perceptions (Pich et al. 2018). Thus, these techniques aided the researcher in uncovering consumers' perceptions that could not be detected through simple and straightforward questioning (Sirieix et al. 2011).

Projective techniques were included in this study to determine if participants knew what pearl millet was and if they had used it before. Some might have heard of this grain (if they ate it cooked at a friend's house), but they might not know how the raw format or bar format might look. Many participants did not have experience with pearl millet, and others were unsure if they had; through this technique and images, they could see exactly what it was and their attitude and perception towards it could be established, even though there was minimal knowledge of the product.

The researcher provided pictures of the different formats in which pearl millet is sold, and additional questioning commenced regarding the pictures of the products. The images were chosen based on what the researcher could find online regarding pearl millet and to illustrate differently packaged products. The first picture represented pearl millet that is dehusked and packaged in a large doy bag with simple labelling. The next picture reflected pearl millet flour, also in similar packaging, but that would possibly be used to bake with. The third image was of a product containing pearl millet as an ingredient, such as high in fibre bars; these bars are a convenient, ready-to-eat format of pearl millet (see Table 4.2).

Sentence completion exercises provide qualitative data relating to consumer views in a structured format (Churchill et al. 2010). Participants were asked to complete a sequence of sentences to determine their behavioural beliefs, control beliefs and normative beliefs, and establish their intent to purchase. The findings are typically less time-consuming and are useful to understand consumers' perceptions; this technique complemented the other data collection technique (Kujala et al. 2014). Well-constructed sentence completion exercises also have the advantage of diminishing any propensity to lead or bias participants (Lichtenstein et al. 2003).

The main data-gathering instrument that was used in this study was focus groups. Focus groups are defined as well-planned interviews within a group setting, which involves a joint activity and discussion determined by the researcher (Nieuwenhuis 2007). The focus of this discussion was based on the information the researcher wished to collect in light of the study's objectives. The focus group interview strategy is rooted in the assumption that group interaction will be effective in widening the range of responses, activating forgotten details of experience, and releasing inhibitions that may otherwise discourage participants from disclosing information (Botma et al. 2015). For this reason, focus group interviews were considered useful for this study.

People are likely to share personal information when they perceive that they share common interests such as age, gender, occupation, marital status or attitudes regarding a certain topic (Schiffman & Wisenblit 2019). Numerous marketers prefer focus group interviews since they feel there is a dynamic interaction between participants in focus groups, which then yields more new ideas and insights (Krueger & Casey 2014). Usually, focus groups are comprised of groups of five to eight participants (Botma et al. 2015). When the participants have to share in-depth, intense and lengthy experiences, four to six participants are more desirable, but when the focus is more on sharing perceptions, six to eight participants are preferred (Krueger & Casey 2014). For this study, the researcher conducted twelve focus group interviews with three participants in each group. The time factor played a role, and most participants only had their lunch hour available to take part in the focus groups. By keeping the focus groups small, it allowed for a 45-60 minute focus group on average. The number of focus groups was dependent on the level of saturation of the data obtained during the interviews (Silverman 2015). Data saturation is the point in data collection and analysis when new information produces little or no new change to the codebook (Fusch & Ness 2015). Data saturation typically depends on the purpose of the research, topic of interest, participants, methods of data collection, as well as analysis (Tran et al. 2016). In this study, data saturation became apparent between focus group 9 to 12, as no new information emerged. The focus groups were digitally recorded with participants' consent. The focus groups were conducted in person in a safe environment, keeping safe distance protocols according to COVID 19 regulations.

4.7.2 Operationalisation

In this study, the term operationalisation will be used to indicate how each of the objectives were explored in this study. Although the term is particular to quantitative research, the concept helped the researcher present the questions used to address the purpose of each of the objectives; the interpretation of the questions is presented as data in the next chapter. Therefore, each of the objectives and the related questions are presented in Tables 4.1 – 4.4 in Appendix D. Next, the design and layout of the focus group interviews are briefly discussed.

4.7.2.1 Design and layout of focus group interview questions

Focus group questions were formulated based on the literature that was collected relating to pearl millet. Even though those studies did not explicitly study consumers' intention to purchase through evaluating the consumer knowledge, perception or attitude, they did emphasise the nutritional value and physiochemical composition of pearl millet, changes in pearl millet when cooked (Adéoti et al. 2017), iron-biofortified pearl millet food (Azhari et al. 2017), as well as the potential uses of pearl millet. The research questions were thus developed based on the researcher's

understanding of prior studies regarding the subject, and were designed to ensure that the questions would answer the objectives of this study. Therefore, the focus group interview layout consists of six divisions, focusing on demographics, subjective knowledge, objective knowledge, product-related experience, consumer perception, and consumer attitude towards pearl millet (Appendix D).

4.7.3 Pilot testing of the instruments

Hassan et al. (2006:70) define a pilot study as “*a small test for research protocols, data collection instruments, sample recruitment strategies and other research techniques*”. To pilot an instrument means pre-testing the data instruments to ensure accuracy (Hazzi & Malidaon 2015). The focus group interview question guide, projective technique, and sentence completion exercise were piloted to ascertain whether the questions were articulated in an accurate and comprehensive way, and whether responses would address the set objectives. It was important to understand whether the participants correctly understood what was asked of them through the data instruments and gain an idea of the duration of the focus groups. Within the pilot test there was 3 participants who took part and the pilot test had the exact same layout as the main study, and the collected data were included in the main study due to the interesting concepts that emerged. Since the data collection instruments were tested, certain necessary changes could have been made. However, for this study, the interview guide, projective technique and sentence completion exercise were only slightly changed in terms of how questions were asked, as some of the pre-test participants thought a few questions were similar than previous ones. Overall, the data instruments remained unchanged to ensure that the same order was followed in order to ensure transferability and credibility. Pre-testing data collection instruments is also beneficial due to it being a quick and cheap way to obtain findings (Maree & Pietersen 2007a), to establish if any changes need to be made. These questions are carefully considered and are guided by the “why”, “who”, “where” and “what” of an event (Turale 2020).

To pilot the questions, a convenient sample of participants was used who matched the inclusion criteria. The researcher asked two colleagues to join the meeting, and the supervisor was present to observe the proceedings to see whether the researcher was able to guide the participants through each instrument and apply the probing technique to gain further understanding and clarification of the participants’ responses. The piloting of the instruments was conducted at the researchers’ place of work, virtually through Microsoft Teams, and the information that was gathered served as a foundation to determine any issues with the questions. This ensured that any potential problems could be addressed and reviewed before the commencement of the focus group interviews. The researcher gained consent from the relevant manager to conduct the pilot focus group to test the interview guide.

For the rest of the study, the researcher recruited participants, as discussed in Sections 4.5 and 4.6. The participants who decided to partake voluntarily needed to provide permission to the researcher via email by completing a consent form (Appendix B). They were also sent an additional document, which included questions relating to their demographic information that needed to be completed prior to the study.

4.7.4 Main study data-gathering procedure

The researcher scheduled a focus group interview upon receiving consent at participants' earliest convenience. These focus group sessions were not done electronically over Microsoft Teams but face-to-face. The communication between the researcher and the participant remained confidential. Both the pilot of the data instruments and the main study were conducted in the following manner:

- a) Upon arrival, the participants were welcomed and offered coffee, tea or water before the focus group commenced.
- b) The participants were formally welcomed and introduced to one another by the researcher, and their names were used throughout the focus group session.
- c) The participants were reminded that the session would be recorded, and the proceedings commenced by giving them a quick brief of the aim and objectives, as well as the research problem of the study and why they were there. They were also reassured of their confidentiality and anonymity, and the recording commenced from this point.
- d) The researcher indicated that they were welcome to leave at any time if they wished to no longer participate.
- e) The researcher encouraged them to answer as truthfully as possible and that any information they give is better than saying nothing. A natural flow of answers was encouraged – to each time start with the same participant and move on to the next participant. This would ensure that all participants were given opportunity to respond to the questions.
- f) The projective techniques and sentence completion exercise were also part of the study, and the participants were asked to respond verbally to each question and not by writing anything down.

Each focus group lasted between 45-60 minutes. After the final question was addressed, the participants were asked if there was anything else they wished to add or say, but no one thought that there was anything more they could contribute to this study. The participants responded with ease to all the questions and did not really need to be probed further due to their answers being

well-defined. In closing the focus group, the participants were thanked for their contribution and were asked if they would be willing to review the transcription from their interview to ensure that the researcher captured their responses truthfully; everyone happily agreed. After the ninth focus group, it was evident to the researcher that no more information was provided, and saturation occurred. The researcher continued to focus group 12 to ensure data saturation had indeed been confirmed, and no further interviews were held. Thus, the data analysis process commenced, as discussed in the next section. In all 12 focus group sessions, three participants were included, constituting a total of 36 participants.

4.8 DATA ANALYSING

Qualitative data tend to be extremely lengthy and require extensive examination, understanding and thorough reading (Nieuwenhuis 2007). Therefore, it is necessary to approach the extensive amount of data in an organised and structured manner. The digitally recorded data were transcribed by the researcher. Transcripts are compressed, transferrable and reproducible, which also provides simple and efficient access at any time (Hepburn & Bolden 2017). Transcription involves two phases, namely a rough transcription, and a refined transcription (Nieuwenhuis 2007). For this study, the first rough transcription occurred by listening to the selected data recording and writing down the verbal content of interactions (Moore & Llompарт 2017). After completing the initial rough description, the researcher reviewed what answers were reiterated to compile related concepts from participants' statements. Each participant received an interview guide to read through; questions were readable and a sufficient amount of information was provided (Meredith 2016). Data were transcribed in Microsoft Word by typing up sentences as participants spoke, and the data were saved and data analysis commenced by employing content analysis. Content analysis is a methodical method that recognises and summarises message content. This is the method of beholding data from diverse viewpoints to identify keys in the text that will help the researcher to understand and interpret the raw data. Content analysis is an inductive and iterative process where the researcher looks for likenesses and variances in the text that would collaborate or contradict theory (Nieuwenhuis 2007).

The researcher implemented coding by cautiously reading through each line of the transcribed data and then separating them into expressive analytical units (Nieuwenhuis 2007). Coding is described as marking segments of data with symbols, descriptive words, or unique identifying names (Linneberg & Korsgaard 2019). The core essence of coding includes evaluating a coherent portion of empirical data and labelling it with a word or short phrase to summarise its content. Coding has several advantages, namely to create an inventory of data which allows the researcher to gain a deep and comprehensive insight into data, make data easily retrievable, ensuring transparency, validity and providing structure (Cresswell et al. 2018). The codes

themselves do not behold information beyond indexing sections of text and are used only to specify the occurrence of a specific researcher-defined theme or concept of data (Pokorny et al. 2018). Once coding was completed, the researcher proceeded to establish themes or categories through combining and organising related codes into categories and themes.

The categories were in accordance with the objectives set for this study. The focus group interview guide was set up according to earlier identified sections, namely subjective knowledge, objective knowledge, product-related experience, consumer perception and consumer attitude towards pearl millet. From these sections, questions were developed, and the responses were then categorised according to the concepts that emerged. It was evident that the categories could be further split into sub-categories to further explain what has been found and present more detail on acquired information. The data categories were then organised through visual representations such as network diagrams to indicate direct links between the categories and sub-categories (Nieuwenhuis 2007).

Once the structuring of the analysed data was completed, the researcher interpreted the data accordingly. The interpretive process happens at various stages in the research process: at the beginning by making sense of what is heard and observed during data gathering, to formulating an understanding of the data, and subsequently, a description of the findings is developed (Fossey et al. 2002). Interpretation allowed the researcher to bring the analysed data into context with existing literature to establish a new understanding of the body of knowledge (Nieuwenhuis 2007).

The interpretation of data included searching for emerging patterns, concepts, associations, and explanations for data (Creswell 2014). Researchers must question themselves within this phase and contemplate what they have learned from the focus group interviews, by studying the transcripts, labelling them, and organising categories of passages (Seidman 2006). Data interpretation ensures that conclusions can be drawn from findings, and these conclusions can be substantiated through the findings within this study to reveal new insights or corroborate existing knowledge (Nieuwenhuis 2007).

Within this study, the researcher also adopted an inductive approach towards the study. The general inductive approach proposes that not all traditional and established qualitative methods can fit all studies, and methodological flexibility is therefore needed (Liu 2017). The general inductive approach was used to examine the qualitative data to recognise concepts and themes in the data that were connected to the evaluation objectives, through a close reading of the text (Thomas 2006). During the analysis, the researcher aims to find similar or different themes within the data by reading it closely, and identifying specific text segments related to the objectives that

might overlap among the categories in an efficient and convenient way (Graneheim et al. 2017). Although the inductive approach is not as strong as some other approaches in the area of theory or model development, it does provide a simple, straightforward approach to attain findings linked to focused evaluation questions (Judger 2016). For the duration of data interpretation, it is crucial to validate the data to establish trustworthiness.

4.9 TRUSTWORTHINESS

Trustworthiness is an extremely important aspect of qualitative research (Nieuwenhuis 2007). Creating a protocol to establish trustworthiness within qualitative research is crucial for accuracy and consistency (Amankwaa 2016). According to Lincoln and Guba (1985), the basics for trustworthiness include credibility, transferability, dependability and confirmability.

Credibility: Shenton (2004) further discusses these concepts by indicating that credibility deals with the question *“How congruent are the findings with reality?”*. Credibility is defined as the confidence that can be placed in the truth of the research findings (Gunawan 2015), and whether the findings represent plausible data gathered from participants’ original information and a correct interpretation thereof (Graneheim et al. 2017). The credibility of the research is enhanced when selecting participants with varied experiences relating to the topic of interest, who can provide insight into the research in different aspects (Korstjens & Moser 2018). To address the credibility of this research study, purposive and snowball sampling techniques were applied to increase the diversity of people and ensure the participants meet the criteria set out. By using participants who had previously heard of pearl millet, even if they had no experience relating to the product, credibility could be increased.

The researcher also included triangulation within this study which is defined as multiple and different techniques being used to reduce bias and cross-examine the integrity of participants’ responses (Anney 2014). The researcher implemented focus groups, sentence completion exercises, as well as projective techniques. For this study, consistency checks were also implemented by encouraging member checking. Member checking is defined as the process where the results from the research project are shared with the participants to allow them to review the results from the data analysis (Curtin & Fossey 2007). This enabled participant to either approve or contest the precision of the work and classify aspects which may have been misinterpreted. The researcher sent emails with the findings to participants to ask them to evaluate the data.

Transferability: Transferability means to ensure that the results of the qualitative study is understood within the context of particular characteristics of the organisation (Anney 2014). This

had been done by providing a distinct description of the unit of analysis, sampling strategy, the study location, data collection process, inclusion criteria, and instruments, as well as the data analysis procedure; should another researcher wish to duplicate this study, they would be able to so. Transferability is a form of external validity; the researcher is accountable for providing profuse descriptions so that those who seek to transfer the results to their own sites can judge transferability (Shenton 2004). The researcher ensured that a clear introduction was given to the participants as to how the focus group would be conducted and allowed participants to ask any questions if there were any uncertainty (Lincoln & Guba 1985). The purposive sampling method also facilitated the transferability judgement (Gunawan 2015), however, the findings can only be transferred to the same target sample and not to anyone else.

Dependability: In order to address the dependability issue more clearly, the procedures within the study should be stated in detail, thereby empowering a future researcher to repeat the work – not necessarily to gain the same findings (Tobin & Begley 2004). To achieve dependability, it is crucial for the researcher to ensure the research process is traceable, logical and well documented (Shenton 2004). For the purpose of this study, the researcher clearly transcribed the audio-recorded responses from participants and ensured to keep it safe. The researcher also provided step-by-step information on how to complete and repeat the process.

Confirmability: The notion of confirmability is the qualitative investigator's comparable concern to objectivity (Nieuwenhuis 2007). This includes the issue of presentation. Therefore, the findings should be the result of the experiences and ideas of the participants, rather than the characteristics and preferences of the researcher (Shenton 2004). Confirmability can be defined by determining that the researcher's interpretations and findings are a derivative from data. This means the researcher demonstrates how conclusions and explanations have been reached (Tobin & Begley 2004). It is typically accepted that the utilisation of several methods of data collection, such as focus groups (Nieuwenhuis 2007) and document analysis, will lead to trustworthiness (Gunawan 2015). For the purpose of this study, the transcriptions were sent to each participant to review their answers and advise whether there was something misunderstood from what they said, missing from what they said, or anything they wished to add to ensure the trustworthiness of findings.

4.10 ETHICAL CONSIDERATIONS

Ethics is defined as the discipline handling what is bad and what is good through obligation and moral duty; for example, it correlates to protecting the anonymity of participants (Creswell 2016). Research ethics are defined as guidelines for the appropriate conduct of research (Papers 2003). Researchers should be as ethical as possible when interpreting the study results (Botma 2015).

Research that includes the involvement of human participants within South Africa has to be reviewed through a recognised research ethics committee, and once the researcher has received approval, the research process may commence (Dooly et al. 2017).

Ethical clearance for this study was obtained from the Health Research Ethics Committee of the CAES at UNISA prior to the commencement of the study. The CAES Ethics Approval is attached as Appendix A (Reference Number: 2020/CAES_HREC/016). The data were only collected after ethical clearance was received. UNISA sanctions internationally acknowledged ethical principles as foundations for research, which includes justice, beneficence, non-maleficence and autonomy (University of South Africa 2013).

Prior to the focus group interview, and on the day of the interview, the purpose of the study was explained to participants, they were provided with the outline of the topics that would be covered, the way the focus group would be conducted was discussed, and an indication was presented on how long it would take to complete the focus group interview. Potential benefits or risks were also covered, and the researcher indicated what would be done with the collected data (Sim & Waterfield 2019). This was to ensure that the participants understood what would be required from them and to ensure full transparency so that they could make an informed decision to partake or not. The researcher also communicated that they were free to leave at any time, and anonymity and confidentiality would be regarded as the highest importance. Participants were assured that all information would be kept strictly within the comfort of the focus group. Data would not be shared with anyone other than the research supervisor. The names of the participants would also not be used in any data analysis or presentation of findings.

Prior to the focus group interview, the participants received a consent form that was presented in Afrikaans and English to ensure optimal communication and prevent any potential misunderstandings or certain expectations from the participant. The information was captured in the consent form that the participants signed (as seen in Appendix B). The researcher also made use of the boardroom office at her place of work and gained permission from her employer to conduct these interviews during the organisation's lunch hour. It is important to note that the participants received no incentive for this study.

4.11 CONCLUSION

In this chapter, the research aim was described, reflecting it is an exploratory study of consumer intention to purchase pearl millet. The study was conducted by establishing participants' attitude, perception and knowledge of an indigenous grain of South Africa. The objective was formulated, and a qualitative paradigm approach was followed. An exploratory research design was

employed, and the study location was in Mbombela, Mpumalanga. Non-probability sampling techniques, namely convenience, purposive and snowball sampling, were employed to select participants. Next, the inclusion criteria were defined, and the data collection methods were discussed. The data-gathering instruments that were used included focus group interviews, sentence completion exercises, and projective techniques through visual aids. Next, the interview guide was discussed to illustrate the researcher's operationalisation of the interview structures. Subsequently, the pilot testing was discussed, along with the layout of the interview guide. Data analysis was the next step and elaborated how the data were transcribed and how themes were grouped that emerged from the answers. Also, the study's trustworthiness was discussed in relation to credibility, transferability, dependability and confirmability. Lastly, ethical considerations were considered and reflected how the researcher obtained consent prior to starting the research and what protocols were followed to adhere to ethical principles.

In Chapter 5, the focus group interviews' findings are categorised and tabulated according to the questions posed in the interviews. The findings are discussed in relation to what other studies have reported on consumers' knowledge, attitude and perception towards making a decision about pearl millet products.

CHAPTER 5 - FINDINGS AND DISCUSSIONS

This chapter presents the findings in accordance with the objectives set out in the study. Figures and tables are included to assist with the interpretation of the findings.

5.1 INTRODUCTION

Chapter 4 presented the research design and methodology used to address the aim of the study, which was to explore consumers' decision to purchase pearl millet by investigating their knowledge, attitude and perception of pearl millet. A qualitative research paradigm was adopted in this study, as it allowed the researcher to explore participants' experience of pearl millet through focus groups, as the main data collection method. Additional data capturing instruments (sentence completion and projective technique) were also implemented to allow for the triangulation of the method. This chapter presents the data gathered through these methods in accordance with the objectives set out in this study. The first section of this chapter focuses on the participants' demographic profile, then the data related to each of the objectives are presented.

5.2 BACKGROUND OF THE STUDY SAMPLE IN BRIEF

The 36 participants who participated in the 12 focus group interviews were purposively selected according to the inclusion criteria set for this study. This criteria required them to be over 18 years of age, have previously heard of pearl millet, should be customers of stores that sell indigenous grains or otherwise known as ancient grains (Akinola et al. 2020), and who are the main food shoppers in their household. The demographic information, as presented in Figure 5.1, indicates that the focus groups consisted predominantly of female participants, with one male participant included in one of the focus groups. The study did not focus on the difference between responses from male or female participants, nor was it designed to distinguish between age groups or ethnicity. The study approached the research topic from the point of view that the opinion of all participants who met the inclusion criteria was considered.

Participants who took part in the focus groups were mostly between 18-29 years of age (66%), with a few who were between 30-39 years of age (28%), and only two participants who were between the age of 50-59 (6%). More than half of the participants' highest level of education was grade 12 (75%), and the rest had either a degree or diploma (25%). The participants were also asked to indicate their current occupation, and almost half (65%) of the participants were found to be in some way connected to the food industry; either in quality, procurement, sales, new product development, and other non-food-related occupations (35%). The researcher could thus

explore whether the participants had any supplementary experience within the food industry that could make such participants more familiar and knowledgeable about pearl millet. The researcher recruited many of her participants at her place of work due to time constraints and convenience, which would explain the high rating of participants in the food industry.

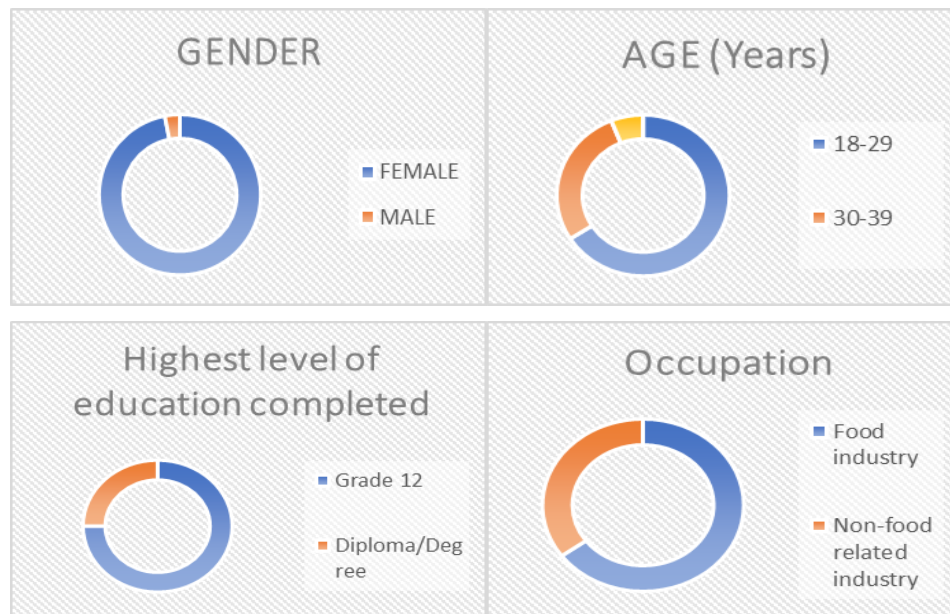


FIGURE 5.1: PARTICIPANT DEMOGRAPHICS

The next sections present the findings related to each of the objectives of the study. In this chapter, the findings are presented in terms of the categories that emerged from the data in relation to each of the questions that were asked. A summary of the main categories that emerged from the data is also presented as a figure to provide a quick overview of the main aspects that emerged in relation to the question that was asked. In some instances, a figure will not be presented where different groups of participants might have emerged based on the findings, or if Yes/No responses were specifically sought. Reasons for a particular response will be presented in figures where the categories that emerged from the data are depicted. Each question will then be discussed, and reference will be made to current literature. Quotations, as a reflection of the exact words used by the participants, will be used to substantiate the categories presented in this chapter. The findings on the first objective, which was to determine the participants' knowledge about pearl millet, are presented first.

5.3 QUALITATIVE FINDINGS REGARDING PARTICIPANTS' KNOWLEDGE ABOUT PEARL MILLET (OBJECTIVE 1)

This study aimed to explore the **role that attitude, perception, and knowledge play in consumers' decision and intention to purchase pearl millet**. The first part of the focus group interviews explored participants' knowledge about pearl millet in terms of a) subjective

knowledge of pearl millet in relation to the extent of their knowledge about pearl millet, b) objective knowledge about pearl millet through an exploration of the product characteristics and use of pearl millet, and c) product-related experience of pearl millet, whereby the informative attributes participants search for and the purchase experience of the product was determined. Each of these sub-objectives is presented in terms of the questions that were asked to address the objective, and the data that emerged from the focus group discussions on each of the questions are included.

5.3.1 Findings of the participants' subjective knowledge (self-assessed) of pearl millet in relation to the extent of their knowledge about pearl millet (Sub-objective 1.1)

As pearl millet is regarded as one of the main indigenous grains found in South Africa (Adéoti et al. 2017), it was important to first establish what participants knew about indigenous grains. This understanding would provide insight into the broader field of indigenous grains and then focus specifically on their knowledge about pearl millet in more detail. A top-of-mind approach was taken to allow participants to express their first impression in relation to indigenous grains and pearl millet. Therefore, the first question that was asked during the focus group was: ***“When you hear the word indigenous grains, what comes to mind?”***

From the qualitative findings generated from this question, three categories emerged that best described participants' understanding of the word *“indigenous grains”*, as presented in Figure 5.2. The quotes that were generated for each of the categories are illustrated in Table 5.1.

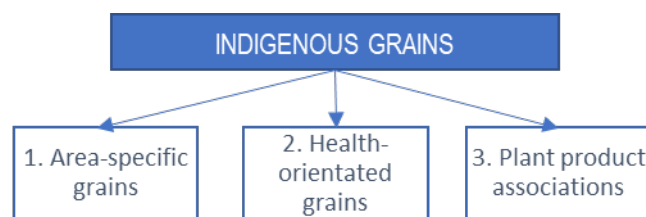


FIGURE 5.2: PARTICIPANTS UNDERSTANDING OF INDIGENOUS GRAINS

When considering what participants thought or understood indigenous grains were, as presented in Table 5.1, an area-specific association was made to a certain area, as expressed in these quotes *“grains from a certain area”*, that indigenous grains were country specific; *“grains that originate in country or area naturally”*, and/or place specific, as this participant explained *“only grown in a certain area”*. Participants' area-specific connotations to indigenous grains could stem from the fact that the word *“indigenous”* refers to the concept of a place-based human ethnic culture (Stewart 2018) that is related to a specific area.

The second category that emerged from the data attributed a health-orientated quality to indigenous grains. Participants said it is “*a healthy sort of food intake*” or “*something healthy that aids in digestion*”. Akonola et al. (2020) are of the opinion that the nutritional benefits of indigenous grains result in them being considered more nutrient-dense than other foods, which supports the health connotation that participants may be attributing to indigenous grains.

In the third category that emerged, specific plant product associations were made by the participants that link indigenous grains to such produce as “*sorghum*”, “*soya*”, “*corn*” and “*wheat*”, to name a few. In a study conducted by Dlamini and Siwela (2015), they referred to maize, wheat, rice, sorghum, millets, oats and others to be the most eaten indigenous grains in South Africa, which creates the expectation that millet would therefore be a well-known grain in South Africa. Dlamini and Siwela (2015) also indicated that these small grains are gluten-free cereals that contain phenolic phytochemicals with potential health-promoting properties. However, it is to be determined if participants in general were aware of these properties when considering consuming pearl millet.

TABLE 5.1: PARTICIPANTS UNDERSTANDING OF THE TERM INDIGENOUS GRAINS

Category	Quote
Area-specific grains	“Grains from specific area” “Grains that originate in country or area naturally” “Something that grows well in your area” “Grains that grow naturally and only in certain areas” “Only grown in specific area” “Something that is grown in a specific area” “Something grown in a certain country” “Something grown in a certain place” “Something that grows well in a specific area” “Grains which originated in our country, South Africa” “Locally available in certain area” “Grains which originated in South Africa” “Something that is locally grown” “A grain that grows in South African Borders” “Grains found originally in Africa or South Africa” “Grains that have been grown and consumed locally, not imported” “Grains belonging to specific country” “Grains found within an only one area like South Africa”
Health-orientated	“specific type of grains that are healthy” “grains that are protein enriched for consumption” “A healthy sort of food intake” “Something healthy that aids digestion”
Plant product associations	“Sorghum comes to mind” “Beans, soya, corn” “Maize” “Ancient grains” “Grains that are not abundant, needs further processing” “Manna from Heaven” “Farming related, corns, wheat”

Once the understanding of the term “*indigenous grains*” in general was established, it was necessary to determine participants’ understanding of the term “*pearl millet*” as an indigenous grain. Therefore, the question posed to the participants in the focus group was: “**When you hear**

the word pearl millet, what comes to mind?” The response to this question was particular to three specific categories that represented the participants’ understanding of pearl millet as having crop-like features, with specific product uses that either had food-like characteristics or were specific to animal feed, had health-related characteristics, or was in a processed state, as indicated in Figure 5.3. The results are also tabulated in Table 5.2.

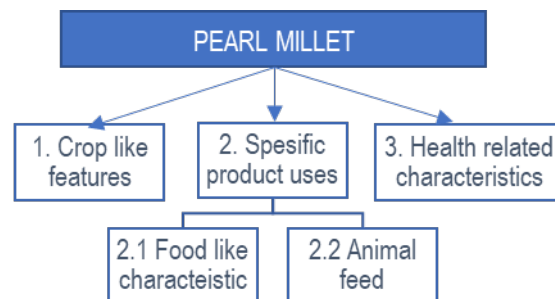


FIGURE 5.3: PARTICIPANTS’ UNDERSTANDING OF PEARL MILLET

To the participants, the crop-like features of pearl millet classified it as being some sort of grain. Participants referred to it as a “*type of grain*”, “*underutilized grain*” or having a plant-based origin. Some participants said it is a “*very dry plant*” and “*I think pearl millet is a plant*”, whereas others noted its seed-like quality: “*I think it is a healthy seed*”, “*part of the seeds or legumes family*”, and “*off white, roundish seed like*”. From the wide variety of crop-like features participants associated with pearl millet, it is best understood to be part of “*small grains*” or “*whole grains*” which is largely produced by smallholder farmers; they are considered “*climate change*” crops due to their hardiness, and also as cereals for their potential use in food production (Dlamini & Siwela 2015). It is thus understandable that participants would draw a parallel between pearl millet and its crop-like features.

In terms of the specific product uses of pearl millet, two distinctive sub-categories emerged that classified pearl millet with food-like characteristics similar to well-known products (“*used in flour-based products*”, “*some type of wheat, or similar to rice*”) or used as animal feed (“*livestock feed*” and “*bush of millet is good for animal feed*”). These notions from participants were verified in a study conducted by Singh et al. (2017), which explored the characterisation of pearl millet hybrids. The authors explained that pearl millet is the key source of food and fodder for deprived farming communities and their animals, thus supporting the view of pearl millet’s use as an animal feed in this study.

The third category that emerged from the data once again referenced pearl millet as having health-related characteristics, specifically being a “*gluten free grain*” and also aiding in digestion, as these participants explained “*it might be good for gut health*” and “*it aids the digestive tract*”. Pearl millet is known to be highly nutritious (Govindaraj et al. 2019). In a study conducted by Saleh

et al. (2013), pearl millet was identified to be extremely rich in resistant starch, soluble as well as insoluble dietary fibres, minerals and antioxidants. Soluble fibres are most often associated with protection against heart diseases and diabetes by lowering blood cholesterol, whereas insoluble fibres promote bowel movements and alleviate constipation. Resistant starch supports a healthy colon (Rolfes et al. 2015), therefore it is a valuable attribute participant recognised in pearl millet.

TABLE 5.2: PARTICIPANT UNDERSTANDING OF PEARL MILLET

Category	Quote
Crop-like features	
Grains	"White type of grain" "Grains for cereals" "I think it is a grain" "I guess it is a type of grain" "Underutilized grain" "Type of grain" "Roundish grain" "That it is a grain" "Some kind of grain" "Grain that is pearl-like shaped" "It is a white grain" "It is a grain, like soya" "A very fine grain" "Pearl shaped grain" "I think it would fall under the ancient grains category" "Ancient grains" "Sustainable grains" "Lower grade grain, main food staple for lower class"
Plant	"I think it's a plant" "Pearl millet is a plant, I think" "Very dry plant"
Seed	"I would say it's some form of a seed" "I think it is a healthy seed" "Off white, roundish seed-like" "That it is a grain or seed" "Seeds or legumes"
Specific product uses	
Food-like characteristics	"Finely milled into flour" "Used in flour-based products" "I would associate it with wheat" "Something to do with food" "Maybe similar to barley" "Some type of wheat, or similar to rice" "Similar to maize" "Food staple from Medieval ages" "I think it is a food staple like sorghum"
Animal feed	"Bush of millet, is good for animal feed" "livestock feed"
Health-related characteristics	
Digestion	"I think it might be good for gut health" "It aids the digestive tract" "Satiation, very filling foods"
Gluten-free	"I think it's a gluten free grain" "I know it is a gluten free product" "Popular in gluten-free households"

The above-mentioned question was asked to ease participants' thought process of what pearl millet is or what they thought it was. A follow-up question was posed that explored, in greater

detail, what they knew about pearl millet: ***“What do you know about pearl millet?”***. Two very distinct categories of participants emerged from the analysis of this question; one group of participants was uninformed, and one group of participants was informed about pearl millet, as presented in Figure 5.4.

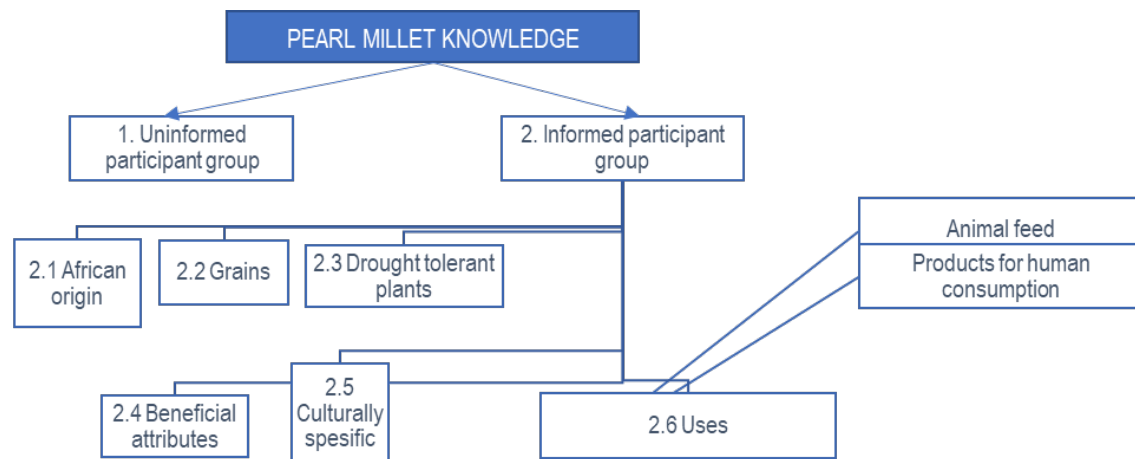


FIGURE 5.4: PARTICIPANTS' KNOWLEDGE REGARDING PEARL MILLET

The uninformed participant group knew nothing of pearl millet, although they were aware of what it was, and the informed participant group knew something about pearl millet or thought they knew something about it. From the informed participant group, six different sub-categories emerged, reflecting the different aspects of their knowledge of pearl millet. The first connotation they had with pearl millet was related to the African origin of the grain, stating that it is a *“grain found in Africa”*, *“millet originates from African continent”* and that *“it is a grain found in South Africa”*. The next two sub-categories involved participants knowing that pearl millet is *“a type of grain”* and a few stated that it has drought-tolerant plant attributes: *“it is a tall drought plant”*. These two sub-categories were specifically reiterated from the previous question, linking to the general concept of pearl millet being a grain with African heritage and drought-tolerant properties.

Participants also indicated pearl millet has beneficial attributes, such as being a *“source of protein”*, *“gluten free grains”*, *“pearl millet contains antioxidants”* and *“it has nutritional benefits like other grains”*. These statements are all true and accurate, especially in comparison to wheat and rice, as pearl millet is recognised as a rich source of energy, amino acids, vitamins, proteins, fibres and mineral nutrients (Panda et al. 2020).

There were also participants (although in the minority) who stated that pearl millet was culturally specific to Indian type food - *“frequently used in Indian cuisine”* - and another participant said that *“it is found in Indian restaurants”*. This is accurate, as the traditional Hindi name for pearl millet is Bajra, and it is one of the most widely grown millet in India (Arokiamary et al. 2020). In India, pearl

millet is also the fourth most important food crop after sorghum, rice and wheat (Dabhi, 2020), and therefore can be associated by some consumers to be linked to traditional Indian food.

Most informed participants described pearl millet according to the product uses associated with animal feed when they said *“it is used for feed”* or products for human consumption, mostly as *“flour”* to make Roti’s. One participant indicated that it was used in *“health bars”*. The uninformed participants, however, stated that *“I don’t know anything about it”*, *“I don’t know much about the grain”* and *“I know absolutely nothing about it”*. Although they said that they did not know anything about pearl millet, they were still aware of what it was. However, they did not know any finer details thereof. One of the inclusion criteria that needed to be met, as discussed in Chapter 4, was merely that participants taking part should at least be aware of pearl millet.

TABLE 5.3: PARTICIPANTS KNOWLEDGE REGARDING PEARL MILLET

Category	Quote
Uninformed participant	“I don’t know much about pearl millet” “I don’t know anything about it” “I know absolutely nothing” “I don’t know much about this grain” “I don’t know anything about the grain” “I don’t know much of pearl millet”
Informed participant	
Africa origin	“millet originates from the African continent” “grain found in Africa” “I only know that it is a grain found in South Africa”
Grains	“Only that it is a grain” “Nothing further than it being a grain” “Nothing except that it is a grain” “Only that it is a type of grain”
Drought-tolerant plants	“It is a drought tolerant plant” “Grass type plant” “It is a tall drought plant”
Beneficial attributes	“It is beneficial for human consumption” “Source of protein” “I think it has nutritional benefits like other grains” “pearl millet contains antioxidants” “Healthy gluten free product” “Gluten free product” “Gluten free grain”
Culturally specific	“It is frequently used in Indian cuisine” “It is found in Indian restaurants”
Uses	
Animal feed	“I know it is used for animal feed” “Can be fed to animals” “It is used for livestock feed” “It is used to feed farm animals” “It is used for hay or grazing”
Products for human consumption	“I know it is used in health bars” “Used as a flour to make Roti’s” “I suppose it is used for flour” “The pearl millet flour is used to make Roti’s in India, they call it Bajra” “It is used for human consumption”

From establishing the foundation of what participants knew about pearl millet, the beneficial attributes stood out in terms of the health orientation related to pearl millet, and it was therefore

necessary to delve deeper into what they knew of its nutritional value by asking: ***“Do you know if pearl millet has any nutritional advantages or health benefits?”*** From the analysis, different categories emerged that represent the nutritional advantages of pearl millet for the participants (see Figure 5.5 and Table 5.3). The advantages included being gluten-free, containing vitamins, macronutrients, minerals, advancing gut health, as well as reducing susceptibility to non-communicable diseases.

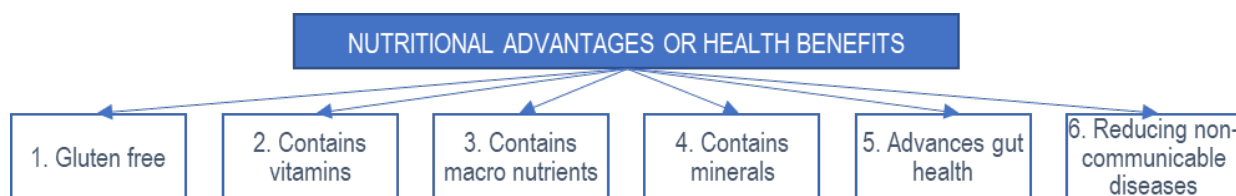


FIGURE 5.5: CATEGORIES OF NUTRITIONAL BENEFITS

According to the World Health Organization (WHO), a diet is healthy when it contributes to shielding the individual against all forms of malnutrition and also protects from non-communicable diseases. The term “*gluten-free*” was a popular topic that arose from participants discussions, as it is not only a popular diet to be followed for the treatment of wheat allergies, non-coeliac gluten sensitivity and coeliac disease (Melini & Melini 2020), but it is also known through society as a food trend that should be followed on a daily basis (Zimna et al. 2020). To a lesser degree, participants indicated that, to them, pearl millet was also “*rich in vitamins*”, “*especially vitamin B*”. Vitamins are dietary components required for life, and vitamin B plays a major role in DNA synthesis, the methylation cycle and monoamine oxidase production, as well as in the maintenance and repair of phospholipids (Mikkelsen et al. 2016) which participants specifically identified to be associated with pearl millet.

Many participants also emphasised the macronutrients benefits, which were primarily related to pearl millet being “*rich in fibre*”, and other participants raised the fact that they thought pearl millet was specifically naturally “*high in protein*”. Macronutrients are nutrients that offer energy to the body and are required in large amounts to maintain body functions. They are grouped under the three main macronutrients, namely protein, fat, and carbohydrates (fibre, starch and sugar) (Rolfes et al. 2015), therefore pearl millet is regarded as a valuable source of macronutrients. With reference to minerals, two particular minerals were mentioned, namely that pearl millet is a “*source of iron and magnesium*”, however major factors that limit pearl millet’s utilisation are the presence of anti-nutritional factors such as tannins, polyphenols and phytate, which lower the availability of minerals. As a result, processing approaches are necessary to improve nutritional availability (Rani et al. 2018).

There were a few participants who also again brought up the advances of gut health when using pearl millet, and there were a few more who indicated its benefits in reducing non-communicable diseases such as “lowering blood pressure”, “reducing the chances of a heart attack” and “reducing chances of cancer and diabetes”. However, even though participants mentioned valuable nutritional benefits related to pearl millet, there are also nutritional qualities that were not deliberated upon by the participants during discussions, these include ‘off flavours’ and lower the availability of minerals within the product. Therefore, different processing methods such as milling, malting, fermentation, blanching and acid and heat treatments are effective to increase mineral digestibility and reduce any ‘off’ flavours (Rani et al. 2018).

TABLE 5.4: CATEGORIES OF NUTRITIONAL BENEFITS

Category	Quote
Gluten-free	“It is gluten free” “Yes, because it is gluten free” “Yes, its gluten free” “It is a popular wheat substitute for consumer who follow gluten free habits”
Contains vitamins	“generally, grains offer good number of vitamins” “I believe it contains vitamin B” “Rich in vitamins”
Contains macro nutrients	“Source of carbohydrates” “Rich in fiber” “Source of protein” “Carb/fiber-based product” “High in fiber” “Good fiber values” “High in fiber” “Rich in fiber” “Naturally high in protein” “High in fiber like other grains” “Yes, good source of fiber” “Maybe fiber” “Fiber like whole wheat grains” “High energy cereal” “High in protein and minerals” “Source of fiber”
Contains minerals	“Natural iron supplement” “Source of iron and magnesium” “grains typically offer good amount of minerals” “Rich in minerals” “Good source of iron” “It contains iron”
Advances gut health	“Good gut health” “It must be good for your gut” “It improves gut health” “fiber aids digestion- helps me go regular”
Reducing non-communicable diseases	“Lowering blood pressure” “helps to reduce cholesterol” “Lowering cholesterol” “Pearl millet contains antioxidants” “Reducing chances of heart attack” “Typically, I think it would aid to reduce cholesterol such like seeds” “Yes, lowering cholesterol and helping with heart health” “Reduces chances of cancer and diabetes”

After identifying the participants’ knowledge regarding the nutritional attributes of pearl millet, the next questioned identified who had consumed pearl millet, to determine their previous experience

with the grain: ***“Have you consumed pearl millet?”*** From responses to this question, three different groups of participants were identified: those who had consumed pearl millet, who were the majority of the participants; those who had not, who were a smaller group of participants; and those who were not sure, another small group similar to those who had not consumed pearl millet, as seen in Table 5.5.

TABLE 5.5: CATEGORIES OF PARTICIPANTS CONSUMPTION OF PEARL MILLET

Category	Quote
Yes	“ <i>Yes, I have</i> ” “ <i>Yes, my friend bought it and I tasted it</i> ” “ <i>Yes</i> ” “ <i>Yes, I also have</i> ” “ <i>Yes, my mother cooked it for us</i> ” “ <i>Yes, I believe so</i> ” “ <i>Yes</i> ” “ <i>Yes, definitely</i> ” “ <i>Yes, most probably</i> ” “ <i>Yes</i> ” “ <i>Yes, I bought it for myself</i> ” “ <i>Yes, I think so</i> ” “ <i>Yes, we have</i> ” “ <i>Yes, I think so</i> ”
No	“ <i>No</i> ” “ <i>No, don’t think so</i> ” “ <i>No, I have not</i> ” “ <i>No, I don’t buy grains</i> ” “ <i>No, I don’t believe ia have</i> ”
Uncertain	“ <i>Maybe</i> ” “ <i>I am uncertain</i> ” “ <i>Not sure</i> ” “ <i>Not sure if I have</i> ”

After defining who from the focus group interviews had previous experience with pearl millet, the necessary next step was to determine whether they intentionally ate it, knowing that it was pearl millet, or not. The researcher followed the responses to the previous question by asking those who either responded with a “yes” or those who were “uncertain”: ***“Did you know it was pearl millet?”*** Most participants indicated that they knew it was pearl millet, and the rest said that they did not know it was pearl millet when eating it. The reasons for participants not knowing that what they were eating was pearl millet, reflected participants typically procuring “*new and different*” salads or trail mixes that have a variety of grains in it. Although they would eat it, they would not necessarily know what it is or have any connotation to the names used to describe the contents of the product.

Leading on from these questions, the inevitable question was: ***“Do you think pearl millet is well-known among South Africans?”*** Participants unanimously responded that pearl millet was not well-known among South African by explaining that “*No, my friends would not know it*” or “*I don’t think so because I know my parents won’t know it*” and “*No, I think people might know of it but*

not necessarily have experience with it". Different reasons were offered as to why the participants thought it was not well-known among South Africans (see Figure 5.6).

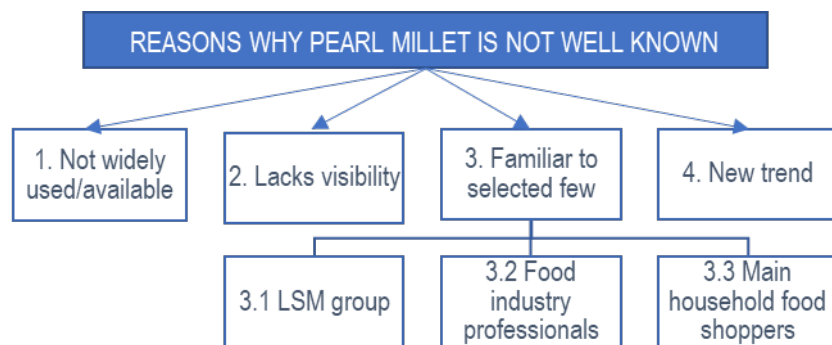


FIGURE 5.6: POPULARITY OF PEARL MILLET

The first category of participants that expressed their opinion of the popularity of pearl millet, said that it was not a widely used product. Participants indicated *"no it is not a widely used product"* and *"no I don't think it is eaten daily in households in South Africa"*, and it is *"not readily available everywhere"* and *"not available in normal supermarkets that are close by"*. In a study completed by Ma et al. (2018) regarding food acquisition and shopping patterns among residents of low-income and low access communities in South Carolina, one of the key factors influencing different patterns of food acquisition was reportedly food shopping distance and availability (Stroebele-Benschop et al. 2017). Distance and availability may therefore impact consumers' choice and buying behaviour of pearl millet.

The second category that arose from this question referred to pearl millets' lack of visibility, as participants used statements such as *"it lacks brand awareness and advertising"*, to explain this phenomenon. In support of participants claiming pearl millet was not visible or noticeable, Ansari and Riasi (2016) mention that a customer's attitude towards a brand is formed during a learning process. Thus, the consumer receives an advertised message from the firm and analyses the message while considering their previous experiences, which helps the customer create a brand image. In light of this explanation of branding, pearl millet might not be familiar to all South Africans due to a lack of advertising and awareness of the product and the brands that sell it.

Furthermore, participants identified pearl millet to be familiar to a selected few people, and from this category, another three distinct sub-categories formed that firstly referenced pearl millet as particular to Living Standard Measure (LSM) groups. In order to segment the South African market, South Africans make use of what is called LSM groups; the market is segmented according to household income whereby the population has been divided into 10 groups, with 10 being the households with the highest monthly income, and 1 being households with the lowest monthly income (Ncube 2016). Therefore, with the statement *"it will depend on your LSM group"*

the participant referred to pearl millet being known among the higher LSM groups that are frequent shoppers in high-end retail stores. However, there was another participant who stated that it would be well-known among “*the rural communities*” which possibly would refer to the lower LSM groups, thus pearl millet can be argued to belong to more than one particular LSM group.

Participants also thought pearl millet would be well-known to food industry professionals based on the quote “*unless you are in the food industry*”. Participants indicated that people who work in the industry, such as new product developers, quality controllers, and food production managers might be more exposed to products such as pearl millet. Participants were further of the opinion that the main household food shoppers would be more familiar with pearl millet, “*only the main shoppers in the household might be familiar with it*”, as they would be the ones who frequently visit the store and look for new ideas for meals for the family. For most of the participants, pearl millet was considered a new trend, especially one participant pointing to the “*gluten free trend*” becoming more of a tendency in society. Society’s increased motivation for the consumption of gluten-free foodstuffs has led to an increased demand for its availability and an exponential increase in the market for gluten-free foods and beverages that has now continued to grow even faster than anticipated (Oladipupo et al. 2017). Table 5.6 provides evidence of participants’ response to the popularity of pearl millet.

TABLE 5.6: POPULARITY OF PEARL MILLET

Category	Quote
Not widely used/available	“No, it is not a widely used product” “No, I don’t think it is eaten daily in households in South Africa like rice and pap.” “No, I don’t think it is frequently used like other staple foods” “No, I don’t think it is readily available everywhere” “No, not available in normal supermarkets nearby”
Lacks visibility	“No, it lacks brand awareness” “No, not sufficient advertising”
Familiar to selected few	
LSM group	“No, it will depend on your education and depending on the LSM group”
Food industry professionals	“No, I don’t think so unless you are in the food industry” “No, I think it is more known amongst farmers” “No, I think people in the food and beverage industry might know it”
Main household food shoppers	“No, but only the main shoppers in the household might be familiar with it” “No, maybe in rural communities it could be a staple food”
New trend	“No, I don’t it is familiar around the new generation, possibly the older generation” “No, I think it’s quite new because I use many South African cookbooks especially my grandma’s older cookbooks and I have never seen a recipe with it in” “No, it must be a trend now in recent years with all the Gluten free trends increasing” “No, I don’t know it because I don’t really eat healthy food like that so maybe people who is more into healthy foods”

Once it was established whether or not the participants thought pearl millet is well-known among South Africans, the final question that was asked to evaluate their subjective knowledge of pearl millet was: “***Have you seen pearl millet in any retail outlets and if so, which ones?***” The majority of participants indicated that they had seen it in retail stores such as “*health stores*”,

“pharmacies”, food retail outlets such as “Spar”, “Wellness warehouse”, “health and beauty outlets such as Clicks” and online stores such as “Nature’s choice” and “Health connections”. The remaining participants said they had not seen it in stores, possibly because they “have not considered it when planning my weekly menu’s”, or that they “typically only buy pastas and rice in the grain aisle in the stores” and “have not looked for it before”.

TABLE 5.7: PEARL MILLET IN RETAIL STORES

Category	Quote
Yes	<p>“Yes, health stores”</p> <p>“Yes, Woolworths”</p> <p>“Yes, Wellness Warehouse”</p> <p>“Yes, wellness shops”</p> <p>“Yes, at pharmacies”</p> <p>“Yes, Dischem pharmacy”</p> <p>“Yes – Clicks”</p> <p>“Yes, Mopani pharmacy”</p> <p>“Yes, Spar stock’s Nature Choice products”</p> <p>“Yes, Health connections sells it online”</p>
No	<p>“No, I don’t really browse for new products”</p> <p>“No, I have not really looked for it”</p> <p>“No, typically only buy pastas and rice in the grain aisle in the stores”</p> <p>“No, I don’t really spend much time searching for new products”</p> <p>“No, I live in Nelspruit now, but I am from a small town that has only basic groceries shops that don’t sell a wide variety of grains”</p> <p>“No, I think high end stores that specialize in vegan products might stock it”</p> <p>“No, I have not as I have not considered it when planning my weekly menu’s”</p>

5.3.2 Findings of the participants’ objective knowledge of pearl millet through an exploration of the product characteristic’s and usage of pearl millet (Sub-objective 1.2)

As it was uncertain what exactly consumers know about pearl millet or how it can be used as an indigenous grain, the next set of questions focused on the knowledge participants had of pearl millet through an exploration of the product characteristics participants could identify related to pearl millet. Their ideas on its usage were also considered. To explore these aspects, the first question that was put to participants was: **“What do you think pearl millet is used for?”**. Two specific categories were identified during the analysis of this question, namely pearl millet as appropriate to be used for animal and human consumption, as portrayed in Figure 5.7.

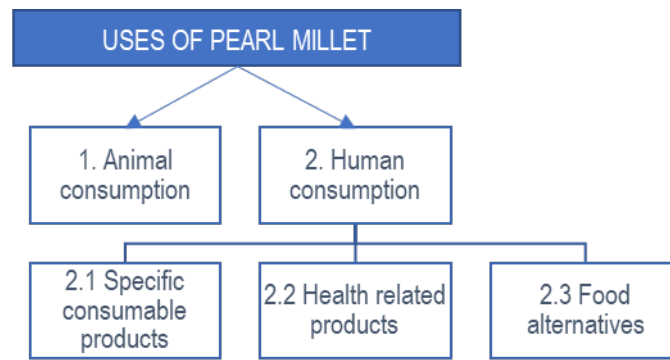


FIGURE 5.7: PEARL MILLET USES

A small number of participants believed pearl millet is used for animal feed and said “*it is used for animal feed*” or “*livestock feed*”. However, a larger group of participants thought pearl millet was rather appropriate for human consumption. In India, pearl millet is almost entirely used for household consumption, and stover is used for animal feed and fodder (Orr 2016). A study determining the effect of replacing maize partially or fully with pearl millet in beef cattle food, established that the cattle’s dietary concentration of the digested matter was not influenced by replacing it with pearl millet, thus establishing that pearl millet can be used as a partial or total substitute for maize grain in concentrated supplements for crossbred beef cattle (Alonso et al. 2017).

In contrast to animal feed, pearl millet is also used for human consumption, and three different sub-categories emerged from the data (Table 5.7) reflecting the products participants associated with pearl millet. These included specific consumable products for human consumption such as “*gluten free crackers and bread*”, “*used to make flour to make Roti’s*” and “*used in cereal bars*”. Participants’ identification of pearl millet in relation to a specific consumable product may be indicative of the pearl millet products that can be found on the South African market. However, in contrast to what the South African participants identified, in a study of the traditional uses of pearl millet in Benin North, pearl millet was used in the same way as other cereals, including as porridge or as a mash flour, and in a traditional local food called foura (Adéoti et al. 2017). In addition, according to a study that measured participants’ interest in instant fortified pearl millet products (instant pearl millet flour) in African countries, there was a potential market for pearl millet products in the low-income countries (De Groote et al. 2018).

The second subcategory of uses for human consumption of pearl millet points to health-related products that address specific health conditions, for example, “*people who can’t consume gluten*” and “*people who struggle with digestion and needs high fiber intake*”. Section 5.3.1 mentioned participants’ awareness of gluten-free products’ benefits. Within this section, they mentioned particular gluten-free products, for example, gluten-free bakery products, extruded products such as flakes and pops, and also in health foods for people suffering from diabetes (sugar-free

cookies, rusks, cereals) (Rai et al. 2008). Participants were also of the opinion that pearl millet is part of a group of products that can be considered as food alternatives: “*alternative for wheat and other grains*”, “*it can be used as a superfood like beetroot and maca powder as an ingredient to foods*” and “*as a replacement for whey protein*”.

In a study on the nutritional comparison of millets with other superfoods, which are nutrient-rich natural foods that contain quantities of micronutrients and macronutrients (Vanga et al. 2018), the different types of millets were compared to other superfoods. These included quinoa, buckwheat, flaxseed, chia seeds and others. From the results, the study concluded that millets overall, and specifically pearl millet, can be considered a superfood based on the micro and macronutrients in the grain, thus providing substantial evidence supporting participants’ association of pearl millet with superfoods.

TABLE 5.8: PEARL MILLET USES

Category	Quote
Animal consumption	“Livestock feed” “It is used for animal feed” “farmers use it for feeding their cow’s” “It is the preferred choice of forage and feed”
Human consumption	
Specific consumable products	“Porridge and cereal dishes” “To bake it” “used in cereal bars” “it can be used to make beer” “breakfast cereals and porridge” “used to make flour to make Roti’s” “gluten free crackers and bread” “used in vegan smoothies” “making food bowls are quite trending I think that would make a great inclusion to some sort of Mexican bowl”
Health-related products	“It is used as staple food in underdeveloped countries” “People who can’t consume gluten” “People who struggle with digestion and needs high fiber intake”
Food alternatives	“replacement for rice” “alternative for wheat and other grains” “as a replacement for whey protein (dairy)” “used as a starchy accompaniment to other food” “it can be used as a superfood like beetroot and maca powder as an ingredient to foods”

The majority of participants categorised pearl millet as a product fit for human consumption. They could also identify specific products they thought would be suitable for including pearl millet, address health-related issues, or be part of an alternative food group of products. Next, it was necessary to determine what they thought would be the best way to consume pearl millet. Participants were therefore asked: “***Do you know anything about how it can be eaten?***” The data analysis of this question revealed that participants believed pearl millet could be eaten in four different ways, which were cooked, raw, milled, or processed, as shown in Figure 5.8.



FIGURE 5.8: WAYS TO EAT PEARL MILLET

When referring to pearl millet in its cooked state, participants suggested that it should be “cooked in water with a bit of salt” or “cooked with boiling water or with milk” with other alternatives to this, as indicated in Table 5.9, where it is “cooked and used in salads like couscous or bulgur wheat” and “cooked similar to quinoa”. In its raw state, participants thought that pearl millet could be “included as sprinkles in your salad” or “included in homemade granola or muesli mix”. The other common form known to participants was millet that is milled into a fine flour and then further processed into “roti’s, pizza, panini’s”. For some participants, it was also a flour used as “replacement for almond flour and sunflower flour” or just “eaten in any baking application”. The last way in which pearl millet could be consumed was in a processed form, which they identified as “eaten in muesli’s”, “sold in stores as health bars”, “used as an ingredient in rice cakes”, and other possibilities as listed in Table 5.9. Participants’ consumption of pearl millet was related to the fact that it is a grain that can be processed into snacks, alcoholic and non-alcoholic beverages, boiled rice-like products, fermented and non-fermented breads, steam-cooked products, and either thin or thick porridge (Rai et al. 2008).

TABLE 5.9: WAYS TO EAT PEARL MILLET

Category	Quote
Cooked	“cooked with boiling water or with milk” “rinse before you cook it” “cook in water with a bit of salt” “cooked and used in salads like couscous or bulgur wheat” “cooked similar to quinoa” “add it to soups like lentils”
Raw	“include as sprinkles in your salad” “include in home-made granola or muesli mix” “include in home-made trail mix” “I think you can add it raw to your smoothies like with chia seeds”
Milled	“it is milled to a flour that can be eaten in any baking application” “use the flour to bake Roti’s” “I am sure you will be able to make your own pizza or panini with the flour” “replacement for almond flour and sunflower flour”
Processed state	“it is an ingredient in puffed chips” “used as an ingredient in rice cakes” “sold in stores as health bars” “Can be eaten in muesli’s”

The sensory parameters are the simple and key characteristics related to the acceptability of any food (Bhati & Goyal 2017). Based on participants’ understanding of how pearl millet can be consumed, the question that immediately followed was: **“What do you think it tastes like?”** Participants’ thoughts regarding what pearl millet tastes like were expressed in relation to the

organoleptic properties attributed to it, and specific product associations that best described how they thought it tasted (see Figure 5.9). Organoleptic properties are defined as the elements of food that are evaluated through the senses, such as the taste, smell and texture of food (Bisla et al. 2014). These elements were further separated into two sub-categories that described the specific flavour participants associated with pearl millet and the texture they associated it with.

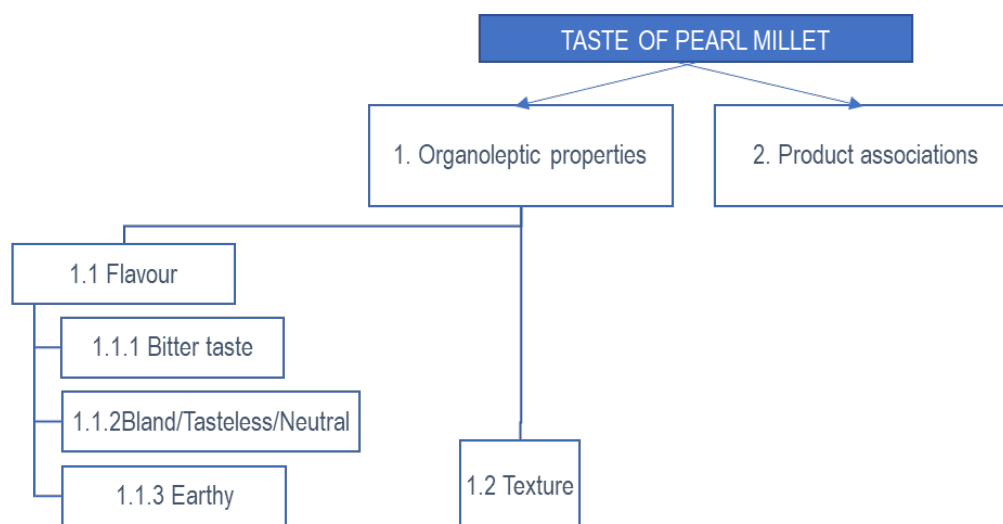


FIGURE 5.9: TASTE OF PEARL MILLET

The flavours participants identified as being particular to pearl millet was that it *“taste bitter like some seeds”* and that it *“might be a bit bitter when eaten raw”*. Pearl millet was also considered to taste bland/tasteless/neutral: *“it tastes pretty bland”*, *“cooked it might be quite a neutral taste”* and *“dry and tasteless”*. The third taste profile that emerged from the data was an earthy taste, reflected in statements such as *“sandy and earthy taste”*, *“neutral taste like most grains”* and *“earthy, naturally seed flavor”*. To the participants, the texture was *“grainy, sandy”*, *“gritty texture”*, whereas others described it as *“fluffy texture, also quite chewy like barley”* and some referred to it as *“Hard and unable to chew”*.

The above-mentioned responses to the specified texture and taste of pearl millet within the different processing formats were based on what most of the participants knew it tasted like. As identified in Table 5.5, most participants had consumed it and the rest either had not or were uncertain if they had. Thus, it is assumed that the rest of the participants merely speculated what they thought it would taste like based on their reference to other grains without the experience of having tasted it.

Research regarding the taste and texture of pearl millet is very limited, especially in its raw form; however, there are a few studies that included pearl millet as an ingredient by using it as flour. The first study evaluated pearl millet cookies containing pearl millet flour, and found that these

cookies are darker in colour, and the hardness of cookies increased in terms of texture (Kulthe et al. 2017). Another study regarding the substitution of wheat flour with pearl millet flour in peanut cookies concluded that there was no significant difference in terms of the organoleptic attributes between the cookies (Alhassan et al. 2018). More studies indicated that by using additional processing methods (germinating, fermenting, roasting and especially popping), the organoleptic qualities could be improved (CFC and ICRISAT 2004; Kindiki et al. 2015; Rani et al. 2018).

Apart from the organoleptic properties associated with pearl millet, participants described the taste of pearl millet in terms of specific product associations that they were familiar with when they said *“cooked I think it will taste like quinoa or couscous”, “I suppose it tastes like raw oats”, “and it tastes like wheat” and “same as cooked corn”*. Colour can be used by the brain to identify what a product ought to taste like, and vice versa; for example, a yellow lemon can be associated with a sour taste (Spence et al. 2015). The same can be applied in the absence of actual product experience, where consumers would rely on their knowledge of other grains or similar pearl millet products as their frame of reference. For example, the flavour and texture could be based on seeds and other grains (couscous, quinoa) that they have previously tasted, as indicated in Table 5.10.

TABLE 5.10: TASTE OF PEARL MILLET

Category	Quote
Organoleptic properties	
Flavour	
▪ Bitter	“it thinks it will taste bitter like some seeds” “I think it might be a bit bitter when eaten raw”
▪ Bland/tasteless/neutral	“cooked it might be quite a neutral taste” “taste bland like grains” “grains don’t really taste like anything” “dry and tasteless” “it tastes pretty bland” “raw I think it might have a nutty taste like seeds”
▪ Earthy	“earthy, naturally seed flavor” “neutral taste like most grains” “sandy and earthy taste”
Texture	
	“when cooked maybe a mash like texture” “rice like texture” “fluffy texture, also quite chewy like barley” “hard and unable to chew” “Gritty texture” “Grainy, sandy”
Product associations	
	“cooked I think it will taste like quinoa or couscous” “same as cooked corn” “I suppose it tastes like raw oats” “it tastes like wheat” “Nothing healthy tastes good”

After determining what participants thought pearl millet was, what it was used for, how it could be eaten, and what it tasted like, the researcher also needed to establish what participants thought it looks like to further establish their subjective knowledge relating to pearl millet. Participants were therefore asked: ***“What do you think it looks like?”*** The responses to this question could

be classified into three different categories that represent the main features of pearl millet, as illustrated in Figure 5.10.

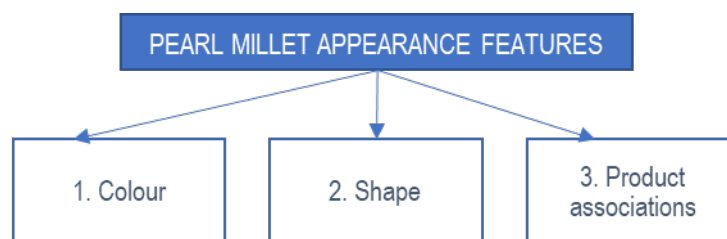


FIGURE 5.10: APPEARANCE OF PEARL MILLET

In this respect, participants distinguished between colour, shape and specific product associations to explain how they perceive the appearance of pearl millet; whether supported by product-related experience or not. In terms of colour, participants used specific colours to verbalise the specific characteristic of pearl millet: “*white round seed*” or “*yellow round seeds*”, “*yellow-grey*” or “*off white in color*”. The colour was also combined with specific shapes that were described as “*yellow round seed*” or a “*round shaped, yellowing seed*”. Participants also referred to particular products they associated with this grain when they mentioned pearl millet to look like “*seed*” or specifically “*chia seeds*” or “*looks like rice*”, or similar to a “*peppercorn*” or “*corn, quinoa or couscous*”.

Some participants expressed product associations in terms of the cooked form of pearl millet by referring to it as “*similar to bulgur wheat when cooked*” or in a processed form it was similar to, “*wheat flour*”, “*resembles roughly grinded corn*” and “*looks like white chia seeds*”. Participants’ description of what they thought pearl millet looked like is in part similar to what Arun and Faraday (2020) proposes as pearl millet being a hard-hulled millet, a maximum of 3mm in length, spherical and of different colours (Arun & Faraday 2020). Pearl millet is also described by the Department of Agriculture, Forestry and Fisheries (2011) as having a white, yellow, brown and grey colour, that is one-third of the size of sorghum, and weighs about 8mg on average (Table 5.11).

TABLE 5.11: APPEARANCE OF PEARL MILLET

Category	Quote
Colour	“white” “yellow” “yellowish seed” “like a peppercorn, yellow-grey color” “white with a pearl color” “off white in color”
Shape	“round seed” “pearls” “small pearls” “roundish grains” “corn shaped” “round shape, easily confused with quinoa”
Product associations	“similar to bulgur wheat when cooked”

Category	Quote
	"resembles roughly grinded corn" "grey flour" "like wheat flour" "looks like a corn plant" "looks like seeds" "looks like maize" "looks like couscous" "looks like white chia seeds" "looks like quinoa" "looks like rice"

5.3.3 Findings of the participants' product-related experience of pearl millet through use of a projective technique of photographs of pearl millet products (Sub-objective 1.3)

Within this section, participants were exposed to the projective technique. They were shown three different photos of pearl millet in three different formats, namely raw, milled and processed (see Figure 5.11).



FIGURE 5.11: PEARL MILLET PRODUCTS

Projective techniques aim to uncover attitudes, feelings, beliefs and motivation that many participants might struggle to articulate (Donoghue 2000). It involves the indirect acquirement of subconscious perceptions and opinions, through verbal or visual stimuli, which overcome communication barriers (Cherdymova et al. 2018). This data-gathering technique was used to establish participants' knowledge that may not have been evident from the questions put forward during the focus group discussion. A visual stimulus was therefore used to determine if any additional information emerged. Furthermore, the objective was to establish product experiences related to distinct emotional messages that support brand and positioning, empowering diversity of samples, and product qualities within a product category based on appeal, force and relevance (Spinelli et al. 2019).

The first question proposed against the backdrop of the products presented in Figure 5.11 was: ***"Have you purchased any of these products or similar products containing pearl millet? If***

not why and if yes, why?”. Most participants responded by indicating that they had not had any experience with the products suggested in Figure 5.12, with only a few participants indicated that they had indeed bought some of the projected products or similar products containing pearl millet, as stated in Table 5.10.

Therefore, through this question, two particular participant groups could be identified. One group had prior experience through the purchasing of pearl millet, and one group of participants had not purchased pearl millet and therefore had no experience with the products illustrated in Figure 5.12. In this study, it was assumed that although a participant might be aware of a product such as pearl millet, they may not actually have purchased the product in order to try it out, which resulted in some participants not having any experience of pearl millet products.

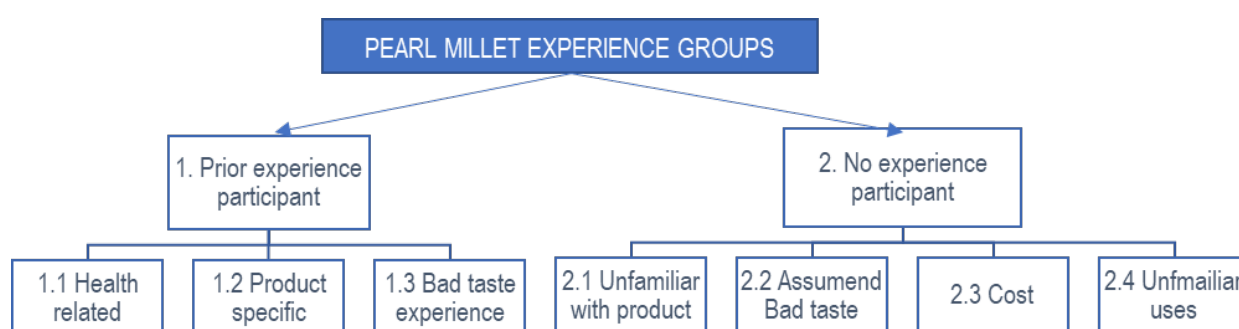


FIGURE 5.12: PREVIOUS PURCHASING EXPERIENCE WITH PEARL MILLET OR SIMILAR PRODUCTS

Within the group of participants who stated that they had prior experience through purchasing some pearl millet products, three sub-categories further developed, that firstly indicated the reason why they had purchased the product. Some reported the health-related connection to pearl millet: “yes, the flour I have used to try and make healthy cookies with”, “yes, I have I try anything that looks new and healthy”, “yes, I typically make purchases based on high in or source of claims” and “yes, I frequently try products that have free from claims”. These statements referred to claims made by manufactures, which eliminate one or more ingredients that relate to consumer allergies; for example “free from labels”. These statements could also be identified by “high in” or “source of” claims (Sarti et al. 2018). By considering the products presented in Figure 5.12 and participants’ health-related reasons for purchasing pearl millet, there is confirmation that pearl millet was deliberately chosen by these participants to acquire its health-related benefits and it could be assumed that they are more likely healthy living individuals willing to pay higher prices. This is similar to what Bharathy and Rajapushpam (2018) concluded from their study on the perception of millet products among household consumers in Salem district. They found that the household’s opinion about millet products was that it provides healthy nutrition and should be implemented and used more frequently in typical everyday products, thus confirming participants’ reasons for purchasing pearl millet products.

Participants who had purchased pearl millet products referred to products which specifically contained pearl millet as an ingredient found in *“mixes with fruits, seeds, grains and nuts”*, *“puffed millet chips”*, *“muesli containing pearl millet”* and *“bars containing pearl millet”*. A bad experience was also identified by a participant who indicated that *“I tried it a family friend who bought it out of curiosity, but I did not like the taste”* which does suggest that the participant would not purchase the product due to her distaste of its flavour.

The participant group who had no prior experience in purchasing and therefore consuming pearl millet products, had specific reasons for not having tried pearl millet products, and from these reasons, four sub-categories were presented. For some participants, their unfamiliarity with pearl millet was the main reason for them not having purchased this product. A participant explained: *“it is not something I grew up with”* and therefore not a product they knew existed. Another participant said *“I did not know that it exists”* and another reported *“I did not have the need for it before”* indicating that the benefits of pearl millet might not be well-known to these individuals. To this effect, Tuorila and Hartmann (2020) point out that familiarity with food establishes certainty of what the food is and reduces the anxiety thereof, thus offering advantage over the novelty of an unfamiliar product.

Some participants who did not have any experience with pearl millet were anticipating a bad taste in relation to this grain, as it was associated with other products: *“I don’t like the taste of seeds and grains in products like bars or granolas”*. In a study evaluating the fondness and acceptability of wholegrain food, the results indicated that more exposure to wholegrain food leads to an increase in the rating of texture, flavour, liking and willingness to include it in their regular diets (De Leon et al. 2020). Thus, increased exposure to pearl millet and the ability to use it in different meals could lead to more favourable outcomes and a better anticipation of its taste.

The third subcategory that identified a further reason participants did not purchase pearl millet and had no experience of the grain was related to the cost of pearl millet. A study measuring the impact of pricing strategies on consumers’ psychology and their buying behaviour established that suitable prices make consumers more willing to purchase items (Al-Salamin & Al-Hassan 2016). In this instance, price sensitive participants felt that pearl millet and similar products are *“usually more expensive than similar products such as wheat and maize”* and it is *“quite expensive compared to samp or rice or pasta”*. These views may explain why participants have not considered pearl millet based on their perceived price perception.

The final reason for not purchasing pearl millet was due to their unfamiliarity with the use thereof. Participants claimed that *“because I don’t know how to incorporate them into my meals”* and *“I don’t know what do to with these products”* they were not interested in purchasing the product.

To this effect, Warin (2018) suggests marketers should focus on in-store tastings and offer practical guidance through cooking demonstrations on how new food products can be incorporated into consumers' lifestyles. This can be done by encouraging consumers to purchase products out of their comfort zone and experiment with new recipes, and not merely avoid purchasing a product due to its unfamiliarity.

TABLE 5.12: PREVIOUS PURCHASING EXPERIENCE WITH PEARL MILLET OR SIMILAR PRODUCTS

Category	Quote
Prior experience participant	
Health-related	"yes, the flour I have used to try and make healthy cookies with"
	"yes, I have I try anything that looks new and healthy"
	"yes, I frequently try products that have free from claims"
	"yes, I typically make purchases based on high in or source of claims"
Product specific	"yes, I like mixes with fruits, seeds, grains and nuts as it keeps me fuller for longer"
	"yes, I have purchased puffed millet chips"
	"yes, I bought a muesli containing pearl millet"
	"yes, I have bought bars containing pearl millet, but it is not always available"
Bad taste experience	"I tried it a family friend who bought it out of curiosity, but I did not like the taste"
No prior experience participant	
Unfamiliar with product	"no, as I am not aware of its benefits compared to normal grains or why it is superior"
	"no, I have not because I have not seen these products in stores before"
	"no, I did not know that it exists"
	"no because it is not something I grew up with"
	"no, I usually don't stray from what I know"
	"no, I did not have the need for it before"
Assumed bad taste	"no, I don't like the taste of seeds and grains in products like bars or granolas"
Cost	"no, these products are usually more expensive than similar products such as wheat and maize"
	"no, I don't really splurge on new products"
	"no, pearl millet is quite expensive compared to samp or rice or pasta"
Unfamiliar uses	"no, because I don't know how to incorporate them into my meals"
	"no, I don't know what do to with these products"

The next question aimed to determine whether participants would purchase pearl millet in future, based on their current experience. Participants were therefore asked: ***"Will you purchase one of these products, and why?"*** Three different participant groups were identified, namely those who were certain of purchasing it in future, those who were not keen to do so, and those participants who were unsure. From these three participant groups – the positive (keen) participants, the negative (not keen) participants, and the hesitant (unsure) participants – specific reasons emerged why each of these groups responded as they did (see Figure 5.13).

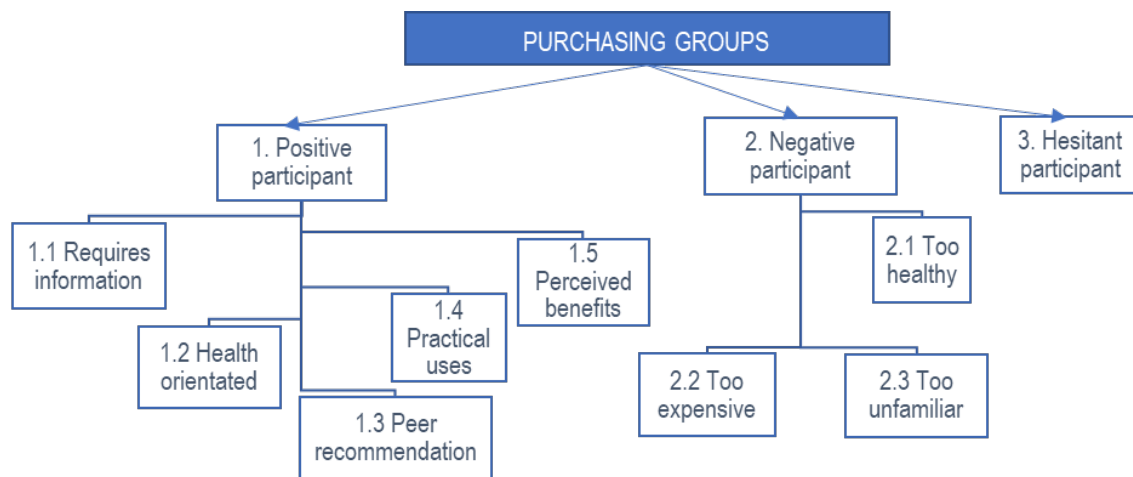


FIGURE 5.13: WILLINGNESS TO PURCHASE

The positive (keen) participants who would consider purchasing pearl millet products said they would require more information in terms of *“how to use it”* and whether the *“price is similar to other grains I buy”*. Although some participants seemed keen to purchase pearl millet products, they would only action this behaviour if more information was available on which to base their decision. Information thus supports a willingness to purchase, as a study by Cerri et al. (2018) suggest, as they explored the importance of product information in shaping consumer attitude and purchasing behaviour. The authors found that a lack of information about product sustainability impacted negatively on the consumers’ attitude and purchasing of sustainable products. The principal outcome of their study can therefore be applied to pearl millet to indicate that the same may be needed to establish a more knowledgeable consumer where pearl millet is concerned.

The second subcategory that emerged from the data was participants who indicated that they would purchase pearl millet for health-orientated reasons. For these participants, their reason was based on the *“health benefit”* of pearl millet since it *“seems healthy”* to them. Participants also indicated that they would eat health bars containing pearl millet, especially because of their *“busy and active on the go lifestyle”*, thus assuming that such bars would be a healthy option for them. In this instance, it would seem that an understanding of consumer lifestyle and its impact on the consumer mindset and their overall potential of purchasing would be useful (Mohiuddin 2018), specifically when developing products containing pearl millet. According to Kumar (2017), consumers make certain choices in life that may relate to a healthy lifestyle. These choices could result in specific choices being made from the available options, in an attempt to maintain their health-related behaviour. Thus, food products containing pearl millet may support a healthy lifestyle for the participant to whom this is important.

Participants would also consider purchasing pearl millet products based on peer recommendations, which was evident through statements such as *“if I taste it by friends or family first and I like it then I would buy it”* and *“I will buy it based on a friend’s recommendation”*. Hu et

al. (2019) investigated the importance of peer influence in consumer impulsive consumption behaviour in a social commerce setting. They found that peers' expertise and trustworthiness were expressly connected to social influence that could wield an effect on consumer purchasing behaviour. This may explain why participants would rely on peer recommendations in their decision to purchase pearl millet products.

There were also various participants who indicated their intention to purchase pearl millet products based on its practical uses, and how they would incorporate it: *"including it in my children's lunch boxes"*, *"use to mix up menus for my family"* and *"would use it in salads"*. The practical uses participants identified are augmented by Rai et al. (2018), who point out that pearl millet can also be incorporated into meals and beverages such as alcoholic beverages, boiled rice-like products, thick and thin porridges, steam-cooked products, fermented and unfermented breads, and snacks. Furthermore, pearl millet can also be used as an aerated product derived from the development of healthy ready-to-eat breakfast cereals from popped pearl millet. Popping is a process of starch cookery that exposes grains to high temperatures for a short time and habitually improves the flavour and taste, and creates a crisp, aerated product (Kumari et al. 2018).

The final concept that emerged from the positive (keen) participants was that they would consider purchasing pearl millet due to perceived benefits they attributed to it, such as *"gluten free-diet"*, *"better digestion"*, *"vegan"*, *"good source of protein"* and also the *"nutritional benefits"*. From the participants' point of view, the perceived benefits of pearl millet would reflect they get the most out of the product or service from an exchange process by maximising benefits and minimising the costs when purchasing a product (Terblanche & Taljaard 2018). Therefore, their perceived benefits would include the benefits they receive aligned to the price that they pay.

The negative (not keen) participant group were not keen to purchase pearl millet as they thought it was *"too expensive"*, *"too healthy"* and unfamiliar to them. These participants *"only buy what I know"*. Studies relating to replacing habitually consumed unhealthy food with healthier alternatives provided compelling evidence that the relationship between intention and dietary choices was weaker where habit scores were higher (Kurz et al. 2015). Therefore, the actual purchase would be dependent on overriding habitual eating behaviours. Even though there are healthier options available, and even if consumers' intention was to pursue a healthier lifestyle, the act of purchasing would be primarily led by their food habits.

The participants who were hesitant in purchasing pearl millet indicated that they might reconsider *"if I was an experienced baker I would try the flour"* whereas another stated, *"perhaps I would be more inclined to purchase the more processed version like the bar format"*. The hesitant

participant was thus challenged by pearl millet in its raw state to be used as an ingredient, since they were not skilled and experienced in using it. They may, therefore, resort to a ‘finished’ product with less difficulty.

TABLE 5.13: WILLINGNESS TO PURCHASE

Category	Quote
Positive participant	
Requires information	“yes, I will if I do research first how to use it” “yes, I would consider it if the price is similar to other grains I buy” “yes, the bars I will try as I have no idea how to use the other 2 products”
Health-orientated	“yes, the bars look healthy and I like the flour combination” “yes, to get the health benefit” “yes, I would eat the bar for my busy and active on the go lifestyle” “yes, they seem healthy so I would try it”
Peer recommendation	“yes, if I taste it by friends or family first and I like it then I would buy it” “yes, I will buy it based on a friend’s recommendation”
Practical uses	“yes, I would use it my salads” “yes, I will use it to mix up my menus for my family” “yes, I will purchase the pearl millet kernels for salads and the bars I will eat as a breakfast snack” “yes, including the bars in my children’s lunch boxes” “yes, I would definitely try the bar picture as it looks more flavorful”
Beneficial attributes	“yes, I would try all since I follow a gluten free diet” “yes, I would buy it for better digestion” “yes, I am vegan so I will definitely eat it as it is a good source of protein” “yes, I would buy these for the nutritional benefits”
Negative participant	
Too expensive	“no, because it is usually more expensive than wheat, maize etc.” “no, because I assume by looking at the packaging that it is expensive”
Too healthy	“no, I don’t care for eating healthy meals, so I won’t try it” “no, I don’t like healthy products like these”
Too unfamiliar	“no, I only buy what I know”
Hesitant participant	“maybe, if I was a more experienced baker, I would try the flour” “perhaps I would be more inclined to purchase the more processed version like the bar format”

Some responses to the previous questions have already pointed to the fact that participants were attributing certain perceived benefits to pearl millet. These benefits would urge them to purchase the product, specifically those who were already keen to purchase it. Based on this understanding, it was also necessary to determine if participants thought they would benefit from an indigenous grain such as pearl millet in terms of it being value for money. The question was thus: ***“Do these products offer the perception of great value for money and if so, based on what and if not why?”***

The majority of participants indicated that they definitely thought pearl millet was value for money, while other participants said it did not look like a great deal. The perception of whether or not one receives value for money could be influenced by many factors, including price, quality, infrastructure, entertainment, facilities, cleanliness of facilities, and variety of products (du Plessis et al. 2017). For each of these participant groups, specific reasons were given why they either thought it was a product that was value for money or not, as seen in Figure 5.14.

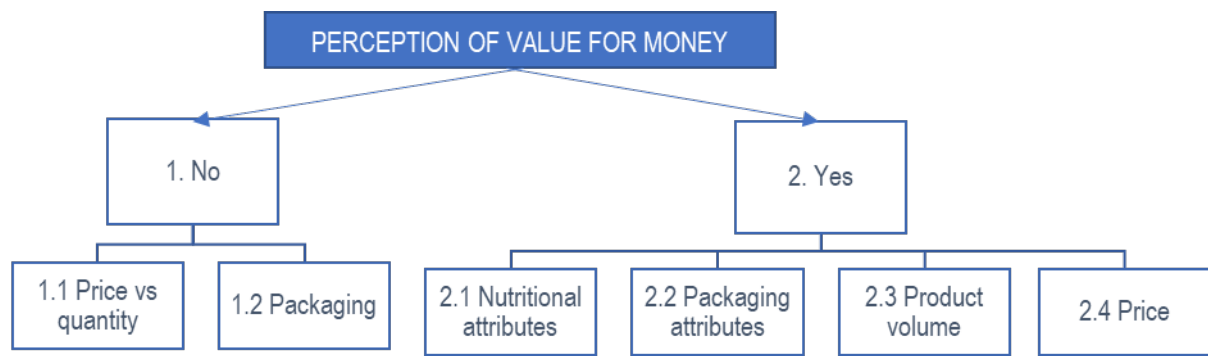


FIGURE 5.14: PERCEPTION OF GREAT VALUE

The participants who stated that pearl millet was not value for money reported on the price vs quantity, meaning that they thought the price did not equal up to the amount of product that they would be getting: *“No, I do not think it is value for money as it is usually overpriced for a small amount”*. The perceived price should reflect the value that the customer receives from the purchase as it has a strong influence on both purchase intention and purchase satisfaction (Schiffman & Wisenblit 2019). Secondly, the packaging itself also did not seem to provide adequate value for money, as one participant indicated that *“millet sold in doy-bags do not give the perception of value to the customer”*. Packaging is deemed important to convey the message the brand communicates with buyers (Schiffman & Wisenblit 2019) and is used to convey an image of value.

The participants who thought pearl millet is indeed value for money did so in terms of different attributes. According to Schiffman and Wisenblit (2019), the most effective positioning is getting consumers to believe that a given brand delivers a product or service benefit that is important to the consumer. Furthermore, these benefits are called ‘unique selling propositions’, which become the core identifier of the brand and is the essence of the brand’s competitive advantage (Schiffman & Wisenblit 2019). The participants who responded positively to pearl millet being great value for money, indicated the potential benefits attributed to the product, such as its nutritional attributes, which they felt was a good selling feature. It added value to their perception of the products: *“Yes, when used in bars it equates to a healthy snack”* or *“Yes, it has a healthy connotation, therefore value for money”*.

The packaging attributes were also identified as a key component in their perception of these products, as they mentioned *“resealable packaging”*, *“functional packaging”* and *“if the packaging looks good, I will pay more”*. Consumers’ demand for *“healthier”*, safe, long shelf life, higher-quality foods, as well as the demand for convenient, transparent and sustainable packaging materials, are continuing to evolve in response to changing market needs (Yildirim et al. 2018), thus escalating the importance of packaging attributes for consumers.

Product volume was another key category identified that aided the perception of value. If participants felt they were buying products with “*a lot of product inside*”, they felt they were getting value for their money. In a study conducted by Sastry and Rao (2017), on participants’ perception about the influence of online retail service quality on e-satisfaction (moderated by purchase volume and perceived value), it was found that the purchase volume is taken as the second moderating factor to analyse the quality attributes of online retail service. Sastry and Rao (2017) conclude that it is important to provide a similar quality outcome to consumers, whether the purchase volume is small or vast, as it can influence repurchase intention.

Price also emerged as a perception of value indicator as the participants indicated that the products were “*more costly to buy vs wheat flour*”, “*packaging of third picture looks more expensive and healthier*”, and another stated that they “*have no idea what the product costs*”, which directly links their perception to value for money.

When considering the different attributes of pearl millet that participants would consider as value-adding features, it should be understood that perceived value is considered a trade among consumers based on what they receive in terms of benefits, qualities and utilities. This is set against what they would sacrifice to get it in terms of effort, time, opportunity cost and pricing (Cronin et al. 2000). In this instance, the intrinsic nature of pearl millet (nutritional attributes) as well as extrinsic attributes (volume, packaging and price), are significant value-adding elements that would possibly influence consumers’ purchasing of the grain. The customer-perceived value is critical for supply management due to its link with market share and customer satisfaction, which generally leads to greater levels of customer loyalty, and positive word-of-mouth resulting in higher market share and profitability from marketers’ and manufactures’ point of view (Zanon et al. 2020).

TABLE 5.14: PERCEPTION OF GREAT VALUE

Category	Quote
No	
Price vs quantity	<p>“No, I do not think it is value for money as it is usually overpriced for a small amount”</p> <p>“Will depend entirely on what you can use it for and how many servings you can get out of it to answer the value for money question”</p>
Packaging	<p>“No, millet sold in doy-bags do not give the perception of value to the customer”</p>
Yes	
Nutritional attributes	<p>“Yes, when used in bars it equates to a healthy snack”</p> <p>“Yes, full of nutrition”</p> <p>“Yes, looks healthy and good for digestion”</p> <p>“Yes, buying any grainy bar makes me fuller for longer and they have a long shelf life which is beneficial”</p> <p>“Yes, it has a healthy connotation, therefore value for money”</p> <p>“Yes, product is very filling therefore a good option for all vegans looking for healthy and nutritious products”</p> <p>“Yes, product is filling and has health benefits”</p> <p>“Yes, it is healthier than rice but in the same price range”</p> <p>“Yes, price is due to the health benefits of the product”</p>
Packaging attributes	<p>“Yes, packaging looks good will pay more”</p> <p>“Yes, when I look at the packaging it seems functional and filled sufficiently”</p>

Category	Quote
	"Yes, packaging is resealable" "Yes, good packaging" "Yes, seems that there is enough product in the packaging" "Packaging looks resealable, doy-bag indicates that it is a more expensive product" "Packaging looks good, especially the millet product in the doy bag that you can reseal"
Product volume	"Yes, looks like a lot of product in packaging and makes you feel good about yourself" "Yes, packaging is filled sufficiently" "Yes, looks like a lot of product" "Yes, perceived to have a lot of product inside" "Yes, good volume of products" "Yes, packaging offers a lot of product therefore the higher price is justified"
Price	"Yes, but it is more costly to buy vs wheat flour" "Packaging of third picture looks more expensive and healthier" "Yes, but I have no idea what the product costs"

When considering participants' understanding of pearl millet as indigenous, the benefits they attribute to pearl millet, and the reasons they give for purchasing pearl millet (or not), it is important to identify the main criteria they would use to influence their purchasing decision of food products in general, and then in relation to indigenous food products. The first question therefore stipulated: ***"What is your main and most important criteria for purchasing food products?"*** From the data analysis, six main concepts emerged that portrayed the participants' view in relation to food products in general. The concepts are price, nutritional and health benefits, quality, sensory evaluation, packaging, and the functionality of the products, as indicated in Figure 5.15.



FIGURE 5.15: MAIN CRITERIA FOR PURCHASING FOOD PRODUCTS

Price featured as one of the most frequently mentioned factors that would be considered in the purchase of food products in general. Participants felt that the *"product has to be cheap, have to feed 3 children"*, *"affordability"* and it should be *"priced accordingly and give me my money's worth"*. When perceived food quality such as health, taste and visual attractiveness is high, then customers would consider the price fair; consequently, when they evaluate prices as fair, their value perceptions would increase accordingly, making price is a valid criterion when purchasing (Konuk 2019).

Participants also identified nutritional and health benefits as one of the key factors that would influence their decision to purchase food products in general, as they *"typically check the energy values of the products as I monitor my daily kilojoule intake"* and *"Check the amount of sugar and to see if there are any artificial ingredients"*. A study investigating the personal and psychological traits influencing the willingness to pay for food with nutritional claims based on potato chips and

toasted bread, reflected that consumers were more willing to pay for toasted bread with one nutritional claim than potato chips with one nutritional claim (Lopez-Galan & de Magistris 2020). The findings also reported that consumers showed a positive preference for products with one nutritional claim compared to those with two nutritional claims presented jointly on front of packaging (Lopez-Galan & de Magistris 2020). This suggests, in contrast to what participants said, that the presence of too many nutritional claims could present an information overload for consumers; they thus prefer products with less complex nutritional information.

For some participants, “*quality*” was imperative when considering the purchasing of food products. This included the assurance that the product did go “*through all the relevant grain quality checks in South Africa, in terms of pesticides*” and had “*long expiration dates*”. Collart and Interis (2018) agree that the quality conception in terms of food date labels (wording and dates) can affect the perceived value of products (Collart & Interis 2018). Better educated consumers also often raise the issues of high prices and short expiry dates as key barriers towards development, particularly in a study conducted in Poland regarding the organic food market (Bryla 2016). Those findings supported consumers’ dependency on quality attributes that ought to be on standard.

Sensory evaluation was another factor that was also deemed important by some participants when deciding to buy food products, with “*the way it tastes*” or “*how it tastes*” and its “*texture*”, specifically named as key influencing factors. Malone and Lusk (2017) investigated how taste trumps health and safety in terms of meat products. They found consumers derive the most use out of how they perceive a product’s taste, rather than how healthy or safe they believe the product to be. Consumers might thus be more inclined to purchase based on how they perceive something might taste rather than the health benefits thereof, which is contrary to what participants said in the second attribute in Figure 5.24, that signifies the nutritional and health benefits.

To some participants, the packaging of the food product was an important factor that they considered when purchasing a food product in general, as they expected the packaging to assist in presenting an “*appealing*” food product. Participants said, “*Packaging and the way the food is presented*” and “*Packaging of new/unknown product has to be appealing*”. Participant perceptions of food packaging indicate that they mainly based their perceptions of food packaging on its functional (recyclable, purposive, being informative) and physical attributes (hygienic, high quality, being attractive). These perceptions have a direct influence on their purchase decision (Schiffman & Wisenblit 2019).

Functionality was the last factor identified by some participants as important in terms of eating the food, purely based on the necessity thereof. They stated that they “*Buy food purely for its functionality*”, and “*Will only buy a functional product*”. These participants are more frequently

known as utilitarian buyers who are mostly concerned with the functionality of products rather than the prestige or social status thereof (Palma et al. 2017) (see Table 5.15).

TABLE 5.15: MAIN CRITERIA FOR PURCHASING FOOD PRODUCTS

Category	Quote
Price	"Price, quality and quantity" "Affordability, value for money, healthy" "I will buy where the price is most competitive" "Value for money, but still healthy" "Priced accordingly and give me my money's worth" "Buy my food according to a meal plan which doesn't vary. Price most important vs taste and functionality" "Price and convenience" "Price" "Product has to be cheap, have to feed 3 children"
Nutritional/Health benefits	"I typically check the energy values of the products as I monitor my daily kilojoule intake" "It should be healthy and nutritious to my body" "Nutritional value and health benefits, buy products that would make you fuller for longer" "Healthy and priced reasonably" "Product should be healthy and tasty" "Health and Nutritional benefits, value for money and has to make you feel full" "Nutritional value, product that will keep my family fuller for longer" "Product has to be packed with nutrients" "Check the amount of sugar and to see if there are any artificial ingredients" "What is the content of the product and will my children be able to eat it"
Quality	"I will pay more if the quality of the product is good" "Want to be assured that product has gone through all the relevant grain quality checks in South Africa, will also have to adhere to pesticide regulations free from glyphosate. Nutritional value and expiration date also important" "Quality, quantity and value for money" "Quality and how healthy it is" "Quality and price of the product"
Sensory evaluation	"The way its tastes and looks" "Taste, texture and knowledge about the product" "How is tastes"
Packaging	"Packaging and the way the food is presented" "Packaging of new/unknown product has to be appealing, price reasonable" "Packaging of an unknown product and the front label information"
Functionality	"Buy food purely for its functionality and not for taste, flavors, recipes etc" "Will only buy a functional product" "Functionality"

Following the above-mentioned question, the focus shifted to indigenous products of South Africa, and the question was: ***"What would be your main and most important criteria for purchasing an indigenous product to South Africa, such as pearl millet?"*** From the analysis of the data, it was evident that some of the categories that influenced consumers' decision to purchase food products, in general, resurfaced when purchasing indigenous products. This included aspects such as the price, sensory evaluation and nutritional health benefits. Packaging was again mentioned, but this time the participants emphasised the importance of the information on the packaging for an indigenous grain such as pearl millet. Two new categories that emerged were product purchases that support locally produced products, and environmentally sustainable practices. These three categories are indicated in the highlighted blocks, as presented in Figure 5.16, and will be discussed in the section below. As the data overlapped in terms of the categories

of price, nutritional, health benefits and sensory evaluation, these categories will not be discussed again.

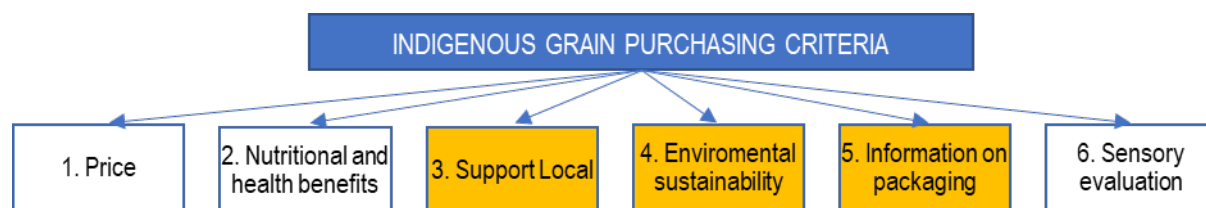


FIGURE 5.16: WILLINGNESS TO PURCHASE INDIGENOUS FOOD PRODUCTS OF SOUTH AFRICA

In terms of participants' willingness to purchase indigenous products, it emerged that participants favoured the idea of contributing to the South African economy by supporting locally produced food products. They explained they *"would buy the product because it is South African, support local, local is better"*. A study by Dobbelstein et al. (2020), determining participant perception of the critical success factors for small local participant brands, found that participants from both Germany and South Africa had a preference for local products and believed that local products offer better quality. This reflects that individuals are supportive and more connected to local communities, and South Africans felt more strongly committed to supporting locals than the Germans (Dobbelstein et al. 2020). Consequently, supporting local products seems to be an important consideration for consumers when considering indigenous grains.

Participants also had an environmental concern which seemed to be negated through the support for indigenous crops. Participants had a positive connotation with products that were *"farmed ethically and doesn't have a bad impact on the environment"* and that are *"natural"*. According to Cherdymova et al. (2018), sustainable practices can include sustainable sourcing, farming and manufacturing of the final product and its packaging. The design of more sustainable packaging is an important step towards reducing packaging's environmental impact (Cherdymova et al. 2018).

A study conducted by Dessart et al. (2019), looking at the behavioural factors affecting the adoption of sustainable farming practices, reported greater specific sustainable practices when farmers have enough knowledge and competences related to these practices, and when they think these practices bring environmental or financial benefits with limited risks (Dessart et al. 2019). Potentially, the more sustainable practices that are followed, the more likely consumers will be to purchase indigenous products. Packaging also plays a key role as a 'silent salesman' as it provides many cues which participants may use to draw interpretations about the packaged product's expected benefits (Steenis 2019).

The final concept that emerged was the information displayed on the product, which included the product uses, serving suggestions, as well as pictures that could provide ideas on how to use it. Participants stated: *“Information on how to use product”, “Ingredients as well as reviews of the product to make sure that I am aware of what I am buying”* and *“If there is a picture on and serving suggestion, this would be an important criterion”*. Ankiel and Grzybowska-Brzezinska (2020) investigated the value placed on product packaging. They found that participants are mainly interested in the name, name of producer and brand, expiration dates, storage requirements, nutritional information, additional benefits, quality declarations, and distinguishing methods of production (Ankiel & Grzybowska-Brzezinska 2020). This supports participants’ concern related to the information they expect to be provided on the packaging, as seen in Table 5.16.

TABLE 5.16: WILLINGNESS TO PURCHASE INDIGENOUS FOOD PRODUCTS OF SOUTH AFRICA

Category	Quote
Price	“Value for money, quality of the product directly equates to the value of thereof, compared to imported brands” “The price and what are tastes like and how it is prepared” “Price would be most important” “Price would be the deciding factor I’m buying indigenous products” “I would purchase the price is right, quality also has to be good” “Price” “Price and value for money, also how to use the product” “Has to be within my budget for me to try it” “Price of product compared to other grains”
Nutritional/Health benefits	“Health benefits and what does the food add to my life” “Will buy products for the health and nutritional benefit, whether indigenous or not” “Health benefits of the natural product” “Health benefits and trying something different, advertising is crucial” “Health benefits and quality of product” “Nutritional value of the product should be much better than the usual products i.e. Couscous/rice” “Major health benefits will let me buy the product” “Health benefits and will be daughter be able to eat it”
Support Local	“Support of local farmers of which quality has been approved” “Support of the local community and experiencing true South African food will let me buy the product” “Would purchase any product that is made in South Africa my family and I are proudly South African and support all local products” “Would buy the product because it is South African, support local, local is better” “Supporting local farmers” “Locally sourced and has undergone quality control” “Would like to know that the product is grown, produced and processed on South African Soil”
Environmental sustainability	“Is the product farmed ethically and doesn’t have a bad impact on the environment” “For the reason that it is natural”
Information on packaging	“Information on how to use product” “If there is a picture on and serving suggestion, this would be an important criterion” “Ingredients as well as reviews of the product to make sure that I am aware of what I am buying”
Organoleptic properties	“the taste is crucial with new products” “taste triumphs every time”

After establishing the main criteria for purchases in general and in terms of indigenous grains such as pearl millet, the researcher needed to understand what the deciding factor for purchases would be in the absence of knowledge or prior experience: ***“If you have no prior information or experience about the product but intrigued by it, how will you go about deciding if you will buy it or not?”*** With this question, the researcher hoped attributes would be identified that would assist the participants who had no prior experience of the product and to whom the product was

unfamiliar and new, to be enticed to consider a product such as pearl millet. The categories that emerged that would intrigue participants to consider an unfamiliar product, were noted to be the price, nutritional and health benefits, product advertising and appearance, product experience, and product research (see Figure 5.17).



FIGURE 5.17: WHAT INTRIGUES PARTICIPANTS TO BUY

Price not only emerged as a purchasing stimulant for unfamiliar products, but was identified in terms of indigenous grains and food products in general. It again emerged as a very important factor that would assist the participants in making a decision about an unfamiliar product. Participants pointed out that the reason why “*price*” was so important to them was because the product would have “*to fit in the budget*” and would also be assessed in terms of how the “*price compares to similar items*”. They thus refer to other product prices. These reference prices are defined as any price that a consumer uses as a basis for comparison in judging another price (Schiffman & Wisenblit 2019). Consumers naturally tend to believe that the selling prices of market offerings are considerably higher than their perceived fairness of price. Therefore, when the advertised price is within a given consumer’s acceptable range, it is considered plausible and credible (Schiffman & Wisenblit 2019), and would provide a reason to purchase the product.

The nutritional and health benefits were mentioned again as one of the product features that would influence their decision to purchase when participants did not have experience with a product: “*by researching the products health benefits, I will definitely purchase the product*” and “*will read the label and ingredients to determine if it is healthy and will research possible recipes*”. According to Hoek et al. (2017), ‘healthy foods’ are an acceptable criterion and should remain the overarching principle for policies concerned with shifting consumer behaviour.

For the participants, product advertising and product appearance would also prompt them to consider purchasing an unfamiliar product when it is presented as “*looking tasty and delicious*” as they “*would buy the product if it is advertised well and trending*”. Marketers can easily use comparative advertising to show product superiority compared to other products (Qazzafi 2019) by appealing through fear, humour, celebrities as spokespersons, timely advertisements, abrasive advertising and audience participation (Schiffman & Wisenblit 2019),

Next, participants' experiences were noted as an important factor that would intrigue them to purchase an unfamiliar product. They would also rely on *“word of mouth from a friend”* and *“Will ask people what their experience of the product was”* when they have no experience of their own to resort to. Within word-of-mouth communications, the parties involved typically perceive each other as highly credible sources of information because they view one another as objective (Schiffman & Wisenblit 2019); for example, social networks where people share information. In effect, a study by Martensen and Gronhøldt (2016) on word-of-mouth's effect on participant emotions and choice, found that positive and negative word-of-mouth advertisements influence emotions, behavioural attitude and intention, which can thus affect the purchasing of pearl millet.

In particular, when an unfamiliar product is being considered for purchase, it emerged that the participants would firstly conduct product research (see Table 5.17), to support an informed decision about the product: *“Will look for serving suggestions and look online for recipes before my purchase”* and *“Will research the product on the internet and obtain recipes to make an informed decision”*. The process of researching information matters to participants. Marketers must therefore deliver applicable descriptions of their products and promotions (Schiffman & Wisenblit 2019). Moreover, recommendations from friends, family and reviews from other consumers will be considered, especially if the consumer has no prior experience (Stankevich 2017) to assist them in making an informed decision.

TABLE 5.17: WHAT INTRIGUES PARTICIPANTS TO BUY

Category	Quote
Price	<p>“Would compare prices and read up on product before making a purchase”</p> <p>“All will depend on price of product”</p> <p>“Price and packaging”</p> <p>“Price range of product compared to similar items”</p> <p>“Price for the product will determine if I buy it, has to fit in the budget”</p> <p>“Will depend on the price of the product”</p>
Nutritional/Health benefits	<p>“Nutritional value and wholesome quality of meal or snack”</p> <p>“Will read about the benefits of the product and how it can be used”</p> <p>“Will look at the potential health benefit and pricing”</p> <p>“Will research the potential health benefit before purchase”</p> <p>“I will look at the nutritional value of the product and research recipes before buying the product”</p> <p>“Will read the label and ingredients to determine if it is healthy and will research possible recipes”</p> <p>“I will look at the label to confirm all the nutrients before buying it, will do research about recipes”</p> <p>“By researching the products health benefits and I will definitely purchase the product”</p>
Advertising and appearance of product	<p>“Must look delicious and be affordable”</p> <p>“Would buy the product if it is advertised well and trending, regardless of price”</p> <p>“Will buy product because it is trendy and new”</p> <p>“How it is packaged and health benefits”</p> <p>“Packaging and if it is a good alternative to the current product that I am using”</p> <p>“Image of the product will determine if I buy it”</p> <p>“It must look tasty and be affordable”</p> <p>“How does it present on the shelf, cleanliness and the color of the millet”</p> <p>“Packaging and health benefits”</p>

Category	Quote
Peoples experience	"Will buy the product based on other people's experience of the product" "Will ask people what their experience of the product was" "Taste of the product and word of mouth" "Possible recipes and people's comments will let me buy the product" "Word of mouth, will only buy if it tastes good" "Will go by word of mouth from a friend"
Research	"I will research the product and recipes" "Will look for serving suggestions and look online for recipes before my purchase" "Will research the product on the internet and obtain recipes to make an informed decision" "Will research the product" "Research the product and its health benefits"

5.4 QUALITATIVE FINDINGS REGARDING PARTICIPANT'S PERCEPTION OF PEARL MILLET (OBJECTIVE 2)

Perception can be described as the process by which an individual selects, organises and interprets stimuli into a meaningful and coherent picture (Schiffman & Wisenblit 2019).

This section of the focus group interviews explored participants' perception of pearl millet in terms of the external attributes that influence their intention (Schiffman & Wisenblit 2019) to purchase by considering quality, price, packaging, retail store image, country of origin, and participants' openness to new products (see Figure 5.18). The external attributes were explored based on a general opinion of all food products, and then more specific with pearl millet in mind. In each of the first five sections, similar questions followed each external attribute, which are explained as follows:

- a) The first question of Sections 5.4.1 to 5.4.4 explored the participants' expectation of each of the external product attributes, namely *quality/price/packaging/retail store image/country of origin* when purchasing general food products.

Consumers' expectations are rooted in their presupposed belief about a service or product, without any information or prior experience (Almsalam 2014). Thus, consumers may have certain feelings or beliefs regarding food products based on how they perceive the product in relation to external factors, with or without having any actual experience with it. If consumers pursue a purchase and their expectation of the product or service is met or goes beyond their expectation, the consumer will then experience satisfaction (Saleem et al. 2015). Therefore, for marketers it is very important to achieve customer satisfaction. This process starts by primarily understanding customer expectations regarding food products and new food products that might be unfamiliar to the majority of participants.

- b) The second question of Sections 5.4.1 to 5.4.4 focused on the importance of these external attributes (*quality/price/packaging/retail store image/country of origin*) for the participant in relation to purchasing indigenous products such as pearl millet.

During the decision-making process, consumers typically rely on extrinsic factors (when they have no intrinsic information or experience) before deciding which food product to choose for consumption. By understanding the role of these factors, researchers gain insight into understanding consumers' dietary behaviour (Higuchi & Maehara 2021). These questions were therefore posed to understand what participants regarded as the most important factors that they rely on when they have no actual product experience with pearl millet, to understand and establish their intent to purchase.

- c) The third question of Sections 5.4.1 to 5.4.4 considered if participants were to purchase an indigenous grain such as pearl millet, what they would be looking for in the *quality/price/packaging/retail store image/country of origin* of the grain to lean towards actually purchasing it?

In the food industry, purchase intention is used to predict the success and future sales of a new product launch. Therefore, much more research is required to investigate (more meticulously) which factors explain whether the purchase intention leads to actual purchase or not (Kytöä et al. 2019). Hence, by pinpointing what exactly participants look for in pearl millet products, researchers can understand what would make them move towards actually procuring the product.

- d) The last category focused on investigating participants' general openness to new/unknown products. This refers to participant dogmatism, a personality trait that measures the degree of openness that participants display towards unknown products (Schiffman & Wisenblit 2019). It is important to understand consumer willingness to procure new products/unknown products to establish whether new pearl millet products should be considered for further marketing strategies and be included in new food products. The questions were structured slightly differently due to being approached in different ways than questions a) to d), as indicated below:

- As a participant, how open are you to new products?
- What will make you consider purchasing a new and unfamiliar product?

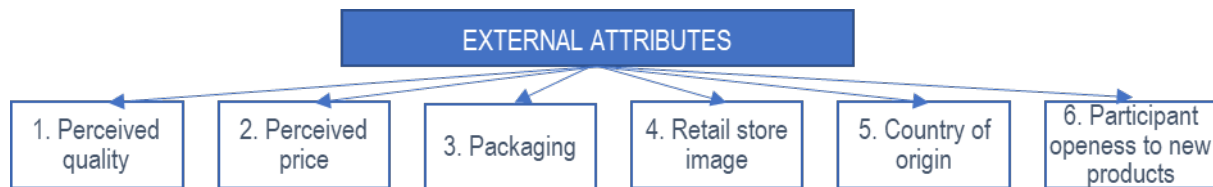


FIGURE 5.18: EXTERNAL ATTRIBUTES THAT INFLUENCES THE INTENTION TO PURCHASE

Perceived quality is described as a subjective ruling made by a consumer regarding the total product or service superiority based on the purpose of the product, in comparison to alternatives (Aaker 2009).

It is important to distinguish between quality and participants' perceived quality of the product. Quality, as an external attribute, can be described as the ability of a product to carry out certain functions which cover reliability (nutritional value), durability (shelf life), ease of use and repairs, and accuracy, among others (Kartikasari 2019). Whereas the perceived quality is an intangible concept that presents variances in relation to the objective quality of a service or product. The perceived quality is more related to an abstract judgement than the concrete attributes of a product (Souki & Filho 2020).

Perceived quality results in an evaluation of consumer expectation vs the actual performance (Calvo-Porrall & Levy-Mangin 2016), therefore the overall perceived quality directly influences the purchase intention (Ruswanti et al. 2016). Participants had some perception about the product quality and price before purchasing the product. After using a product, purchase intention increases or decreases, because it has direct relations that affect each other. If the quality of a product is perceived to be high, purchase intention will also high (Saleem et al. 2015). Therefore, the opening question in the section on perceived quality related to all food products, was: ***“What do you expect when you look at the quality of the product?”*** The notions that emerged (see Figure 5.19) that related to participants' perception of the quality of a food product included the 1) packaging appearance, 2) freshness, and 3) claimed quality of the product.



FIGURE 5.19: QUALITY EXPECTATIONS

Packaging appearance was broadly noted as having the greatest association with product quality. Consumers often judge the quality of a product or service based on a variety of cues that they associate with the product; these cues can be extrinsic, such as the packaging itself

(Schiffman & Wisenblit 2019). Participants mentioned specific attributes they look for in packaging to guide them in terms of the quality of the product, namely the “*nutritional information*”, “*shelf life dates*”, “*neat packaging*”, “*awareness of ingredients*”, “*sound packaging, a sealed product*” and also “*packaging and label should be of high quality to attract the participants attention*”. The front of packaging typically plays a role in seizing consumers’ attention, influencing their product preferences, and the design can also influence their perceptions of health through the use of colour, pictures and symbols (Pulker et al. 2016). It would thus be evident that packaging contributes to perceived product quality.

Furthermore, the freshness of the product was also widely mentioned across the group of participants, as they indicated their expectation through statements such as “*the product will be fresh, have good color and packaging*” and “*I expect freshness mostly*”. From a study conducted by Heide and Olsen (2017), regarding the influences of packaging attributes on participants’ evaluation of fresh cod, informational attributes (freshness indicators, shelf life, freshness statements) were deemed more important than visual attributes (packaging shape and colour) for customer evaluations and their choices of fresh cod in Norway. Therefore, these attributes are typically important when evaluating the quality of perishable food products and can also be applicable for this study regarding pearl millet.

The findings that emerged also indicated that some participants were reliant on the claimed quality announced by the manufacturer or retailer, as they mentioned “*the quality will be what they said it will be*”, “*that you would get the quality as promised/claimed*” and also to “*scrutinize the product for overall compliance with all relevant food safety and labelling regulations*”. These claimed quality certifications were imperative as consumers’ perception of product properties and quality are significantly affected by information. Their interest in the direct indications of food quality is high (Magnier et al. 2016) and should be considered as important for pearl millet products.

TABLE 5.18: QUALITY EXPECTATIONS IN PRODUCTS

Category	Quote
Packaging appearance	<p>“Good packaging, branding and details on what product can be used for and nutritional values”</p> <p>“Appearance and the shelf life of the product is important”</p> <p>“I will look the packaging and the labelling of the product; does it look clean and of good quality. I will look what they say about the product on the packaging”</p> <p>“Does the product look neat and clean with no visible defects”</p> <p>“Sturdy packaging, freshness and due dates printed on packaging.”</p> <p>“I want to be aware of all the ingredients”</p> <p>“Packaging should draw one’s attention and good quality product”</p> <p>“The packaging and the look of the product itself”</p> <p>“Packaging gives clear information”</p> <p>“Will look at the product itself and the way it tastes, sensory aspects is crucial”</p> <p>“Visually, what it looks like, is there effort in the packaging”</p> <p>“How the product is packaged and that it doesn’t contain any foreign objects”</p> <p>“The packaging and label should be of high quality to attract the participants attention”</p> <p>“I expect sound packaging, sealed product”</p> <p>“Face value and how product look on the outside and the product inside the packaging”</p>

Category	Quote
	<p>"First look at the packaging should sell the product, and there should be consistency in the product"</p> <p>"I want well sealed packaging, preferably resealable"</p>
Freshness	<p>"Fresh, must be attractive and have all important nutritional values"</p> <p>"Freshness, well packaged"</p> <p>"The product should look fresh, presentable and contain a good nutritional balance"</p> <p>"Freshness, health benefits and natural"</p> <p>"I expect freshness mostly"</p> <p>"That the product will be fresh, have good color and packaging"</p> <p>"Fresh and product should be attractive"</p> <p>"Freshness, health benefits and natural product"</p>
Claimed quality	<p>"I would expect it to last a long time, taste well and be of good quality"</p> <p>"That you will get the quality they claim"</p> <p>"Would expect the product to be of the same quality as the usual products I buy, I will not buy a product of poorer quality"</p> <p>"The quality will be what the said it will be"</p> <p>"Scrutinize the product for overall compliance with all relevant food safety and labelling regulations"</p> <p>"That you would get the quality as promised/claimed"</p>

The opening question established what the participants used as quality indicators when considering a food product. The next question specifically intended to establish the importance of quality indicators when considering pearl millet. However, the findings also reflect which indicators are important when considering pearl millet. Therefore, the question that was asked was presented as: ***"How important is quality to you when it comes to indigenous products such as pearl millet?"***

Most participants indicated that quality was very important to them when indigenous products were considered, such as pearl millet. Specific mention was made of how *"crucial it was as it is the most reliant factor a product can give"*, it would *"motivate me to buy the product"* as it is *"important especially if it's a new product"*, because *"if quality is substandard, I will not buy it"*. In this instance, participants were also able to explain their view on quality by indicating that repeat purchases would not be considered because *"if quality is bad on first-time purchase, I won't purchase again"*. Repurchase intention is conceptualised as the intention to engage in repeat purchases (Wisker 2020). In a study investigating the mediators of the relationship between service quality and customer loyalty, it was reported these attributes (service quality, satisfaction and corporate image) have a positive effect on loyalty and repeat purchases (Makanyeza & Chikazhe 2017). Based on the quality indicators provided by participants, pearl millet products could offer considerable quality attributes to encourage repeat purchasing.

Many participants accept quality to be related to the price, and they indicated these grains are typically higher priced than other grains, for instance, *"these grains are typically more expensive"* and *"if I pay a high price, I expect high quality"*. Consumers tend to use price as an indicator of quality when they have little or no other information available (Schiffman & Wisenblit 2019), as might be the case with pearl millet. The commonly believed assumption is that high quality mostly results in high prices (Zich 2017). This assumption is rooted in the Price-Quality Schema

(Lichtenstein et al. 1993), arguing that low price relates to equal low quality, and high price reflects high quality, illustrating the root of the quality-price relationship among participants.

Participants' impression of the quality of pearl millet was also established based on first impressions, which emerged from statements such as *"it is the first impression"*, *"visually it should like appetizing"* and *"presentation is very important"*. First impression formation could be applicable during the process of interpreting quality. Participants look for quality and interpret products based on that, however when the product is used up, all that remains is the first impression left from that product (Becerra 2012). Within this instance, the participants felt that the first exposure to pearl millet products would offer an interpretation of their first impression.

Only one participant did not think the quality of indigenous products were important and was rather more concerned about the price of the product than the quality. According to this participant, quality is *"not important as I would rather look at the price than quality"*. A further participant thought the quality of pearl millet was semi-important as they stated they are *"more relaxed when it comes to quality of product made in South Africa compared to other countries such as Thailand and China"* where the quality would be more important of them. This could be due to a belief system on the quality associated with foreign-produced products that are regarded as being inferior compared to that of locally produced products (Schiffman & Wisenblit 2019); therefore, pearl millet might be considered an authentic alternative to imported products, as seen in Table 5.19.

TABLE 5.19: QUALITY IMPORTANCE IN TERMS OF PEARL MILLET

Category	Quote
Important	<p>"Crucial as it is the most reliant factor a product can give"</p> <p>"Very, as it will motivate me to buy the product"</p> <p>"It is so important especially if it's a new product"</p> <p>"highly important"</p> <p>"Quality is quite important to me"</p> <p>"if quality is substandard, I will not buy it"</p> <p>"important I need consistency throughout"</p>
Repeat purchase	"Important, if quality is bad on first time purchase, I won't purchase again"
Price	<p>"highly important as these grains are typically more expensive"</p> <p>"Very important because if I pay a high price, I expect high quality"</p>
First impression	<p>"Very, it is the first impression"</p> <p>"visually it should like appetizing"</p> <p>"presentation is very important"</p>
Not important	"Not important as I would rather look at the price than quality"
Semi-important	"I am more relaxed in terms of quality to buy products indigenous to South Africa compared to Thailand or China products"

To establish the quality indicators that participants would look for in general and in pearl millet specifically, the researcher had to determine whether quality would thus influence their decision to purchase a food product. The question put to participants was accordingly: ***"If you were to purchase an indigenous grain such as pearl millet, what will you be looking for in the***

quality of the grain?” From the analysis of the data, it emerged that quality related to the following concepts, as presented in Figure 5.20, and discussed in detail below.

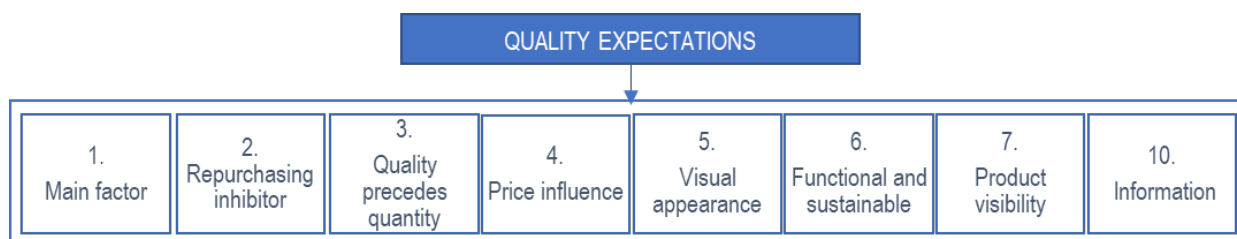


FIGURE 5.20: QUALITY EXPECTATIONS OF PEARL MILLET

Two of the participants indicated that quality is their primary influence. They reported their reliance on quality as a key factor, especially when knowing nothing of the product, as the one participant mentioned in Table 5.19. Product quality can be noted as the most dominant variable in influencing purchasing decisions and the purchase motivation (Herawati et al. 2019), which is proven to support the importance related to quality and pearl millet products. The quality of the product also inhibits repurchasing of the product as one participant specifically mentioned “*If quality is bad, I won’t repurchase it*”. Becerra (2012) claims that consumers make comparisons of products and services through their expectations and are therefore satisfied or dissatisfied. When consumers do not have any prior product experience, they tend to rely on the perceived quality of the product. These attributes revealed external features that displayed consumer expectation of the product (Becerra 2012). Consequently, the way participants perceive pearl millet quality will reveal their expectation of the products.

A participant also indicated that “*quality trumps quantity*”, which means that quality precedes quantity when a food product is considered. In a study by Wilkins and Ireland (2020), investigating the trade-offs among product price, quantity and quality, it was reported that manufacturers might have a better chance of maximising profit by reducing pack quantity, rather than increasing price or lowering quality. This is quite important from a marketing perspective as it concludes, in descending order, that the product attributes that could be traded off would be quantity, price, then quality.

Participants felt that price and quality would compete together in terms of the purchase decision, as indicated by these participants stating “*it will come down to 50/50 quality vs price*” and “*quality vs price ratio will depend whether I purchase or not*”. They also indicate that “*if price is low, I would think the quality is cheap*”, which may not result in the decision to purchase. Price-quality centres are connected to the hypothesis that the price of a product is proportionate to its quality, thus the higher the price, the higher the quality (Anggita & Hapzi 2017). This concept therefore highlights the price to quality importance for indigenous grains such as pearl millet.

Participants indicated that the visual appearance of the product was an important indicator: *“I eat with my eyes”*, and *“visual cleanliness is very important”* which may also be linked to the value for money participants mentioned: *“if it looks cheap it will taste cheap”*. In a study on the visual appearance of beer, it was found that when participants had the option to review a pale beer compared to a dark coloured beer, they indicated that they thought the dark coloured beer was more expensive purely based on appearance; they were willing to pay up to 6% more on average for the darker beer (Reinoso-Carvalho et al. 2019). This could be why consumers may or may not buy pearl millet products – if it looks dissatisfactory, they might not consider it. There were also a few statements among participants on indications of perceived quality, namely being *“nutritionally dense products”*, *“long shelf life of products”* and *“grains should be GMO free”*. These concepts relate to the functionality and sustainability of products to reflect these claims, and ought to be considered when designing product packaging to convey the information to consumers.

A key quality indicator that was identified in terms of pearl millet was the visibility of the product. Having a *“clear view and window of the product inside”* and a *“clear visual presentation of the product”* was related to the packaging of the product as well. In a study regarding the effectiveness of transparent packaging compared to product imagery on product evaluation, the authors (Simmonds et al. 2017) found that products in transparent packaging are consumed more quickly and are more likely to be purchased. Thus, graphic designers should enable the clear window function when designing packaging for pearl millet products.

Participants also mentioned that the packaging of pearl millet should include *“descriptive information”*, *“storage instructions”*, *“certification logo’s”* and a *“clean ingredient statement”*. In a study on the role of packaging in quality perception by Vigstrand and Lundell (2016), the authors indicated that the visual components of packaging are less important when dealing with high involvement purchases (high-risk), and more information would be required. Thus, participants who require more information regarding pearl millet might regard it as a high involvement purchase due to their inexperience and unfamiliarity with the product. By understanding participants’ views on quality and the influence thereof, it opened up participants’ perceptions. They engaged in self-discovery, and established what they look for in the quality of grains such as pearl millet.

TABLE 5.20: QUALITY EXPECTATIONS OF PEARL MILLET

Category	Quote
Main influencing factor	“It is the main and only factor of influence to me” “I rely on quality as key factor when I don’t know anything of the product”
Repurchasing inhibitor	“If quality is bad, I won’t repurchase it”
Quality precedes quantity	“Quality trumps quantity”
Price influence	“It will come down to 50/50 quality vs price” “quality vs price ratio will depend whether I purchase or not” “It will depend on how much money I am prepared to spend” “if price is low, I would think the quality is cheap”

Category	Quote
	"It should be affordable, if the price is higher it should state why i.e. higher quality" "I would buy the product if it gives me good value for money, I expect the quality to be good and judge price thereof" "Value for money, I would compare the R/kg vs the price of alternatives" "Value for my money spent" "I expect product to give me my money's worth"
Visual appearance	"Visual aspects would serve as an important factor" "I would look at visual cleanliness product" "visual importance is very important" "I eat with my eyes so if it looks unappealing, I won't buy it" "if it looks cheap it will taste cheap" "Firm packaging with good barrier properties to protect the inside product" "Color should be within product specification" "presentation of product is crucial" "The look and feel represent quality" "No stalks, pebbles or foreign objects inside product" "it's on shelf cleanliness" "no foreign objects, it should be hand sorted or mechanically sorted"
Functional and sustainable	"I would look for a nutritionally dense product" "I want to buy a grain that will aid my health to help me with quality of life" "I focus on healthy lifestyle and therefore high-quality products are very important" "Long shelf life" "Need to be GMO free, otherwise I would give it to my family"
Product visibility	"Clear view and window of actual product inside" "clear visual presentation of the product"
Information	"Descriptive information" "Background information on how it is grown, treated, preserved, etc." "Packaging information on storage use" "certification logo's like vegan society, etc." "Clean ingredient statement"

5.4.1 Findings of the participants' perception regarding product price (Objective 2)

Price is the sum of money that is charged for a service or product (Kotler & Armstrong 2012). Based on a study on the influence of brand image, advertising and price on consumer purchase intention, conducted by Manorek (2016), the researcher found that perceived price is a very important element for understanding purchase intention and consumer behaviour, as it is an expression of product value (Wang et al. 2017). In the search to understand the role of purchase intention and smartphones, Satriawan and Setiawan (2012) found that perceived price and perceived quality positively and significantly affected the purchase intention thereof. Therefore, following on from quality as an external attribute, stances on perceived price, in general, were explored by asking participants: ***"What do you expect when you look at the price of the product?"*** Participants discussed the expectation they have of the price of a product in terms of the following categories (see Figure 5.21).



FIGURE 5.21: PRICE EXPECTATIONS

Participants provided a variety of opinions related to price fairness. They considered price when they wanted “to see if it’s the money’s worth to add to my food” and “I would compare the R/kg vs the price of alternatives”. Price fairness can be defined as consumers’ assessment of the seller’s price and the price of a comparative other party, and whether or not it is reasonable (Konuk 2019). According to Al-Salamin and Al-Hassan (2016), there is a positive relationship between price and consumers’ buying behaviour; the more suitable prices are, the more willing consumers will be to purchase them. Consumers thus make either explicit comparisons of two or more actual product prices or implicit comparisons, comparing the observed price with some indistinguishable, expected reference price (Malc et al. 2016). Therefore, the price alternatives that the participants in this study evaluated might be among different brands that offer similar products, or it might be among similar types of products. For example, pearl millet might be evaluated against quinoa, bulgur wheat, rice and other grains.

The quality of the product was reiterated in this section as some participants indicated that quality remained related to the price of the product and they “*did not mind the price if the quality matches up*” and the “*price goes hand in hand with the quality of the product*”. Quality is the process of continued improvement. It reduces not only the perception of risk but also meets the needs of consumers who are always drawn towards it (Krishnaveni & Priyanga 2016). Therefore, by understanding that quality is persistent and not static, it will always be relevant to consumers as they require ongoing efforts from marketers and manufacturers to level up their quality standards.

It was also important for some participants that the price was market-related (“*products should not be more expensive compared to other products on the shelf*”, “*price should be market related and price competitive*”) and similar to other grains (“*bulgur wheat and buckwheat*”). Before making actual purchases, consumers make a comparison and evaluate price against alternative brands, illustrating the best method of building customer satisfaction (Anjana et al. 2018). Consumers who are not willing to purchase products that are too expensive are known as price-conscious consumers, and they typically engage in a higher level of search in product prices (Cham et al. 2018). This emphasises the importance of price and consumer consumption patterns when purchasing any products.

TABLE 5.21: PRICE EXPECTATIONS

Category	Quote
Price fairness	"Value for money, that the asking price for the products is in line with what is being produced" "To see if it's the money's worth to add to my food" "That it is reasonable/affordable and that you get value for money" "I determine if it is affordable and that it matches my budget" "Value for money" "Affordability" "I expect it not to be too expensive" "I would buy the product if it gives me good value for money, I expect the quality to be good and judge price thereof" "Value for money, I would compare the R/kg vs the price of alternatives" "Value for my money spent" "I expect product to give me my money's worth"
Quality	"Quality for money" "I don't mind the price if the quality matches up" "Price goes hand in hand with the quality of the product, I expect to pay a reasonable price" "I want quality for what I paid for" "I expect that whatever the price for the product that the quality will be upheld" "The higher the price the better the quality and it should taste better"
Market-related pricing	"That the price is market related and price competitive" "Price must be market related; people should feel that they can buy the product without counting every cent" "Product should not be more expensive compared to other product on the shelf" "Price should be market related" "Marketed related pricing is important"

A follow-up question was posed specific to pearl millet and how important price would be when participants were confronted with this grain: ***"How important is price to you when it comes to indigenous products such as pearl millet?"*** From the findings, most of the participants indicated that price was very important when considering an indigenous grain such as pearl millet. This was because participants felt pearl millet was firstly, not a usual purchase, *"not a usual purchase like rice, etc."*, but *"more expensive"*, which may mean they were rather cautious when considering a product they do not habitually purchase. This cautious action might be related to the level of perceived financial risk (expectation of losses) (Ariffin et al. 2018) that the participants associated with pearl millet. For example, if a product such as pearl millet is more expensive, there is a level of uncertainty since the product is unfamiliar (might taste bad or unsure how to cook) to the consumer.

Affordability was a very important aspect of pearl millet identified by participants. They mentioned: *"It is important because I am not familiar with the product and I don't want to be wasting my money", buy according to their budget* and *"price should be market related and not overpriced"* and therefore *"I would expect it to be affordable to all South Africans"*. Similar findings were reported by Isaskar et al. (2019), who investigated satisfaction with modified cassava flour; they reported prices had a significant positive effect on consumer satisfaction, and prices should match consumers' expectations. Customer satisfaction hinges on the extent to which a product's perceived performance matches the buyer's expectations (Qalati et al. 2019), therefore the price should be justifiable according to the consumer's expectations.

The majority of participants stated that price is the main factor they considered when it came to indigenous products such as pearl millet. Only two participants stated that pearl millet's quality would be more important, as they mentioned *"it is at the top of the list for making my purchase decision"* and *"price is crucial, and I would say the final factor before I make a decision to buy a product"*. Another important factor that emerged, shown in Table 5.20, was the certification of pearl millet, when a few participants said *"I don't mind paying more if the product is certified as either organic or part of vegan society"* and *"if product has the added logos and certification reiterating the fact that it is vegan and locally produced, I won't mind paying more"*. The same was found in a study by Amfo et al. (2018); when determining participants' willingness to pay for certified safe vegetables, the authors found their participants were willing to pay a premium price for certified safe vegetables to avoid health-related risks. The same can therefore be noted for pearl millet products when developing, designing packaging, and brainstorming marketing strategies.

TABLE 5.22: PRICE IMPORTANCE IN TERMS OF PEARL MILLET

Category	Quote
Not a usual purchase	"It is quite important when it is not a usual purchase like rice etc. Usually more expensive"
Affordability	<p>"It is important because I am not familiar with the product and I don't want to be wasting my money"</p> <p>"I would expect it to be affordable to all South Africans"</p> <p>"Price should be market related and not outpriced"</p> <p>"It is important because it has to fit into my monthly budget"</p> <p>"It should be affordable"</p> <p>"In general, price of the product is important"</p> <p>"As it is a staple food, reasonable pricing is very important"</p> <p>"Fairly important, if price of the product is higher than other relative products, it is most times not taken into consideration"</p> <p>"It is important as I have to buy according to my budget"</p> <p>"I feel with the product being indigenous it should be priced higher than alternatives, all South Africans should be able to afford it"</p>
Main factor	<p>"Top of the list for making my purchase decision"</p> <p>"I think that it is of high importance, main reason being it is an indigenous product"</p> <p>"Price is crucial, and I would say the final factor before I make a decision to buy a product"</p> <p>"It is important to me because it is the first thing I look at after being intrigued by the product, deciding factor on the purchase"</p>
Certification	<p>"I don't mind paying more if the product is certified as either organic or part of vegan society"</p> <p>"If product has the added logos and certification reiterating the fact that it is vegan and locally produced, I won't mind paying more"</p>

The closing question in the section on perceived price was specific to pearl millet, and participants were asked: ***"If you were to purchase an indigenous grain such as pearl millet what will you be looking for in the price of the product?"*** Where the price of pearl millet was concerned, participants specifically mentioned the importance of getting their money's worth as they wanted to *"get what I pay for"* and have the *"price equal to the value of my need"*. Woo and Kim (2018) had similar findings regarding consumer attitudes and buying behaviour towards green products. They determined that receiving value for the money created a positive perception towards products. Price can thus be defined as the nominal value charged to the customer to acquire products that have anticipated benefits for the customer (Setiawan & Achyar 2012).

Participants shared that the price of pearl millet should be more affordable, by proclaiming that *“price should be in the same range of all type participants and not just the higher LSM groups”*, *“the majority of participants in the marketplace”*, *“not overpriced”*, *“not too expensive”*. Affordability was also mentioned in Table 5.22 and Table 5.23. Another aspect that was important to participants in terms of what would influence their purchasing of pearl millet was the market/product-related pricing of pearl millet. Participants felt pearl millet should be similarly priced to other grains if they wanted to incorporate it into their everyday meals: *“More or less similar to other cereal grains”*, *“Pricing should be decent and not be more expensive compared to other grain alternatives”* and *“I will assume that the pricing is accurate and that the grain is of quality, therefore I will pay more for it”*. Similar was found in a study conducted by Albari (2019), who investigated the influence of product price on participants’ purchasing decisions. Findings showed that the price of a food product improves purchasing and is also linked to its quality, as participants felt the higher the price the higher the quality and vice versa, as mentioned in earlier sections as well. This would indicate that for pearl millet products, there was a strong association between quality and price when comparing this grain to other products.

TABLE 5.23: PRICE IMPORTANCE IN TERMS OF PEARL MILLET

Category	Quote
Money's worth	<p>“Is it worth the money, packet size must correlate to the price of the product”</p> <p>“If the price is equal to the value of my need”</p> <p>“It should be value for money, I want to get what I pay for”</p> <p>“I want value for money, if it seems that it would give me that I will consider buying the product”</p> <p>“I will have to understand the why the product might be more expensive than other grains”</p>
More Affordable	<p>“That it is more affordable than to the majority participants in the marketplace”</p> <p>“That it is affordable and gives me value for money, not overpriced”</p> <p>“Product should be affordable and not overpriced”</p> <p>“Product has to be affordable, but I wouldn't mind paying a premium price for major health benefits”</p> <p>“Affordability and value for money”</p> <p>“Price should not be outrages”</p> <p>“Price should be in the same range of all type participant and not just the higher LSM groups”</p> <p>“I would expect price to be affordable as it is an alternative to staple foods in South Africa”</p> <p>“Affordability of product”</p> <p>“Not too expensive”</p>
Market/Product-related pricing	<p>“Price should be similar to alternative products”</p> <p>“I will have to understand the why the product might be more expensive than other grains”</p> <p>“Should be lower and not exceeding the price of the current grains on the shelves”</p> <p>“Pricing should be decent and not be more expensive compared to other grain alternatives”</p> <p>“More or less similar to other cereal grains”</p> <p>“Price is relatively similar to other products”</p> <p>“I would expect that it is not priced more expensive than its alternatives”</p> <p>“I don't want it to be more expensive than other grains”</p> <p>“Pricing should be market related”</p> <p>“Product should be priced the same as rice/pasta/couscous”</p> <p>“Price should be the same as other grains”</p> <p>“Market related”</p> <p>“I will assume that the pricing is accurate and that the grain is of quality, therefore I will pay more for it”</p>

5.4.2 Findings of the participants' perception regarding product packaging (Objective 2)

Product packaging is not only used for the product's protection against the external environment, but also for promotional purposes and to convey information (Waheen et al. 2018).

The participants' perception of pearl millet was further studied by exploring product packaging as an external attribute that forms part of the presentation of a product. Product packaging was also considered to establish what participants would expect from packaging in general, before focusing on their views related to pearl millet packaging itself. Therefore, participants were asked: ***“What do you expect when you look at the packaging of the product?”*** Participants identified several aspects of packaging that they would consider, as illustrated in Figure 5.22.



FIGURE 5.22: PACKAGING ATTRIBUTES

Environmentally friendly packaging seemed to have emerged as an important external attribute that the participants were considering. They mentioned *“well sealed biodegradable packaging is crucial”* and *“In this day and age, environmentally friendly packaging is a necessity”*. This was also found in a study regarding consumers' response to environmentally friendly food packaging by Ketelsen et al. (2020), which reported consumers are more willing to pay for environmentally friendly and reduced packaging than products with standard packaging designs and materials.

The functionality of the packaging was another very important attribute. Participants stated that they expected a *“firm packaging, protecting the product”*, *“resealable function of products”* and *“quality in the form of seal, strength and durability”*. This was also mentioned by Kapoor et al. (2019), who conducted a study in India that indicated key packaging attributes, as perceived by the participants, relate to safety, convenience, and utility. This is similar to the functionality of the packaging found in the current study, as well as economic and social costs, which is somewhat different from what the participants in this study revealed.

Product attractiveness is another aspect of product packaging that was mentioned by participants: *“packaging should be visually pretty and also have pictures on how to use the product”*, *“should be something simple yet elegant to separate pearl millet from other products”* and *“packaging that catches the eye, by being neat, modern and different”*. This is comparable to a study conducted by Schnurr et al. (2016) to establish the effect of product attractiveness and product quality. The

authors report that when consumers are unfamiliar with a product, they take the attractiveness of the context in which the product is presented into account when judging the product's attractiveness. In general, the concept can be followed that what is beautiful is indeed good.

A further attribute that participants pointed out as an important aspect of packaging was the way it contributed to product visibility. Participants felt it important to be able to see *“the product and not just see a picture of it”*. This visibility was also mentioned in Table 5.18 and again in Table 5.20. The same was reported in a study conducted by Simmonds et al. (2017) on the effect of seeing products on or through the packaging. Their participants wanted to be able to see the product through or on the packaging, and this had a noticeable effect on participant behaviour. Product visibility therefore plays a critical role in influencing the success of products in the market place. This goes hand in hand with information given on packaging as participants stated that packaging should provide information on such aspects as *“storage instructions”*, *“nutrients”*, *“directions for use”* and should offer *“interesting facts”*. A study by Alhamdi (2020), conducted to determine the importance of packaging on consumer buying behaviour, claimed that the dimensions of colour, shape, size and design were significant, yet packaging is also used as a marketing tool to convey important information to the consumer. In contrast, one participant stated that they did not look at packaging when considering purchasing a product, as seen in Table 5.24.

TABLE 5.24: PACKAGING EXPECTATIONS

Category	Quote
Environmentally friendly packaging	<p>“Well sealed biodegradable packaging is crucial”</p> <p>“Environmentally friendly”</p> <p>“packaging that aids the environment”</p> <p>“I hate plastic, as little plastic as possible”</p> <p>“In this day and age, environmentally friendly packaging is a necessity”</p> <p>“Quality packaging equals quality product for environment”</p> <p>“Packaging should be ecofriendly and good for nurture, not too fancy either”</p>
Functionality	<p>“Functionality is more important than appearance”</p> <p>“I focus on the resealable function of products”</p> <p>“Sturdy wrapping, not necessarily carton boxed”</p> <p>“I expect quality in the form of seal, strength and durability”</p> <p>“Functionality of packaging in important and the resealable function is good. Proper storing instructions to be included”</p> <p>“Does the packaging reseal, convenience”</p> <p>“Is the packaging resealable”</p> <p>“Firm packing protecting the product”</p> <p>“Resealable packaging and cooking instructions”</p> <p>“Packaging should be practical, and I need to be able to keep product in original packaging after opening it”</p>
Product attractiveness	<p>“I enjoy it when packaging catches my eye, by being neat, modern and different”</p> <p>“Eye catching, simple but informative”</p> <p>“Packaging must catch you eye and then you need to know what is in the product to”</p> <p>“Packaging should look decent and not be dirty on the outside, should also be suitable to keep moisture, foreign object and insects out”</p> <p>“Packaging should be visually pretty and also have pictures on how to use the product”</p> <p>“Something simple yet elegant to separate pearl millet from other products”</p>
Product visibility	<p>“I would like to see the product”</p> <p>“I would like to see the product in packaging and not just a picture”</p> <p>“I would like to the product inside the packaging”</p> <p>“Would like to see what's inside, clear information, suitable packaging”</p>

Category	Quote
Product information	"To be informative" "I want packaging to be informative and to give me information about the product, nutrients and directions for use" "Packaging should be informative" "Interesting facts and serving suggestions" "Instructions on how to use and store product" "Good packaging and explanatory details on what the product can be used for and nutritional information"

The next question explored the importance of packaging when it comes to indigenous products such as pearl millet, ***"How important is packaging to you when it comes to indigenous products such as pearl millet?"***. Across all the focus groups, it was evident that all participants thought the packaging that accompanied indigenous products was very important. They all stated, regarding pearl millet, that the packaging would be vital. This view is in contrast to what the one participant said in the previous question in Table 5.22; that participant claimed not to look at packaging at all, but when this question was posed regarding pearl millet, the participant agreed that packaging would indeed play a role. Packaging is widely noted to play a vital role in attracting consumers' attention towards any product and is used as a promotional tool through design, colour, material and other characteristics (Mazhar et al. 2015). Packaging attributes could be divided into two groups, namely visual attributes (pictures, shapes, sizes, colours, etc.) and informational attributes (ingredients, serving size, cooking instructions, recommended uses, etc.) (Heide & Olsen 2017). Therefore, establishing the basis for designing effective pearl millet packaging would be of importance to manufacturers.

The next question explored the specific packaging elements that would influence the participant in considering purchasing pearl millet: ***"If you were to purchase an indigenous grain such as pearl millet, what will you be looking for in the packaging of the grain?"*** The majority of participants stated the main factor they would be looking for in the packaging of pearl millet would be informative in nature. They mentioned wanting more descriptive *"cooking used and recipe ideas"*, *"sustainable packaging logos"*, *"information on how and where products come from, as well as nutritional information"*. Participants who had experience, and the others who did not, all indicated groups they require more information. It is evident that food packaging technologies are improving continuously in response to lifestyle changes and the ever-increasing demand for high-quality and safe foods. It helps extend shelf life and maintain the sensory properties, quality, and safety of packaged food, and promotes environmental sustainability (Han et al. 2018). This supports why participants require continuously updated information, as product packaging is a highly efficient marketing tool to create product awareness.

TABLE 5.25: PACKAGING ATTRIBUTES FOR PEARL MILLET

Category	Quote
Informative packaging	"I will look at what information is on the packaging, whether it is descriptive and also visual"
	"I look for information on cooking uses and recipe ideas"
	"Informative packaging"
	"I will be looking for something on the pack telling me more about pearl millet and what it is good for"
	"That it provides me with sufficient information of the product"
	"Sustainable packaging logos, less plastic"
	"information on what, how and where products come from, as well as nutritional information"
	"Pictures of how you can use and cook the product"
	"Information – recipes, instruction for use and pictures"
	"Information and instruction on storage is important"

5.4.3 Findings of the participants' perception regarding retail store image (Objective 2)

The store image can be defined as the perception consumers have based on the multi-attributes of a store; this includes how consumers picture a store in their minds (Wu et al. 2011).

The store image elements are the "*nice feeling*" emotions customers experience, different from the physical attributes of "*price*", "*quality*" and "*reputation*" (Abbas et al. 2020). The retail store image is therefore the overall perception that participants have of a particular store and of the experience of shopping there. It becomes important to understand the overall customer perceptions regarding store image that eventually influence customers' store choice, purchase intention, store satisfaction and loyalty towards their preferred store (Shamsher 2016). The next section thus explored consumers' perception of pearl millet in terms of the retail store image as an external product attribute. Participants were asked: "***What do you expect when you look at the retail store image of the product?***"

Participants' expectations of the retail store image featured several different elements that they expected the store would capture. The first is attractive branding: "*good quality branding is essential*", "*depending on the stores it offers a promise made by retailers to offer quality to the customer*" and "*should attract my attention*". Similar findings were reported by Rezaei and Valaei (2017), as they indicated that retailers apply in-store brand experiences to establish branding strategies, increase brand awareness, enhance their brand image, and distinguish themselves from their competitors.

The in-store ambiance was another feature that emerged that involved "*atmosphere and ambiance of the store which represents the quality of the goods available in the store*" as well as "*the environment should set me at ease, perhaps some background music to inspire shopping*". This has been found not only in the food industry but also in the fashion business of today, due to the retail store space functioning as a critical marketing communication tool representing the brand's intended image. The store ambiance is created within the store by means of visual

communication, music, and lighting, among others, to generate a stimulating environment that positively influences customers' purchasing behaviour (Deka 2019).

In-store hygienic conditions were further identified by some participants as an expected feature of the store image, in statements such as *"cleanliness and no off smells"*, *"good store hygiene"* and *"clean stores"*. This has also been noted in a previous study by Truong et al. (2017), who reported that cleanliness has a significant impact on consumer perception as it can be used as a promoter, a method to improve positive reactions, and change customers' behaviour by providing a pleasant experience in-store.

A well-organised appearance was expected from one of the participants who stated that the store should not be *"overpacked and cluttered"*. This added to the importance of the store image having an attractive appearance, which was specified through these quotes *"good presentable layouts"*, *"good physical appearance such as shelves"* and *"overall good appearance"*. This overall appearance was also found important in a previous study by Cho and Lee (2016), who investigated the influence of retail store image and concluded that participants who are exposed to a higher luxury retail atmosphere reported higher levels of perceived store luxury. Thus, pleasurable aesthetic factors in the store lead to increased purchases due to store preferences, consequently providing cause as to why participants felt that the store image plays a part in their shopping experience.

TABLE 5.26: RETAIL STORE IMAGE EXPECTATION

Category	Quote
Attractive branding	"good quality branding is crucial" "depending on the stores it offers a "promise" made by retailers to offer quality to the customer" "something that attracts my attention"
In-store ambiance	"atmosphere and ambiance of the store represents the quality of the good available in the store" "the environment should set me at ease, perhaps some background music to inspire shopping"
Hygienic conditions	"clean stores" "cleanliness and no off smells" "good hygiene" "I expect cleanliness"
Organised	"not overpacked and cluttered"
Attractive appearance	"overall good appearance and attractiveness to the participant's eye" "humans are very visual in nature therefore I myself look at how they products are displayed" "good presentable layouts are important" "physical appearance of the stores such as shelves, layout of products, etc. are important"

Knowing which features of the retail store image, in general, were important to the participants, provided a foundation from which to work. Participants had an opportunity to extensively think about the question, and the next question explored which aspects of the retail store image (where pearl millet was concerned) were important to participants. Participants were asked: ***"How important is retail store image to you when it comes to indigenous products such as pearl millet?"*** From the findings, three different participant groups emerged based on how important

the retail store image was to them, where pearl millet was concerned. The first group thought it (a) important, another group thought it (b) unimportant, and the third group thought it (c) semi-important.

The participants who deemed store image to be important were expecting “good branding” and justified this by pointing out that the “higher store image the higher the likelihood for me to purchase” and also that the store image is “very important as it inspires confidence in products being sold” as the “retail image sells the product”. There were participants who were of the opinion that the retail store image is unimportant where pearl millet is concerned, as they stated “would not rely on retail store image for my initial purchase” and that “millet would taste the same in any store”. Another participant said was “not really important because the shelf life of grains is typically the same so I would not mind where I buy it”. The last participant group where indicated that the retail store image for pearl millet was “somewhat important” or “it is relatively important”, as explained by this participant who said “it is important but if pearl millet is sold in 3 different stores, I will buy at the cheapest store no matter what store it is because grains taste like grains”.

Shamsher (2016) found that retailers would stand to lose their customer base and competitive advantage if they did not understand how the retail store image influences the consumer’s behaviour. Another study by Fuentes-Blasco et al. (2017) also highlighted the importance of store image. They found that store image was the variable with the greatest influence on consumer satisfaction, especially contributing to positive word-of-mouth behaviour. Therefore, it could be noted that the benefits of a good retail store image outweigh any reason not to implement it, as a well-rounded store offers an encouraging place for consumers to shop in, where they want to spend more time, and are willing to explore new products on the shelves, such as pearl millet.

TABLE 5.27: RETAIL STORE IMAGE IMPORTANCE IN TERMS OF PEARL MILLET

Category	Quote
Important	“good quality branding is crucial” “I would prefer to buy from a well-known store that I know it is good quality” “it is important to me if I am unfamiliar with the product” “the higher the store image the higher the likelihood for me to purchase” “I think it is really important” “retail image sells the product” “very important as it inspires confidence in products being sold”
Unimportant	“I would not rely on store image for my initial purchase” “I think millet would taste the same in any store” “it is not more important to me than other stores” “not really important because the shelf life of grains is typically the same so I would not mind where I buy it”
Semi-important	“it is important but if pearl millet is sold in 3 different stores, I will buy at the cheapest store no matter what store it is because grains taste like grains” “it is somewhat important” “it is relatively important”

The concluding question in relation to the retail store image specifically tried to establish what the retail store selling pearl millet’s image should be, and how this would influence the purchase of

pearl millet: ***“If you were to purchase an indigenous grain such as pearl millet, what will you be looking for in the retail store image the store selling the grain?”*** Responses included several aspects that related to the store image where pearl millet is sold, including a) supportive brand awareness: *“If the store image has a good reputation it, I will be inclined to try new products”* and *“good brand awareness of its product and the target audience to inform participants of new products”*. Brand awareness is the extent of the availability of the brand in the memory of the consumer and relates to how a consumer perceives a brand. It is therefore imperative that companies build a strong brand that not only affects short-term profits but also future growth (Shahid et al. 2017). Another study by Shabbir et al. (2017) had a similar response when investigating the effect of brand image; they determined that brand awareness is indeed a major contributor in consumer decision-making.

This was followed by b) adequate in-store lighting, which was deemed important as *“good natural lighting and neural colors”* and *“good lightning give good atmosphere”*. The same finding was noted in a study by Soomro et al. (2017) regarding merchandising elements’ visual effect on consumer attention. Elements such as colour and lighting were found to attract customers.

Since store personnel might be the first contact with consumers, participants identified c) *“knowledgeable personnel”* as well as *“friendly personnel”* as important factors in the retail store image. In agreement, Abbas et al. (2020) found that well-trained salespersons can lead to impulse purchasing behaviour and reduce challenges in consumers’ buying process, due to their assistance to provide a service and therefore smooth out any discomfort customers might experience in-store.

Furthermore, the overall d) in-store ambiance *“sets the mood for shopping”* and a *“welcoming entrance gives a good first appearance”* was identified as a key element of importance where pearl millet is sold. A comparable study by Myposhi and Dhurup (2016) highlighted that there is a positive relationship between green ambiance in the corporate store selling environmentally sustainable solutions, such as eliminating the excess use of plastic bags and replacing it with brown paper bags, resulting in a favourable store image among consumers.

The participants also identified e) in-store layout appeal through *“interesting layouts”*, *“neat stores”*, and *“good shelves”*. An equivalent study by Hultman et al. (2017), exploring store format development and its influence on store image, identified that store location, store services, store layout and store range are the most frequent attributes that influence consumer perceptions.

The f) price indicators were noted as helpful tools that can be used to show *“prices of products”* and *“the price per kg”*. Furthermore, the g) appropriate location was advantageous, as explained

in these quotes: *“location in decent area with good parking”* and *“location near me is typically convenient that will allow me to browse more”*, as well as h) promotions and in-store tastings, which participants felt were *“a good way to connect to customers and present new products”*. Price and location were thus deemed important retail factors that they would consider where pearl millet was concerned.

In a study by Singla and Khanna (2019), investigating customer perceptions and expectations of service quality, participants were reportedly attracted to a wide range of products, promotions, convenient locations and parking. According to Aziz et al. (2020), many researchers also identified that a fine colour combination, organised goods demonstrations, nice visual appeal, customer-orientated credit policies, quality of merchandise, and the gentle approach of the sales workforces, diversity in a store, suitable locality, and attractive rates are some of the pleasing features that attract customers. Therefore, companies ought to understand the critical importance of store image and the different element thereof that could contribute to the shopping experience and increase product sales.

TABLE 5.28: RETAIL STORE IMAGE ATTRIBUTES

Category	Quote
Supportive brand awareness	“good brand awareness of its product and the target audience to inform participants of new products” “commitment to selling quality products” “responsible sourcing of products” “stores retail image that involves supporting the communicating” “the better the image the more time I would spend browsing instore” “if the look and feel is great, I would be more likely to explore the store” “If the store image has a good reputation it, I will be inclined to try new products” “certain stores and brands target individuals with higher income for example Woolworths is typically for individuals with higher income, so the store image represents the group of people that they are attracting”
Adequate in-store lighting	“good lighting is also important” “good natural lighting and neutral color” “good lighting gives good atmosphere”
Knowledgeable personnel	“the personnel are the first contact and they should be well informed” “friendly personnel, eager to assist”
In-store ambiance	“good ambiance sets the mood for shopping” “welcoming entrance gives a good first appearance”
In-store layout appeal	“good shelves and layouts for products are important” “neat stores that display the products in an appealing manner” “interesting layouts will intrigue me” “good descriptions of products”
Price indicator's	“it is always incredibly frustrating for me if there is no prices on the products or below the products” “important information such as price per kg is required”
Easy accessibility	“easy accessibility to reach products on shelves” “easy accessibility and convenience are key for me”
Appropriate location	“good location in decent area with good parking is important for me” “location that is near me is typically convenient that will allow me to browse more”
Promotions and in-store tastings	“instore tastings are a good way to connect to customers and present new products” “promotions for new products attracts attention from customers” “new products should be presented instore in the different ways that it can be made”

5.4.4 Findings of the participants' perception regarding country of origin (Objective 2)

The country of origin relates to the geographic location from which a product or brand initiates (Thøgersen et al. 2017). The country of origin belongs to the category of extrinsic product attributes that are used by consumers when intrinsic cues or knowledge are absent (Hu & Baldin 2017). Country of origin commonly refers to where a product originates, and consumers often have the perception that certain companies or brands are associated with certain countries. This creates a positive association for the consumer, enhancing their willingness to purchase products based on country of origin (Rusimiati et al. 2020).

As this study focused on an indigenous grain specific to South Africa, it was deemed important to consider participants' perception related to the country of origin. Participants were asked: ***“What do you expect when you look at the country of origin of the product?”*** They raised different expectations when considering the country of origin of a product in general. Participants mentioned looking at the a) quality difference between other countries and South Africa: *“third world countries like South Africa that does not have the level of quality products such as first world countries, like USA”* and *“imported products are superior to local products”* because *“international standards vs local standards might differ, etc.”* They also acknowledged that locally produced products might specifically show the *“difference between quality of mass production and local typically varies”*.

Many companies have used country of origin as a tool to situate themselves against other competitors in the market; especially in this time where globalisation is being encouraged (Giao 2018). According to Fan et al. (2019), studies have shown that consumers often perceive locally produced food to have higher quality with superior attributes such as freshness and flavour, which is opposite to what this study has found based on participants' perceptions. Participants suggested that where the country of origin was concerned, they would be b) trusting of the originality of the products, since they *“expect authenticity and originality that it comes from South Africa”* and that *“the product source comes from where the label states”*. In a study by Thøgersen et al. (2017), regarding the importance of country of origin of organic food, participants argued a degree of trust accompanies certain countries; for example, many consumers trust products from a first-world country rather than a third-world country.

More specifically some participants were sensitive to the quality of the product as c) quality influences the way participants look at the country of origin: *“it affects how I see quality”* and *“it defines quality for me”*. A study by Chonpracha et al. (2020) aimed to explore consumer purchase decisions and consumer perception of the quality of products based on country of origin. They argued that country of origin – where Indonesian consumers are concerned – is the strongest

influencer in quality perceptions. This suggests that depending on the product at hand, the country of origin can play a substantial role in perception towards quality. Consumers form opinions of quality, both before and after a purchase, through the evaluation of intrinsic and extrinsic product cues (Chonpracha et al. 2020).

The country of origin has been found to be more critical when consumers are evaluating high involvement items, such as designer clothing or prestige motorcars, and less important in the evaluation of low involvement, low-priced items such as toothpaste or tee shirts (Veale & Quester 2009). One participant also pointed out that the country of origin would be considered in the way it d) promotes sustainability, in terms of how it supports the people in the country from which the product originated (*“self-reliance, because the country cultivates and utilizes its indigenous crops/resources to sustain its people”*). In one study, the sustainability of local vs global food products in Europe was compared, and Schmitt et al. (2017) found local products outperform global products in the majority of rankings; one reason provided was that local products are more sustainable, as found within this study. Lastly, one participant also suggested that the country of origin should reflect e) transparency by being *“clear and honest”* in its presentation to a potential consumer. The trust that consumers have in an organisation ought to be stressed as important in building a relationship (Ali et al. 2019), and is worth considering when establishing an indigenous grain such as pearl millet in South Africa.

TABLE 5.29: COUNTRY OF ORIGIN EXPECTATION

Category	Quote
Quality difference	<p>“third world countries like South Africa does not have the level of quality products such as first world countries, like USA”</p> <p>“I expect that quality and the quality from mass production vs local typically varies”</p> <p>“international standards vs local standards might differ”</p> <p>“imported products typically need to be kept fresher for longer and therefore are more processed”</p> <p>“I typically think imported products are superior to local products”</p>
Trusting originality	<p>“I expect authenticity and originality that it comes from South Africa”</p> <p>“I expect that the product source comes from where the label states and that it is not fraudulent”</p> <p>“that the product correlates with the country it’s from, for example if I buy Chinese rice I expect it to be from China”</p>
Quality influencer	<p>“I would think that if it would come from a small place in Africa that the quality would not be good”</p> <p>“it will influence how I perceive the quality of the product”</p> <p>“it affects how I see quality”</p> <p>“absolute quality”</p> <p>“it defines the quality for me”</p>
Promotes sustainability	“self-reliance because the country cultivates and utilizes its indigenous crops/resources to sustain its people”
Transparency	“it should be clear and honest”

By understanding consumers’ expectations regarding the country of origin, marketers can better position products. The researcher thus needed to establish: ***“How important is country of origin to you when it comes to indigenous products such as pearl millet?”***. From the data analysis, three participant groups emerged based on the country of origin’s importance when purchasing an indigenous product.

For the one participant group, the country of origin was regarded as important, for the other group it was not important, and the third group deemed it was semi-important. Those who claimed it was important in the decision to purchase a product, mentioned the importance of a) supporting local products as it *“must be proudly South African”* and therefore b) supporting the economy as *“it is crucial to cultivate the normality of growing locally produced products and exporting them to generate income for South Africa”*. According to Schiffman and Wisenblit (2019), when consumers make purchasing decisions, they tend to take the country of origin into consideration in their choices.

Some participants indicated that the country of origin was not important in the decision-making process: *“not very relevant”* and *“not really important to me as I don’t look at the label”*. Parts of consumers’ brand knowledge are derived from the countries where the products are manufactured, design, or other brand-related characteristics. However, some studies argued that the country of origin was not the main factor in consumers’ evaluations. In fact, in an increasingly borderless world, the country of origin is suggested to be an insignificant factor to explain consumers’ product evaluations (Yang 2017). One participant thought that the country of origin was *“somewhat important but not highly important”* when it came to its influence on the purchase of a product.

TABLE 5.30: COUNTRY OF ORIGIN IMPORTANCE IN TERMS OF PEARL MILLET

Category	Quote
Important	
Support local	“yes, I am inclined to buy locally produced products” “important but not the first thing I would notice on a label” “i am very keen to support locally produced products” “very knowing the country of origin will give me a good idea if I want to buy it or not” “must be proudly South African” “It would be important for me”
Support economy	“it is crucial to cultivate the normality of growing locally produced products and exporting them to generate income for South Africa” “local is better and helps the economy more” “I like to purchase South Africa products to support the farmers in our country” “anything affecting the economy of my country is important and I would support it”
Not important	“not very important as it is a staple food for developing countries” “don’t look at it” “it’s not that important to me unless it specifically states Proudly South African” “not very relevant” “not really important to me as I don’t look at the label”
Semi-important	“somewhat important but not highly important”

After determining the importance of country of origin, for participants in general, participants were asked: ***“In which way does country of origin influence your decision to buy a product?”*** The data revealed three different participant groups in relation to how the country of origin would influence their purchasing decisions.

The first group of participants would not be influenced. Within this group, most participants said *“it does not influence me at all”* when purchasing a product which was explained as, *“it would be the last thing I would look at”* or *“I don’t even look at where it’s from”*. This contrasts against the findings from in Table 5.28, where most participants stated that country of origin is important; however, when asked whether it would influence their purchasing decision, most indicated no. This might be due to their perception that it is important but, they would not apply it or regard it has something that will influence them when it comes down to the actual decision to purchase. Someone who has a positive attitude towards a product’s country of origin would be very willing to accept and use those countries’ products or services. In contrast, people who have a negative attitude towards a country will reject products and services from those countries (Hernanto 2018).

Some participants who were influenced by the country of origin reported they preferred locally produced products as they *“love to support our farmers in the country”*, *“I favor local products”*, *“I prefer South African produced products, but it’s not always possible”*. One participant, in particular, stated that *“China is a no go for me”*. Prior research support this study’s findings that there is a significant role that country of origin can play in meeting consumers’ expectations on the quality and performance of a product (Le & Huang 2020). For a smaller group of participants, the country of origin would most likely influence the purchase of a product, as they said: *“I would more likely but a product from South Africa”* and *“it would if it is a product I buy frequently”*, as seen in Table 5.31.

TABLE 5.31: COUNTRY OF ORIGIN INFLUENCE

Category	Quote
Influenced participant	<p>“I love to support our farmers in the country”</p> <p>“very as locally produced products I would purchase primarily”</p> <p>“yes, China is a no go for me”</p> <p>“I prefer to buy South African products, but it is not always possible”</p> <p>“I favor local products”</p>
Not influenced participant	<p>“it does not influence me at all”</p> <p>“it would be the last thing I would look at”</p> <p>“I don’t look at it at all”</p> <p>“not really at all”</p> <p>“it does not really affect me at all”</p> <p>“in no specific way”</p> <p>“it does not really influence me”</p> <p>“no, I don’t look at the labels”</p> <p>“no influence”</p> <p>“not much”</p> <p>“I don’t even look at where it’s from”</p>
Most likely to be influence participant	<p>“I would more likely buy a product from South Africa”</p> <p>“it would if it is a product I buy frequently”</p>

5.4.5 Findings of the participants’ openness to new products (Sub-Objective 2)

Since not all South African consumers are familiar with or regular users of pearl millet, it was important to establish how a product such as pearl millet should be presented to penetrate a

consumer group who was unfamiliar with the product. It was therefore important for the researcher to establish how open participants would be to new products, by asking: ***“As a consumer how open are you to new products?”*** Three groups of participants emerged from the findings, as illustrated in Figure 5.23.

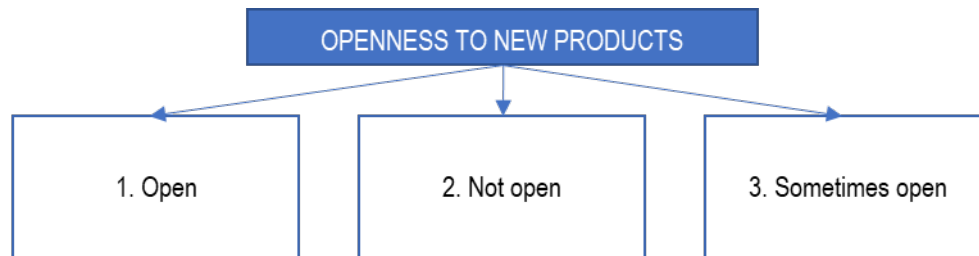


FIGURE 5.23: PARTICIPANT OPENNESS TO NEW PRODUCTS

Although most of the participants were open to new products and indicating that they *“love it”* and *“I am very open to try new things”*, the reasons they gave to contemplating a new product were based on the a) good quality visible in the appearance of the product. This made them eager to try new products, stating they were *“very open if the quality looks good”*. The notion and importance of quality have been clarified in previous sections of this study, indicating that consumers rely on product quality in the absence of product-related experience (Schiffman & Wisenblit 2019). This claim supports participants’ reliance on quality attributes.

The participants also said that they are open to new experiences that new products offered, as they said, *“quite open to new experiences”* and *“when it comes to food, I like trying new food with new recipes”*. A study by Waldrop and McCluskey (2017) supports participants’ opinions, as the researchers found that consumers who had a superior openness to new foods had a higher purchase intent and acceptance of novel foods. This signifies the unique role of new innovative products in the food industry, and the potential scope for new products, such as pearl millet-related products.

The third category that emerged were participants who were open to new products due to their ability to quickly adapt to new things. Participants indicated: *“I adapt quickly and will try new things frequently”*, and also that their curiosity to try new things drive their decision-making: *“I am curious, so I try new things”*. Several studies mention that open-minded people are individuals with attributes of intelligence, free thoughts, curiosity and flexible action (easily to adapt), and they are typically more inclined to engage in shopping experiences (Moslehpour et al. 2017). Conservative consumers are traditionalists who are more conscientious, whereas liberals have greater openness to new experiences (Jost 2017). This view was reported by participants who were not open to new products, who specified that *“I hate trying new things”* and *“I don’t really splurge on new things that are a risk of being not pleasant to eat”*.

The reason why other participants in this group were not open to new products was mainly attributed to them *“not really (open to new products) because my kids don’t really like it”*. A few participants said that they were sometimes inclined to consider new products for a variety of reasons, either because, *“I am set my ways when it comes to products but will try something if it is well marketed”* or *“I think I am in between, depending on how I feel the day”*, as noted in Table 5.31. Every consumer has created a comfort zone for themselves and do not necessarily want to step out of it (Mamta & Verma et al. 2020), consequently creating a level of rigidity whether or not they mean to do so. This creates an opportunity for marketers and new product developers to take extra measures in selling new products to non-consumers.

TABLE 5.32: PARTICIPANT OPENNESS TO NEW PRODUCTS

Category	Quote
Open	<i>“I am pretty open to try new things”</i> <i>“very open”</i> <i>“love it”</i> <i>“I am very open to new things”</i> <i>“I am very open to new food products”</i>
Quality	<i>“very open if the quality looks good”</i>
New experiences	<i>“quite open to new experiences”</i> <i>“very open to new experiences”</i> <i>“I really like experimenting”</i> <i>“when it comes to food, I like trying new food with new recipes”</i>
Adapt quickly	<i>“I adapt quickly and will try new things frequently”</i> <i>“I am an early adapter”</i>
Curiosity	<i>“I am curious, so I try new things”</i>
Not open	<i>“I hate trying new things”</i> <i>“not really because my kids don’t really like it”</i> <i>“I don’t really splurge on new things that are at risk of being not pleasant to eat”</i>
Sometimes open	<i>“sometimes, but I am scared to purchase if it is a big packet”</i> <i>“I am set my ways when it comes to products but will try something if it is well marketed”</i> <i>“mostly buy the same products but now and then I will try something new”</i> <i>“I think I am in between, depending on how I feel the day”</i>

After establishing how open participants were to new products, it was essential to dive deeper and confirm what it would take to make them consider purchasing an unfamiliar or new product: ***“What will make you consider purchasing a new/unfamiliar product such as pearl millet?”*** A number of ideas emerged that represented the different factors that would make them consider a new or unfamiliar product.

Participants first mentioned the attractive publicity achieved from *“good branding and awareness”* and *“good advertising”*. A study by Boungevile and Ruswanti (2017) found that brand loyalty was the most important dimension to build brand equity, and a significant contributor towards this is found in brand awareness and association.

For one of the participants, the availability of smaller portions of the product would persuade her to consider purchasing a new or unfamiliar product. The participant said that a *“smaller packet size for tasting purposes would be great when trying a new product, instead of buying a big bag*

of something that you are not sure if you would like". In researching the benefits of reducing packaging size, it was found to promote healthier habits (Cadario & Chandon 2019). Consumers could therefore benefit from smaller pack sizes for various reasons.

Affordability of the new or unfamiliar product emerged as an important element that participants would consider when they said, *"I will ask myself if I can afford it"* and whether it is an *"affordable price"*. In a study researching the antioxidant properties and consumer acceptability of pearl millet and tiger nut biscuits, Omoba et al. (2015) found that consumers' acceptance of these biscuits were motivated by the affordability and convenience thereof.

A participant also indicated that *"pure curiosity"* would possibly be a factor that would make her consider a new and unfamiliar product. Science is based on curiosity (Krishnan et al 2019), drives learning, and gives birth to innovation (Chotani 2021). As a result, consumers who are open to new products purely based on curiosity are more likely to be willing to purchase products they can learn from and, for example, create new recipes. Another category that emerged that links with curiosity is that, for some participants, trendy products would make them consider the product; participants tended *"to read up about the latest trends"* and another would also consider the product *"if there are cool new recipes that have the unfamiliar product in"*.

For some participants, the nutritional value of the product would make them consider it, as they were keen to try *"nutrient dense food"*. A participant pointed out that *"a nutritional value good for my family"* would be a determining factor. Nutritional and health benefits have been stated as important in the absence of knowledge when pursuing new products, and consumers often seek healthy and nutritive food. The same findings were reported in a study investigating the factors influencing consumer willingness to pay for organic fruits and vegetables (Nandi et al. 2017).

If the new or unfamiliar product received favourable reviews, participants said they would also consider the product. They specifically mentioned being influenced by *"word of mouth"* of *"good reviews from other people"*. It is commonly thought that satisfied consumers contribute positively to word-of-mouth advertising, and it is one of the most important variables when attempting to acquire new customers (Liu et al. 2017). Therefore, if consumers have peers who share their experiences, their intent to purchase would increase substantially.

For other participants, the knowledge they had about the new or unfamiliar product would make them consider it; one participant mentioned that *"the more knowledge I have the more I would consider it"* and would like to know *"how to use it"* and *"if there is a nice recipe I would buy it"*. Another participant in particular also mentioned that a new or unfamiliar product's availability was something that she would consider, as she indicated *"the product should be readily available"*.

The concepts reflected in Table 5.33 illustrate that having sufficient knowledge and receiving more product awareness through readily available products, were considered important when deciding whether to purchase pearl millet products.

TABLE 5.33: CONSIDERATIONS FOR NEW/UNFAMILIAR PEARL MILLET PRODUCTS

Category	Quote
Attractive publicity	"good branding and awareness" "good advertising" "more awareness of product outside of the healthy food spectrum"
Smaller portions	"smaller packet size"
Affordability	"affordable price" "firstly price" "I will ask myself if I can afford it"
Curiosity and trendy	"pure curiosity" "I like to read up about latest trends" "if there are cool new recipes that have the unfamiliar product in"
Nutritional value	"if nutritional value is good for my family" "good nutrient dense food" "I will consider it if it has the health benefits I am looking for" and "I would consider it for good health benefits"
Favourable reviews	"good reviews from other people" "if the reviews are great" "word of mouth is always a good way" "I will buy based on friend or family recommendations"
Knowledgeable	"the more knowledge I have the more I would consider it" "to have sufficient knowledge is important to me" "interesting facts on packaging" "recipe guidance"
Product availability	"the product should be readily available"

5.5 QUALITATIVE FINDINGS REGARDING PARTICIPANT'S ATTITUDE TOWARDS PEARL MILLET (OBJECTIVE 3)

Consumers' attitude can be described as their negative or positive assessment of the performance of the specific behaviour (Ajzen & Fishbein 1985). The final section of the focus group interviews thus addressed participants' attitude towards pearl millet, by using Ajzen and Fishbein's (1980) TPB. The TPB model states that human behaviour is directed based on normative beliefs, behavioural beliefs, and control beliefs. These beliefs cause certain outcomes, such as subjective norms, attitude towards the behaviour, and perceived behavioural control, leading to the formation of behavioural intention. The data on these beliefs were generated through a sentence completion exercise that was completed by each participant during the focus group. The completed sentences are presented in the following discussions.

5.5.1 Behavioural beliefs

Behavioural beliefs relate to the individual's belief about the consequences of engaging in a behaviour, while outcome evaluation refers to the corresponding favourable or unfavourable decision about the probable consequences of the behaviour (Ajzen 1991). Consumers' attitude

towards the behaviour is thus based on beliefs about the probable negative or positive consequences of executing the behaviour (Steinmetz et al. 2016). When faced with a choice between opposing brands or products, consumers are assumed to first identify the attribute dimensions relevant to the decision, and then assess each possibility in light of these attributes (Ajzen 2015). The first question in the sentence completion exercise aimed to investigate what attributes participants deemed relevant when choosing to purchase pearl millet: ***“What do you want to see the producer/marketer/supplier do regarding an indigenous product such as pearl millet to help you make a decision on whether to purchase it or not?”***. The concepts that emerged from this question are indicated in Figure 5.24.

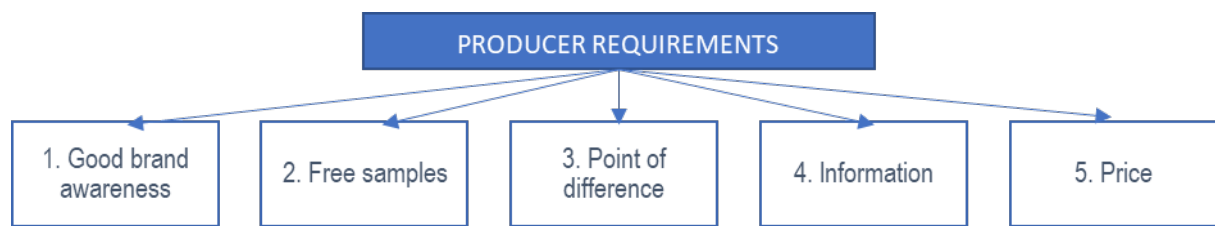


FIGURE 5.24: PARTICIPANT REQUIREMENTS FOR PRODUCER/MARKETER/SUPPLIER

The participants indicated the importance of marketers or manufacturers having “*good advertising in retail stores and online*”, “*good branding and awareness*” and also “*good marketing and indicate why it’s better than other products*”. Similar results were found in a study by Japutra et al. (2018), who considered the effect of brand attachment to brand loyalty. They found that consumers who are strongly attached to certain brands maintain favourable brand evaluations, which prevents switching intentions to other brands. This finding supports the notion that brand awareness could lead to brand loyalty and favourable behaviour towards these brands, and any new products that are launched into the market.

Another concept that developed throughout was having free samples, as participants felt that “*instore samples for tasting*” was the “*best way*” for them to discover new products. Research by Heilman et al. (2004), to examine the effect of in-store free samples on short-term and long-term purchasing behaviour, found that few promotion tactics are as effective as free in-store samples presented at the purchasing point. This has been found to boost sales on the day of purchase between 37-50%; these samples are given in person and free, and it could be viewed by consumers as a ‘gift’.

Participants also mentioned the necessity of the product having a point of difference as they wanted to know “*how it can be used as replacement to other foods*” and “*want someone to explain what it is, how it’s better than other products*”. Within a study to determine consumers’ attitude towards international products, Asshidin et al. (2016) found that consumers strive for uniqueness among themselves and the products they buy. Therefore, they compare products for the best

point of difference, and thus their need for uniqueness positively influences their attitudes towards international products.

The information category appeared once again as participants wanted to feel educated about the product. They stated that marketers should “*give out pamphlets about what the product is all about*”, “*indicate health benefits*” and provide “*enough information and advertising regarding what it is and how it can be used*”. Ajzen et al. (2011) stated that knowledge is a criterion for actual action. Another study by Mei (2019), exploring food allergen knowledge and attitude among UK consumers, found that there is a significant relationship between knowledge and attitude. It was reported that by combining knowledge and attitude, it could positively influence food allergen handling practices. This supports participants’ views that they required more knowledge to form an opinion of pearl millet.

The last category that arose was not a new concept – price. Two participants stated they want to see “*value for money*” and “*price is very important and should be better than imported products*”. Although Yeo et al. (2017) claim food is, in fact, a low involvement purchase, therefore indicating that consumers typically make food-price selections reasonably at the given time without much prior consideration, Villa-Real et al. (2020), in their study on food values and influence on attitudes and purchase intention, discovered that price is more important for utilitarian products. In the case of eating health products, consumers would be willing to pay higher prices due to the nutritional information, supporting participants’ view regarding the pricing of pearl millet, as seen in Table 5.34.

TABLE 5.34: PARTICIPANT REQUIREMENTS FOR PRODUCER/MARKETER/SUPPLIER

Category	Quote
Good brand awareness	“good branding and awareness” “good advertising in retail stores and online” “product should be well advertised” “good marketing and why it’s better than other products” “Cooking programs that will use the millet would be great”
Free samples	“provide instore samples for tasting” “tasting new food is the best way for me with friendly staff”
Point of difference	“they should focus on point of difference” “how it can be used as replacement to other foods” “I want someone to explain what it is, how it’s better than other products”
Information	“Give out pamphlets about what the product is all about” “frequent information about the benefits” “to educate participants more on this product and also its uses” “provide enough information and advertising regarding what it is and how it can be used” “the more information I have the more likely I will buy it” “indicate health benefits” “more information motivates me to buy”
Price	“The price is very important and should be better than imported products” “value for money”

5.5.2 Normative beliefs

Normative beliefs relate to an individual's perception about how other people would like them to act in a certain circumstance, while motivation to comply refers to the individual's desire to comply with the judgement of other important individuals (Ajzen 1991).

Subjective norm is an outcome of normative belief and motivation to comply. Subjective norm rests on beliefs about the normative expectations of important individuals (family, friends, etc.) (Steinmetz et al. 2016). Consumers have been noted to mainly favour optimal food over suboptimal food when making food selections (Aschemann-Witzel et al. 2018). The question to address normative beliefs was: ***“I will purchase indigenous grains such as pearl millet based on...?”*** The categories that emerged from their answers are depicted in Figure 5.25 below.

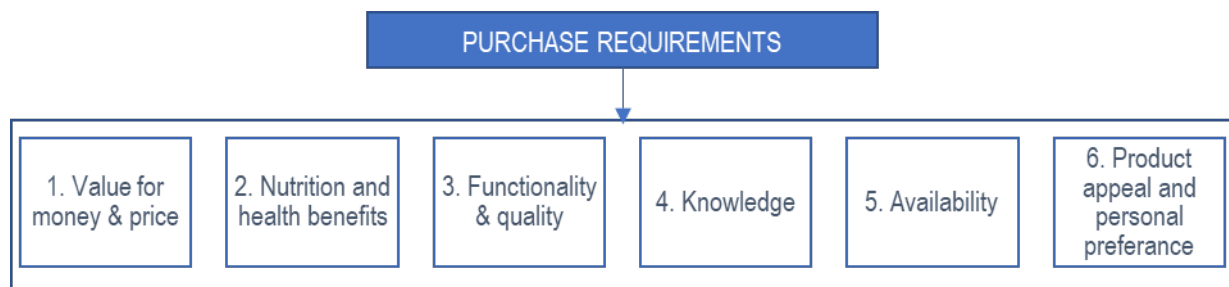


FIGURE 5.25: PURCHASE REQUIREMENTS

From the data, the first concept that developed reflected value for money and price. Participants stated that they make purchases based on the value they believe they will receive and stated, *“value for money”* and to have a *“good price”*; especially due to the newness of the grain and the uncertainty that goes with trying a new product. Similar was found among participants in a study by Morteza et al. (2017) of organic food purchases, where price was deemed an important factor when considering organic food. Within this study, the role of price transparency (clear overview of current price) motivated consumers' purchasing decision. Another study by Hsu et al. (2017), considering the purchase intention of green skincare products, found that customers evaluate what is fair for the perceived price of the offering. Therefore, they would tolerate price increases for products if marketers clearly present product information reflecting differences in green skincare products and 'not green' products.

Nutritional and health benefits also emerged as a factor on which participants based their purchase decisions (*“nutritional and health benefits”*). Furthermore, health and wellness linked together with these benefits as participants concluded that *“satisfying the nutritional needs of my family”* and that pearl millet products ought to have a good *“health and nutritional composition”*. The health and nutritional aspects have been repeated throughout this study, along with the functionality of the purchase. Participants buy products based on *“filling my family's need”*, and

the quality of the packaging was noted to be important when buying indigenous grains such as pearl millet. Research found that sustainable products and diets are accessible, economically fair, and affordable, with a good nutritional composition (Stubbs et al. 2018).

Participants stated that their purchases are based on their “*knowledge I have of the product*” and they wish to be “*well informed*”. A few participants indicated that “*word of mouth*” and “*previous experiences from other people*” would make them more knowledgeable, and they would be more inclined to purchase pearl millet. These statements were supported by a study conducted by Sun (2019), on ethical consumer intention formation. It was determined that consumers often do not have adequate knowledge about ethical products and are ill-informed about the claims made regarding those products, which could prevent them from trying new products.

A participant claimed that their purchase would be based on the “*availability of the product*”. This was also found in a study relating to the importance of how the perceived availability of products can impact consumer decision-making (Reisch & Zhao 2017). Participants would not invest the time and effort in new ingredients or products they cannot use or find again to purchase.

Another participant indicated that they would purchase based on product appeal and personal preference. This was evident in their statement relating to “*how the product packaging appeals*” to them. Personal preference was noted to be important, and participants further elaborated that “*what I like to eat*” and “*my personal preference*” of food was important. The taste of the products also links up with personal preference, as participants claimed “*taste triumphs everything*”. These concepts all align with the appeal of the product and the appeal in purchasing it. Roggeveen et al. (2015) found that retailers could substantially increase their sales and profits by adding dynamic presentation formats to their products, whether it is on the actual product or the environment in which it is sold. This claim supports why participants might be more inclined to purchase pearl millet based on the appeal factor according to their personal preferences, as seen in Table 5.35.

TABLE 5.35: PARTICIPANTS PURCHASE PEARL MILLET BASED ON

Category	Quote
Value for money & price	“good price” “decent price” “pricing for sure” “pricing is very important” “value for money” “purchase based on price”
Nutrition and health benefits	“nutritional value and health benefits” “health benefits” “diet, healthy lifestyle” “based on nutritional components” “health and nutrition” “based on health benefits” “satisfying the nutritional needs of my family”

Category	Quote
	"based on benefits" "nutritional status" "Nutritional value and benefits" "health and nutritional composition"
Functionality & quality	"the functionality" "filling my family's needs" "functionality" "quality of the packaging" "good standards for quality packaging" quality "quality is key"
Knowledge	"knowledge I have of the product" "product knowledge" "to be well informed" "word of mouth" "previous experiences from other people"
Availability	"availability of product" "it is frequently available" "if the product is always available"
Product appeal and personal preference	"preference" "what I like to eat" "taste" "healthy and tasty" "needs to taste good" "taste triumphs everything"

5.5.3 Controlled beliefs

Control belief can be defined as the belief in the outcome of the occurrence of certain aspects that may ease or hinder the performance of a particular behaviour; such as money, opportunity, time, among others (Ajzen 1991). Perceived behavioural control is an outcome of control beliefs and perceived power, and the question addressing controlled beliefs was: ***"I will not purchase indigenous grains such as pearl millet when ...?"*** The categories that emerged are discussed next.

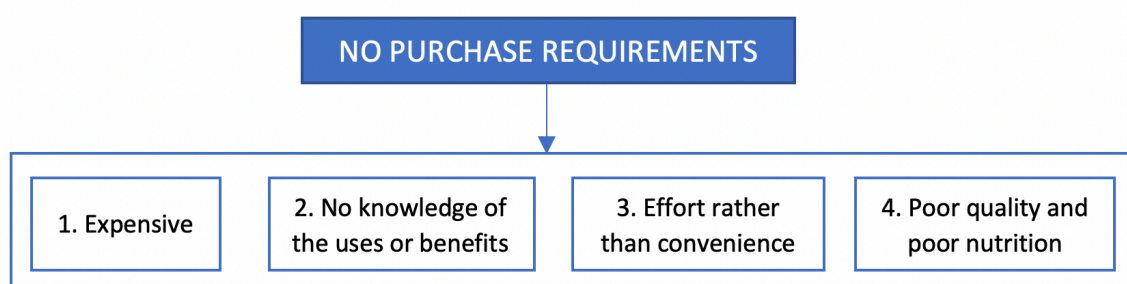


FIGURE 5.26: REQUIREMENTS FOR NOT MAKING PURCHASES OF PEARL MILLET

The majority of participants were concerned about it being too expensive and stated that if it is *"overpriced"*, *"way to expensive"* they would not consider purchasing pearl millet. This is important to grasp, because in low-income countries such as South Africa, price and cost are crucial

indicators of consumer food choice (Siddique 2012). The same could be understood of consumers' attitude towards price.

Secondly, participants mentioned having no knowledge of the uses of the product, and they indicated that they would not buy it "*if I don't know the function*", "*don't know what it's made for*" and also if "*I don't need it*". From the findings, one participant stated that they do not purchase food products if they have "*never heard of it before*". There were also quite a few participants who stated they would not buy if they have no knowledge of the uses: "*not sufficient knowledge*", "*don't know how to cook with it*", and "*not sure how it can be eaten*".

Consumers learn attitudes from direct experiences with products, word-of-mouth, and exposure to mass media and any other sources (Schiffman & Wisenblit 2019). In a study by Vecchione et al. (2015), regarding consumer acceptance levels of GM food products, it was found that perceived benefits, risks and knowledge greatly influence consumers. Another study by Chen et al. (2013), conducted in Canada, demonstrated the effectiveness of information and prior knowledge of new food technologies on consumers' evaluation of food product innovations. Thus, these studies support participants' need for more knowledge on the what and how of the entire product.

Then there were a few different responses from various participants that they will not buy pearl millet when it is not "*frequently available*". Others stated that "*if the product is not always available, I won't buy*" and also "*if it is hard to come buy*". In a study by Awan et al. (2015), on the factors affecting halal purchase intention in the Pakistan Halal food sector, it was reported that a lack of communication and availability of products is the most crucial elements in countries like Pakistan. Having low brand loyalty among consumers influences people's decisions on where to shop. Similarly, in this study, participants said they do not want to struggle with new products that are not readily available.

Another category that arose was related to the effort and convenience regarding the use of pearl millet, and participants said that, "*if it takes very long to cook compared to rice and pasta that are quick dinners*". The growing interest around the "convenience" attribute is also correlated to changes in lifestyles. Findings from a study conducted by Contini et al. (2018) on the role of personal and context-related factors in convenience foods, reported the market availability of convenience-processed foods is positively correlated with the intention to consume them. This could be true for participants' reasoning as to why they lean towards purchasing products that require less effort and are convenient to their changing lifestyle.

Participants also said they would not purchase products that are of poor nutrition. If it was nutritionally harmful with “*a lot of sugar and preservatives*”, “*too high in kilojoules*”, “*if it contains gluten or saturated fats*” and when it is “*not nutritionally filling*”. A study by Hoque et al. (2018), on health consciousness and its effect on the purchase intent of liquid milk, found that consumers’ health consciousness has a positive impact on perceived knowledge, belief, and attitude, but not on purchase intent. Their claims offer a contrast to what was found among participants in this study.

The last concept that was discussed was poor quality. A few participants said that “*when it has passed its shelf life*” and “*not fresh*” they would not consider purchasing. Others indicated that if the product has poor quality and “*looks old*” or if the “*packaging is damaged*” they would not make the purchase. According to Rezaei and Valaei (2017), their study aimed to determine the impact that purchase intent had on the quality of customers’ relationship to shelf life; their data reflected a positive relationship between the quality of the product and consumer purchasing behaviour.

TABLE 5.36: PARTICIPANT DO NOT MAKE PURCHASES WHEN

Category	Quote
Expensive	“overpriced” “way to expensive” “too pricey” “fairly priced” “If the price is too high” “does not fit into my budget” “overpriced” “too much money for so little product”
No knowledge of the uses or benefits	“no idea how to use it” “I don’t need it” “if I don’t know the function” “don’t know what it’s made for” “no need for it” “never heard of it before” “I don’t know how to prepare it” “don’t know how to cook it” “It can’t be used in many meals” “don’t know what it is” “not sufficient knowledge” “not sure how it can be eaten”
Effort and convenience	“if it takes very long to cook compared to rice and pasta’s that are quick dinners”
Poor quality and nutrition	“when it has a lot of sugar and preservatives” “too high in kilojoules” “if it contains gluten or saturated fats” “not nutritionally filling” “I don’t like products that are extremely processed with preservatives” looks old” “packaging that is damaged” “when it has passed its shelf life” “not fresh”

5.6 CONCLUSION

This chapter presented the findings according to the main objectives of the study. In the next chapter, the conclusions from the findings and an interpretation of the most significant findings are presented. The contribution, recommendation and limitations for this study, as well as possible future research to be conducted on pearl millet, are also proposed.

CHAPTER 6 - CONCLUSION OF THE STUDY

This chapter presents an interpretation of the main findings of the study. The contribution of the study is highlighted, and recommendations resulting from this study are made. The limitations of the study are also emphasised.

6.1 INTRODUCTION

Chapter 5 offered some insight into the role attitude, perception, and knowledge play in consumers' decision and intention to purchase pearl millet. The discussion of the findings was offered in alignment with the research objectives set out for this study. In this chapter, conclusions are presented based on the main findings in relation to each of the objectives. Interpretations of the findings are also offered that may point to the implications thereof.

To provide context to the sections to follow, a brief overview of the objectives is presented:

- **Objective 1** set out to identify consumers' knowledge about pearl millet through an investigation of their: subjective knowledge of pearl millet in relation to the extent of their knowledge about pearl millet; objective knowledge about pearl millet through an exploration of the product characteristics and usage of pearl millet; and an investigation of the product-related experience of pearl millet, whereby the information attributes for which consumers search and the purchase experience of the product were determined.
- **Objective 2** aimed to determine consumers' perception of pearl millet in terms of the external attributes (perceived quality, perceived price, packaging, retail store image, country of origin, consumer openness to new products) that influence their intention to purchase.
- **Objective 3** explored consumers' attitude towards pearl millet in terms of the influence of normative beliefs, behavioural beliefs and control beliefs.
- **Objective 4** set out to propose a conceptual framework of the attitudinal, perceptual and knowledge factors that influence consumers' decision and intention to purchase pearl millet.

The study's contribution is discussed in relation to the original conceptual framework that was proposed based on the findings of consumers' decision and intention to purchase pearl millet. Particular attention is focused on this study's contribution to the body of knowledge of pearl millet research that exists. The study's contribution to the different theories that were adopted in this research is addressed, as well as the contribution this study has made to the methodology that

was applied for this research. Finally, the contribution this study could make to the food industry, and the manufacturing and marketing of an indigenous grain such as pearl millet, is presented. This is followed by the limitations of the study and recommendations for future research. In confirming that the conclusions of this study are aligned to the context in which the study was performed, the demographic profile of the participants is briefly summarised.

6.2 DEMOGRAPHIC PROFILE OF THE PARTICIPANTS

The participants in this study were 36 individuals grouped into 12 small groups of three participants each, residing in the city of Mbombela (Nelspruit). These participants formed the study sample on which the findings of this research are based. Most of the participants were women (main food shoppers) between 30-39 years of age. In following the convenience sampling strategy, the researcher mostly recruited participants at her place of work, which was a food manufacturing company. However, it should be emphasised that due to the snowballing sampling technique that was implemented, participants outside this environment were also included, offering additional opinions to the discussions. Participants were all matriculated, and some had furthered their studies through either a diploma or degree. The demographic profile should be kept in mind throughout the interpretation of the data as it offers a view of the contribution participants made to a better understanding of their attitudes, knowledge and perception of pearl millet and how this would influence their decision and intention to purchase pearl millet.

6.3 RESEARCH PROBLEM IN BRIEF

South Africa is regarded as an emerging country, facing many challenges regarding malnutrition and food insecurity. Although marketers have placed more attention on processed foods, the importance of indigenous foods and the role these foods could play in addressing nutrition-related concerns in South Africa has been underplayed. South Africa hosts a vast range of indigenous food crops that are underutilised and not well-known, of which pearl millet is one such grain. In communities where pearl millet is a staple food, its nutritional benefits and cultivation have not been promulgated effectively for it to be deemed a worthy indigenous grain through which dietary deficiency and malnutrition could be addressed. Food manufacturers have also not paid attention, nor have they been curious about consumers' response to pearl millet and if, from their perspective, it is a grain worth investing in as a consumable food product. Subsequently, very little consumer information exists about pearl millet, and even less about their attitude, knowledge and perception of pearl millet and how these elements would influence their decision and intention to purchase this indigenous grain.

6.4 CONCLUSIONS

6.4.1 Objective 1: Identify consumer's knowledge about pearl millet in terms of their:

6.4.1.1 Subjective knowledge (self-assessed) of pearl millet in relation to the extent of their knowledge about pearl millet (sub-objective 1.1)

Participants' subjective knowledge (self-assessed) of pearl millet appeared to be clear, meaning that they thought they had knowledge about it. This impression emerged from a top-of-mind approach that explored what they knew or thought they know about indigenous grains, as well as pearl millet. From the word "indigenous", participants concluded that these grains were predominately found in specific areas, places, countries and were referred to as "*indigenous grains of South Africa*". However, their self-assessed certainty cannot be interpreted as a true reflection of their knowledge, but possibly an interpretation made from the word "indigenous grain" that was put to them. Interestingly, a health orientation link to indigenous grains emerged that connected pearl millet to "healthy food" that could aid in digestion with additional protein benefits. Potentially, this response could be expected of participants who were involved in the food industry; however, it is not certain if their understanding of grains in general influenced the response. Pearl millet was further associated with other crops such as corns, beans, soya, and maize, to name a few. These associated responses rather suggest that participants were not very clear on what exactly pearl millet was, only that they regarded it to be similar to well-known crops found in South Africa. The participants' self-assessed knowledge does cast a shadow over their true knowledge about pearl millet. Their responses suggest they took the basic words that were presented in the questions, such as "indigenous grains", and gave a response that was a direct interpretation of what they thought the words meant, not really having in-depth understanding about indigenous grains such as pearl millet.

When exploring the term "pearl millet", the crop-like nature of the grain, with grain, plant and seed-like features were forthcoming, also attributing food-like characteristics to it associated with known products such as wheat, sorghum, barley, maize or rice. Such associations do not strongly suggest consumers are sure of what pearl millet is, but rather that they are trying to put it in a category where they feel comfortable it belongs, based on similar features. The thoughts that pearl millet, as a processed product, was finely milled into flour, used in flour-based applications, or suitable as animal feed, could possibly relate to some participants having a closer involvement with pearl millet through the food industry. However, these specific responses were not from the majority of participants. In explaining what pearl millet was, the health-related connotation once emerged, where it was associated with improved digestion and an inherent gluten-free product. This health-related association with pearl millet also potentially stems from the association of food with high-fibre content being good for digestion. However, the specific nature of this response (related to digestion and being gluten-free) could not be isolated from participants who were

involved in the use of pearl millet in the food industry, making them more aware of the benefits of this product.

Further exploration of what participants knew about pearl millet, and not just what they assumed it was, established differences between participants. Some were more informed and, in some way, knew something more specific about pearl millet than those who were uninformed consumers, who indicated that they knew nothing of pearl millet. To some extent, participants' self-assessed knowledge of the word 'pearl millet', and what they knew about pearl millet, did not result in any different opinions, other than what already emerged (of African origin, a grain, culturally specific, with health beneficial attributes and with specific uses for animal and human consumption). However, its drought-tolerant nature was mentioned as a particular aspect associated with pearl millet.

Within the health-related connection to pearl millet, specific details were provided, not only emphasising gluten-free or digestion-related connotations, but elements such as antioxidants and a source of protein. The culturally specific association to pearl millet was something new that was pointed out, in relation to Indian cuisine that might have been known to participants who had experience with such food products or meals. In exploring the known elements of pearl millet, its uses for human consumption were more specific. A detailed identification of products, such as health bars, Roti's and other flour-based products, was mentioned. Therefore, the difference between what the word 'pearl millet' means and what they know about the grain seem closely related, with only slight specifics emerging in terms of what they know.

More in-depth probing in relation to the nutritional and health-related aspects of pearl millet resulted in an elevated understanding of these benefits. An overlap between what already emerged from their understanding of pearl millet was found with some additional nutritional specifics, such as containing vitamins, minerals and macronutrients, while reducing non-communicable diseases. Noteworthy macronutrient elements were emphasised concerning the link with fibre and the fact that this aspect of pearl millet stood out for many participants. Their notion of pearl millet as a specific source of fibre was possibly top-of-mind in terms of other grains being a good source of fibre, in general, that aids in addressing non-communicable diseases such as lowering blood pressure and cholesterol, and any other related diseases. Many consumers are more knowledgeable in general about the health benefits of products such as grains, which could support participants' general awareness of pearl millet's health benefits. Although many participants worked in the food industry, it could not be confirmed that the health-related aspects that emerged from the information they shared were really attributed to their food industry experience.

Although half of the participants had consumed pearl millet prior to the study, there was a group of participants who did not really know if it had been in food products they consumed. Some consumed it but did not know it was pearl millet, which suggests that consumers do not always notice ingredients or product information when consuming food items, and may therefore not always be aware of the products that contain pearl millet. It may rather point to their curiosity of trying “new and different” products without questioning the content of the product, which may include mixed grain salads, trail mixes or health bars, to name a few. In addition, the fact that pearl millet was not well-known in South Africa could also add to consumer’s unawareness of its presence in food products. Its anonymity is attributed to being unavailable to the general consumer in South Africa – being store specific takes it out of the general retail outlets consumers tend to patronise in South Africa. Although unavailability does not necessarily mean unobtainable, consumers may not know what to look for in a pearl millet product and therefore think it is not available to them, as it goes unnoticed. However, pearl millet’s unobtrusiveness in retail does give consumers the impression that it is a new and trendy product, which does not fall in the general consumer’s repertoire of purchased food products, and is thus not noticed or considered during their food purchases.

6.4.1.2 Objective knowledge about pearl millet through an exploration of the product characteristics and use of pearl millet (sub-objective 1.2)

Considering participants’ objective knowledge – what they actually know about pearl millet and not what they perceive to know – again illustrated that participants were clear that pearl millet was either meant for human or animal consumption, which was limited to fodder. In terms of how it could be consumed by humans, participants were more assertive and specific in terms of the products (porridge, cereals, cereal bars, to bake with, to make beer or Roti’s with, vegan smoothies, gluten-free crackers and bread) they knew it was used for, and certain of how it can be used as a food alternative (replacement for rice, wheat, grains, protein and ingredient in food). In addition to these practical uses of pearl millet, it was again emphasised that it serves a purpose in contributing to the health and wellness of its consumers (digestion, gluten intolerance and as stable food in underdeveloped countries).

It is rather interesting to note that during the exploration of consumers’ objective knowledge of pearl millet, their confidence in identifying its uses emerged in the ability to clearly distinguish between the ways to consume it (cooked, raw, milled or processed). The specific nature of these responses (e.g. cooked in water with a bit of salt, cooked and used in salads like couscous or bulgur wheat, include as sprinkles in your salad, include in homemade trail mix, milled to flour that can be eaten in any baking application, replacement for almond flour and sunflower flour, can be eaten in muesli, as health bars) could be attributed to participants being familiar with pearl millet

in the food industry. Based on their experience, they were aware of pearl millet, and consumed it.

However, when considering the data on how best participants could describe the taste of pearl millet, the tastes they described were not all necessarily based on their experience of eating and tasting the grain, but rather phrased as “I think it will taste like....” or “I think it might....” Or “raw I think it might have a....” or “when cooked it maybe.....” or “cooked I think it will ...”. This suggests that not all the identified tastes were an exact description of their experience, but what they imagined it would be like; possibly be linked to how they experienced grains in general. Having said that, clearly defined organoleptic experiences of pearl millet being dry and tasteless, pretty bland, earthy, seed flavour, to name a few, were identified. Other participants gave an associative organoleptic expression such as “tastes like wheat” or “tastes like raw oats”. Product associations were also helpful in establishing the appearance of pearl millet; other than being described through shape (round) and colour (yellow, white), it was rather found to be similar to products such as wheat, corn, seeds, maize, couscous, chia seeds, to name a few.

Therefore, participants’ objective knowledge of pearl millet reflects some consumers inability to clearly describe its features, other than equating it to other products with which they are familiar. Participants could also not fully agree on the specific features of pearl millet, allowing for a variety of shapes and taste experiences to emerge. However, a clear distinction should be made between objective knowledge that is based on true experiences, and those that are imagined, which was specifically found in the taste of pearl millet.

6.4.1.3 Product-related experience of pearl millet, whereby the attributes consumers search for and the purchase experience of the product will be determined

In order to explore their product-related experience of pearl millet, participants were shown three different pictures of pearl millet that could be found in stores. These pictures illustrated different formats in which pearl millet was sold to investigate whether consumers had any product-related experiences with any of these types of products. Many of the participants had no prior experience with these three specific products, although there are many other related products. However, the unfamiliar nature of these products hampered the purchasing thereof, and thus the experience with these products. This emphasises the effect that unfamiliarity with pearl millet has on consumers’ experience with this grain. Although consumers may be unfamiliar with pearl millet products (such as these three examples), habitual shopping behaviour could also contribute to consumers’ avoidance of pearl millet, along with the cost of pearl millet, and inexperience in using it as an ingredient in food.

Once more, the health-related features of pearl millet drew specific consumers to these products. Although these three products were unfamiliar to the participants, as consumers they seemed keen to explore these products if the following recommendations provided them with sufficient information to confidently purchase the product: (1) source information on the product, (2) health-like features are emphasised; (3) comes with peer recommendation; (4) the uses of pearl millet are explained; and (4) perceived benefits are indicated. These purchasing recommendations are indicative of the lack of information available to consumers about pearl millet and what it offers the consumer, as well as how it can be used. For those who did not want to purchase these products, their hesitation could be attributed to their lack of information about pearl millet and their unfamiliarity with the grain, but also their perception that it is expensive. This suggests that because pearl millet has been identified as being particular to select stores and is less known in the general food retail arena, consumers might associate it with a higher price tag than ordinary grains found in mainstream food stores. However, most participants perceived these products to offer value for money – based on a deduction of the visual presentation of the products, not from personal experience – by referring to the packaging, product volume and nutritional attributes as “looks good”, “seems...filled sufficiently”, “looks reasonable” “looks healthy”, among others.

Many of the attributes that participants pointed to as reasons why they would purchase the three pearl millet products, were also mentioned for general food purchasing criteria. In this instance, price, nutrition and health benefits, quality of the product, the organoleptic features of the product, packaging material, and the functional use of the product would be key criteria they would consider for food purchases in general. However, when considering purchasing criteria for an indigenous grain, participants not only included the same aspects of general food purchases, that still remained important to them, but shifted their requirements to also reflect a patriotic, environmental and information approach. To them, it was important to support a locally produced product that was also environmentally friendly, and provided enough information such as how to use the product.

When reflecting on the ideas participants had about indigenous grains – as being from a specific place – their mention of the importance of a locally produced product that does not damage the local environment (natural) suggest that the terms “indigenous” strongly resonates with locally produced products. It has become an important element in the consumers’ decision-making process where food products are concerned. Without any experience of the indigenous grain, the price of the product, the nutritional and health benefits of the product remain the main criteria that are consistently considered in consumers’ purchasing decision of an indigenous grain.

6.4.2 Objective 2: Determine consumers' perception of pearl millet in terms of the external attributes that influence their decision and intention to purchase

To address objective 2, the researcher explored participants' perceptions of external product attributes such as quality, price, packaging, retail store image, country of origin, and participants' openness to new products. The findings were captured and interpreted as below:

6.4.2.1 Perceived quality

Although the term 'quality' emerged as an important purchasing criterion for food products in general, in this study, when exploring this product attribute more closely, it became evident that quality was reliant on a visual appearance and perception of what the consumer could glean from the product. In particular, for general food purchases, the appearance of the packaging, the perceived freshness of the product, and how well the manufacturer complies and communicates the attributes of the product to the consumer, assist the consumer in making a decision whether to purchase the product or not. When quality is considered in terms of an indigenous grain such as pearl millet, the importance of quality is emphasised as a critical decision driver. This should be visual in nature, resulting in the impression of the product the consumer receives. It is assumed that the perceived impression may be influenced by such attributes as the packaging appearance and perceived freshness of pearl millet. Also, with price specifically may be a good quality indicator, with the assumption that a more expensive product would be of better quality, it will play an important role in consumers' decision to purchase pearl millet.

6.4.2.2 Perceived price

Price was mentioned by participants as an external attribute that may influence consumers' purchase decision. They claimed to link price to the quality of the product, as explained above. However, price should always be considered in terms of consumers' sensitivity towards the cost of a product. In this regard, consumers seem to look at the fairness of the price of the product in relation to other products, and that a product is not unrealistically priced, since such products may not necessarily point to a better-quality item. Consumer judgment in terms of the price of an indigenous product, like pearl millet, will depend on the affordability of the product in relation to similar products. It could be argued that if pearl millet is not well-known to consumers, the affordability of this grain will become a significant indicator of whether it matches up to similar grains, resulting in consumers favourably considering the purchase of this product. To some extent, the unknown nature of pearl millet may require further confirmation through certification, which will create consumer trust in the product, for which a consumer is willing to pay.

6.4.2.3 Perceived packaging

Product packaging includes the visible nature of the product it contains and the information about the product a consumer uses to make an informed decision. In general, consumers have become environmentally conscious, therefore requiring product packing to comply with environmentally friendly principles. However, packaging functionality remains an important consideration, while presenting the product in a visibly attractive way. Interestingly, consumers are willing to wave all these criteria except one, product information, when it comes to an indigenous product such as pearl millet. It can be argued that when a consumer is confronted with an unfamiliar product such as pearl millet, the product information on the packaging may be the main source of information the consumer will use on which to base their purchase decision. Therefore, it is critical that in the case of indigenous grains (pearl millet), consumers are provided with the necessary information about the product that will not only act as an educational tool but assist the consumer in making an informed decision about pearl millet.

6.4.2.4 Perceived retail store image

Store image may not always be considered an important extrinsic attribute of a product. In this instance, consumers typically use certain perceived criteria with which to assess the retail store image. This includes the way attractive branding has been used, the in-store ambiance, hygienic conditions of the store, its organisation, and overall attractive appearance. When considering an indigenous grain such as pearl millet, consumers may be inclined to equate the store image to the products they sell, working in favour of pearl millet. In particular, if a well-known retailer sells an unfamiliar product (such as pearl millet), consumers may favourably consider the product as the retailer may indirectly endorse and show support for the product. Consumers will consider such endorsement in the brand awareness created by the retailer, the retail ambiance and personal support, price and accessibility of the product, as well as in-store promotions of the product. Therefore, store image will play an important role in the marketing and purchasing of pearl millet.

6.4.2.5 Perceived country of origin

Country of origin has become another important extrinsic product attribute that may direct consumers away from purchasing a product, or create favourable reactions that may lead to product purchases. Consumers seem critical of products they do not know, and may harshly assess a product from another country based on their perceived impression that products from some countries do not always meet quality standards, resulting in a lack of trust. Moreover, a locally produced product such as pearl millet may have a competitive edge over other international

products, as some consumers seem keen on supporting locally produced products that may improve the local economy of South Africa. The support for locally produced indigenous food products may not receive the same support from all consumers, nor will it influence consumers who do not support locally produced products, and this dichotomy should be considered where pearl millet is concerned.

6.4.2.6 Consumer openness to new products

Findings have suggested that pearl millet may not be known to many consumers. Also, consumers' readiness to explore an unfamiliar product remains unknown to many marketers. Having said this, some consumers are excited by new product experiences, which may, in some instances, be based on curiosity. Other consumers are more inclined to remain habitual shoppers, and are not easily swayed by new products. In the case of pearl millet, it seems several criteria have to be met before consumers will consider this unfamiliar product. It will have to feature attractive publicity, be affordable, have nutritional value, favourable reviews from other consumers, and be readily available. Most importantly, participants claimed they need to be well informed about this product before they will be open to purchasing it. This could suggest that the marketing of pearl millet may require several key features before consumers become open to considering it as a potential food product to be purchased.

6.4.3 Objective 3: Explore consumers' attitude towards pearl millet in terms of the influence of normative beliefs, behavioural beliefs and control beliefs

In addressing objective 3, the three beliefs that are influential in consumers' attitude towards pearl millet were explored by means of a sentence completion exercise. The behavioural beliefs attempted to investigate the attributes participants deemed relevant when considering pearl millet, especially what they expected producers, marketers and suppliers should do in relation to pearl millet. In this instance, participants expected these stakeholders to create good brand awareness around pearl millet; provide free samples; point out the difference between pearl millet and other relevant products; competitively price pearl millet; and most importantly, provide information about pearl millet which will assist them to form an idea about this grain.

To determine the normative beliefs participants hold towards pearl millet, participants were asked to indicate on what they would base their purchasing decision. In this instance, these beliefs confirm the most important features participants believed are relevant to pearl millet, namely nutritional and health benefits, value for money and the price of the grain, quality and functionality of the product, information about the product, the availability of the product, and its product

appeal. These beliefs form the core of the most important features of pearl millet that should be acknowledged when marketing it.

The controlled beliefs towards pearl millet were addressed by asking when participants would not purchase pearl millet; these beliefs would redirect consumers' attention away from pearl millet. The expensiveness of the grain in relation to other product, consumers' lack of knowledge about the product, a nutritionally poor product of poor quality, were some of the main considerations. To ensure that pearl millet is an attractive option to consumers, marketers should pay careful attention to the control beliefs that consumers do not wish to experience.

6.4.4 Objective 4: Propose a conceptual framework of the attitudinal, perceptual and knowledge factors that influence consumers' decision and intention to purchase pearl millet

From the findings of this study, the following amended conceptual framework is proposed in Figure 6.1 to illustrate the role attitudinal, perceptual and knowledge play in consumers' decision and intention to purchase pearl millet. It is proposed that consumer knowledge plays a critical part in the decision to purchase, which is influenced by consumers' subjective and objective knowledge. It is further suggested that the product-related experience of pearl millet will have an influence on consumers' knowledge about pearl millet; this experience will influence the need to purchase pearl millet, conduct a pre-purchase search to look for available stores or appropriately priced pearl millet products (to name a few consumer considerations), and perform an evaluation of alternatives.

The throughput phase of the consumer decision-making process is further supported by consumer perceptions, which are also reliant on the extrinsic product attributes that can form purchasing barriers in the case of pearl millet. These purchasing barriers may result in potential negative experiences in relation to future purchases of pearl millet. However, the psychological field within which the consumer makes product-related decisions is also influenced by the consumer's attitude. In this instance, attitude has a direct influence on the behavioural, normative and control beliefs that guide the intention to purchase pearl millet. These beliefs are further influenced by the consumer's knowledge of pearl millet, and the product-related experiences the consumer can fall back on. In particular, the decision to purchase could be affected by purchasing portals, such as favourable purchasing components that contribute to the consumer's knowledge about pearl millet. This also directly influences the intention to purchase pearl millet based on aspects such as a favourable sensory acceptance of the product; health consciousness of a consumer; or the fact that the consumer is familiar with the benefits of pearl millet and has adequate knowledge about the use of the product. The components of the purchasing portal may also directly influence the consumer's attitude towards pearl millet and thus their intention to

purchase such products. However, it is still proposed that the actual behaviour of purchasing pearl millet may be directed by what the consumer is able to control, such as the availability, price, packaging and other product-related factors. In the case of pearl millet, it was evident that peer influence would have a role to play in the intent to purchase pearl millet specifically, as it is an unfamiliar product to consumers and they are reliant on the opinion of others who they trust.



FIGURE 6.1: AMENDED CONCEPTUAL FRAMEWORK

Based on the findings, the framework has thus been amended to introduce the purchasing portals and barriers as influencing components in the decision to purchase pearl millet. A more in-depth understanding of the role consumer knowledge will play in the decision and intention to purchase

pearl millet has been established, in addition to the influence of product-related experiences on consumer knowledge.

6.5 CONTRIBUTION OF THE STUDY

Based on the literature review, this study's contribution is discussed by exploring the role attitude, perception, and knowledge play in consumers' decision and intention to purchase pearl millet. This discussion is facilitated by a review of the research contribution to the following sections:

6.5.1 Contribution to the conceptual framework

This study has contributed to an amended conceptual framework of consumers' decision to purchase pearl millet by exploring consumers' knowledge, attitude and perception of pearl millet (see Figure 6.1). In particular, it was possible to identify the purchasing portals that would influence consumers' decision to purchase pearl millet and the purchasing barriers that may hinder its purchase. The portals and barriers are specific to pearl millet and contain important elements that may detract or enhance consumers' purchases thereof, which were not previously known. The findings have also pointed out that consumer knowledge of pearl millet is a very central component in the decision and intention to purchase the product, and should not be underestimated. This means the amended conceptual framework has centralised consumer knowledge around which the decision and intention to purchase pearl millet may revolve.

6.5.2 Contribution to body of knowledge of pearl millet

In the South African context, very few studies have been conducted that portray consumer attitude, perception and knowledge towards pearl millet products, and fewer have explored the intent to purchase the indigenous grain. This study makes a contribution to the body of knowledge of pearl millet by showing what understanding consumers have of pearl millet. It was determined that consumers had a relative grip on the broad field of pearl millet and had a good understanding that it could be used for animal and human consumption. The findings further indicated that consumers are in favour of the idea of incorporating pearl millet into their diet due to the many benefits it inhibits. The study reflected that the consumers who took part in this study were mostly from the food industry, which could support their knowledge of pearl millet or the general concept of indigenous grains. Still, the findings indicated that very few participants had previous experience with pearl millet, and the individuals who did were unsure at the time of use what exactly it was. The study also revealed the importance of the health and nutritional attributes of pearl millet in general, as being a reason why participants would consider trying it. The study reported on the key factors that consumers rely on when purchasing products and what they

would require when considering pearl millet, thus contributing to an understanding of South Africa consumers. Moreover, the importance of well-advertised products and what consumers look for in indigenous products, such as pearl millet, were highlighted.

6.5.3 Contribution to theories

The study used Schiffman and Wisenblit's (2019) consumer decision-making model by focusing on the transformational phase, and combining it with Fishbein and Ajzen's TPB (1985) within the psychology field to better understand consumer behaviour and intention to purchase pearl millet products. These two theories have not been used in combination within the South African context, or in an attempt to understand consumers of pearl millet. Therefore, this study has provided an exploratory view of consumers' knowledge, perception and attitude towards pearl millet.

In terms of Schiffman and Wisenblit's (2019) theory, it was evident that consumers knew little of pearl millet, and although their subjective knowledge was high, their product-related experience and objective knowledge was low. They indicated that external attributes would influence their perception of pearl millet and identified the main areas of importance. The study also focused on consumers' attitude; Fishbein and Ajzen's TPB (1985) was convenient to establish their attitude towards purchasing pearl millet, which was positive in this study. Their normative beliefs were not apparent in this study, and the influence of friends and family was uncertain. However, it was determined that their perceived behavioural control was strongly associated with the amount of information they had, and although they did not have significant knowledge of pearl millet, the study revealed that the ease of purchasing pearl millet would be adequate and prompt them to try it.

6.5.4 Contribution to method

The study followed the design and development of methodology within the qualitative paradigm. The focus group discussions, and additional projective techniques and sentence completion exercises, were useful to explore consumer knowledge, attitude and perception of pearl millet. By using focus groups, data were generated that offered insight into consumers' intent to purchase pearl millet and pearl millet-related products, and offered key notions that consumers look for when purchasing in South Africa.

This study has again established the value of projective and sentence completion data-gathering techniques. It added an interesting element to the conversation about pearl millet, and produced data that confirmed facts that emerged during the focus group discussions. It elicited some new understanding and importance of specific elements related to pearl millet and the decision and

intent to purchase the indigenous grain. Applying the qualitative paradigm to this study field has been useful to explore the topic of research, as it allowed verbal conversations to be examined to find the fundamental notions consumers hold about pearl millet. As no previous studies have been conducted in this field (of consumers and their intent to purchase pearl millet), the researcher could review and further explore her conversations with the participants with a strong understanding of the phenomenon under discussion. This paradigm therefore did not limit the researcher in discovering participants' views, since the qualitative paradigm allows a story to progress until clarity or understanding between the researcher and participant is reached.

6.5.5 Contribution to food industry

Studies towards pearl millet have mainly been international, with restricted studies conducted on pearl millet in South Africa. Furthermore, consumers' perception, attitude and knowledge of pearl millet specifically have not been established previously, according to the researcher's knowledge. The food industry can therefore benefit from this study, as it has been clearly identified that consumers would indeed purchase pearl millet and pearl millet products, especially when there is an increase in awareness and availability of the product. By understanding what consumers perceive as important, the manufacturers, suppliers, and marketers in the food industry can successfully develop, design, and position pearl millet and pearl millet products. The study identified that consumers perceived the quality of the product to be directly linked to the perceived price of the product. It also highlighted which quality and price attributes were noteworthy to consider.

Moreover, product packaging has surpassed the traditional role of just protecting the inner content, as consumers demand environmentally friendly, attractive packaging that has a clear view of the product inside and the required information on the packaging. This creates an opportunity for product developers to push the boundaries by creating wholesome products combined with sustainable and functional packaging. The retail store image was also vitally important, and store managers should focus on the total package that the brand represents by adding good lighting, in-store ambiance, and well-organised structures in an overall hygienic store. The country of origin also seemed to play a role, and marketers thus need to correctly represent the country of origin's beneficial attributes. Consumers were also found to be quite open to new products and experiences once they have sufficient knowledge thereof.

6.6 LIMITATIONS OF THE STUDY

Due to the exploratory nature of the study and the use of non-probability sampling strategies and snowball sampling (due to lack of financial support and time), only a small sample was recruited

through purposive and convenient sampling. Therefore, information could only be gathered from a small percentage of consumers, and this might not be an accurate representation of all consumers' views. Secondly, this study was qualitative, and consumers' actual knowledge of pearl millet and experience with it was restricted through a determination of their own opinion of what they knew. The study was also limited to Mbombela (Nelspruit), which does not represent consumers' views from other areas.

Furthermore, the results of the study primarily represent the opinions of food industry representatives (as the majority of the participants), which may be considered a limitation. The findings of this study cannot be used to predict consumers' purchasing behaviour or decision-making where pearl millet is concerned, since the study was conducted with a very specific target sample. The sample was not large enough to exactly state, with confidence, what consumers know of pearl millet, what their intention would be, and what their knowledge, perception and attitude, in general, would be. There might be additional or underlying factors that could influence consumers' intent to purchase. Another limitation of this study is the "newness" and the limited availability of these products, resulting in high prices. Thus, people who do not customarily buy from health stores would possibly not even know about the grain.

6.7 FUTURE RESEARCH

Although the information of consumer knowledge, attitude and perception towards pearl millet in South Africa is low, it is very important to further this research. It is critical to obtain additional views and opinions from consumers in South Africa to further determine the feasibility of increasing product development for pearl millet. Therefore, further research can be conducted using a qualitative paradigm to obtain an in-depth understanding of more consumer views of pearl millet that represent a larger proportion of consumers in South Africa.

It could also be useful to apply the other psychological attributes in the consumer decision-making model, namely motivation, learning and personalities. The input and output phase could also be evaluated in terms of consumer decision-making towards pearl millet, and an in-depth study of consumers' subjective norms in purchasing pearl millet could be further researched, as it was unclear in this study whether it would influence consumers purchasing decision. It is recommended that more studies be conducted on pearl millet and the benefits it possesses. Additional research and increasing awareness of pearl millet could promote the demand for it and offer more opportunities to develop new products.

The findings of this study also suggest that consumer education may be required to improve consumer knowledge about pearl millet. Future research should be conducted to determine the

effect of consumer education campaigns and consumer information about pearl millet on the purchase and use of pearl millet as an indigenous grain in South Africa.

6.8 RECOMMENDATIONS

The findings from this study suggest that consumers require further information about pearl millet that will enable them to make better informed decisions about the indigenous grain and to also raise their awareness of the grain. Consumer information campaigns need to be implemented to create a better consumer understanding of pearl millet in terms of its use, benefits, nutritional value and health-like features. These campaigns can be initiated by producers, manufacturers or retailers whom consumers also look up to as endorsers of the indigenous grain. Only through consumer education will the uptake of pearl millet, as an indigenous grain, improve.

Specific recommendations can be made to producers, manufacturers and retailers in relation to the marketing and development of pearl millet products:

- Information about pearl millet should be more readily available to the consumer, which could be at the point of purchase or through additional labelling and informative packaging.
- Online marketing campaigns could also be considered where comments can be made by peers, which consumers use as confirmation agents, whom they trust to assist them in making an informed decision.
- The health-like features of pearl millet should be emphasised in communications about pearl millet.
- Product use should be explained as this would inform consumers how to substitute other grains with pearl millet.
- The benefits of pearl millet should be clearly communicated.
- The indigenous nature of pearl millet should be emphasised as a locally grown product of good quality, which is endorsed by important manufacturers and retailers in South Africa.
- It should be competitively priced but not out of reach of the average consumer.
- Pearl millet should be advertised in general food retailers to create a better perception of the product; that it does not only belong in health stores or upmarket retailers.
- The packaging material used for pearl millet products should not create the perception that it is too expensive or a product that cannot be used for general food preparation.
- The sustainability of pearl millet, as a locally produced grain, should be emphasised, which currently attracts consumers.

6.9 CONCLUSION

In this chapter, the main conclusions were presented on each of the objectives formulated to better understand consumers' intent to purchase pearl millet by exploring their knowledge, perception, and attitude towards the indigenous grain. The findings have been discussed in terms of the contribution the research made towards the conceptual framework proposed for this study, to the theories used, to the method, and to the food industry. The limitations of this research have been noted, and recommendations for future research have been suggested that would expand the current findings.

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APPENDIX A: ETHICS CLEARANCE



UNISA-CAES HEALTH RESEARCH ETHICS COMMITTEE

Date: 27/01/2020

Dear Ms Fourie

**Decision: Ethics Approval from
23/01/2020 to completion**

NHREC Registration # : REC-170616-051
REC Reference # : 2020/CAES_HREC/016
Name : Ms C Fourie
Student # : 61508438

Researcher(s): Ms C Fourie
Chantellefourie95@gmail.com

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

Working title of research:

Determining consumers' intention to purchase pearl millet through establishing the attitude, perception and knowledge of the indigenous grain

Qualification: M Consumer Science

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

Due date for progress report: 31 January 2021

Please note the points below for further action:

1. The committee notes that the researcher will obtain permission letters from the organisations where participants will be recruited after receiving ethics clearance. These letters must be submitted to the committee before data collection may commence.



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*The **minimal risk application** was **reviewed** by the UNISA-CAES Health Research Ethics Committee on 23 January 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(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 **2020/CAES_HREC/016** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,



URERC 25.04.17 - Decision template (V2) - Approve

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Prof MA Antwi
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29/01/2020

Prof MJ Linington
Executive Dean : CAES

E-mail: lininmj@unisa.ac.za
Tel: (011) 471-3806



URERC 25.04.17 - Decision template (V2) - Approve

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APPENDIX B: PARTICIPANT INFORMATION SHEET

PARTICIPANT INFORMATION SHEET

Ethics clearance reference number: 2020/CAES_HREC/016

16/01/2020

Title: Exploring the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet

Dear Prospective Participant

Student research project

My name is Chantelle Fourie and I am doing research with E Kempen a professor in the Department of Life and Consumer Sciences towards a Masters of Consumer Science at the University of South Africa. We are inviting you to participate in a study entitled: *Exploring the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet*

WHAT IS THE PURPOSE OF THE STUDY?

I am conducting this research to find out consumer knowledge, attitude and perception towards purchasing pearl millet.

WHY AM I BEING INVITED TO PARTICIPATE?

The focus group interview guide has been designed to study the consumers' intention to purchase pearl millet through establishing the attitude, perception and knowledge of the indigenous grain. You were selected to participate in this focus group because you are the responsible person for purchasing food products within your household and have heard of pearl millet before. If you are below the age of 18 years old you will not be permitted to take part in this study. By taking part in this focus group, you agree that the information you provide may be used for research purposes, including dissemination through peer-reviewed publications and conference proceedings. The approximate number of participants in this study will be 36 participants that will be divided into

groups of 6 with 6 participants in each group. Due to the group setting confidentiality cannot be guaranteed outside of the focus group, since the researcher has limited control over what participant can share outside of the focus group.

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

Describe the participant's actual role in the study.

The study involves *a focus group that will be digitally recorded which also includes a sentence completion exercise as well as a projective technique. The duration period can be anything between 45 minutes and two hours depending on the group and level of interaction.* Indicate what sort of questions will be asked or show the questions on this document. The following are examples of questions being asked.

1. When you hear the word indigenous grains, what comes to mind?
2. When you hear the word pearl millet, what comes to mind?
3. What do you know about pearl millet?
4. Do you know if pearl millet has any nutritional advantages, or health benefits?
5. Have you consumed pearl millet?
6. Did you know it was pearl millet?
7. Do you think pearl millet is well known amongst South Africans?
8. Have you seen pearl millet in any retail outlets and if so, which ones?

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Statement that participation is voluntary and that there is no penalty or loss of benefit for non-participation. It is anticipated that the information we gain from this focus group will help us to determine consumer knowledge, attitude and perception towards purchasing pearl millet. You are, however, under no obligation to complete the focus group and you can withdraw from the study prior to focus group meeting that has been scheduled.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

You will not benefit from your participation as an individual, however, it is envisioned that the findings of this study will establish the foundation of developing more indigenous crops ins South Africa.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

We do not foresee that you will experience any negative consequences by taking part in this focus group, however the following consequences in completing the focus group might arise such as a slight inconvenience of your time. The researcher(s) undertake to keep any information provided herein confidential, not to let it out of our possession and to report on the findings from the perspective of the participating group and not from the perspective of an individual.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

You have the right to insist that your name will not be recorded anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research. Your name will not be recorded anywhere and no one will be able to connect you to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for a period of five years in a locked cupboard for future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. The records will be kept for five years for audit purposes where after it will be permanently destroyed hard copies will be shredded and electronic versions will be permanently deleted from the hard drive of the computer. You will not be reimbursed or receive any incentives for your participation in the survey.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

No payment or incentive will be conducted within this study.

HAS THE STUDY RECEIVED ETHICS APPROVAL

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

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact Chantelle Fourie on 0792650714.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact Chantelle Fourie on 0792650714.

Should you have concerns about the way in which the research has been conducted, you may contact <insert supervisor's contact details here, including email, internal phone number and fax number>. Contact the research ethics chairperson of the CAES Health Research Ethics Committee, Prof MA Antwi on 011-670-9391 or antwima@unisa.ac.za if you have any ethical concerns.

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

A handwritten signature in black ink, appearing to read 'Chantelle Fourie', with a large, stylized initial 'C'.

Chantelle Fourie

CONSENT TO PARTICIPATE IN THIS STUDY

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

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

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

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

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

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

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

Participant Name & Surname..... (please print)

Participant Signature.....Date.....

Researcher's Name & Surname.....(please print)

Researcher's signature.....Date.....

APPENDIX C: TURNITIN RECEIPT



Digital Receipt

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Exploring the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet

by

Chantelle Fourie

61506438

To be submitted in accordance with the requirements for the degree of

MASTER OF CONSUMER SCIENCE

In the Department of Life and Consumer Sciences

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF E L KEMPEN

FEBRUARY 2021

APPENDIX D: INTERVIEW GUIDE

UNISA 2020 INTERVIEW GUIDE

Dear Sir/Madam

Invitation to participate in the 2020 UNISA student focus group interview to: Exploring the role attitude, perception and knowledge plays in consumers' decision and intention to purchase pearl millet.

South Africa is known for having one of the greatest biodiversity's in the world which includes an enormous range of indigenous crops. Pearl millet is regarded as an indigenous crop with excellent nutritional value and has numerous potentials for development in South Africa. However, this grain has been previously underutilized and is still unfamiliar amongst many consumers. Therefore, in this study we aim to determine what consumers know about pearl millet as well as their attitude and perception towards it to establish their intent to purchase these products.

For any queries regarding this study, kindly contact:

-Miss C Fourie (61508438@mylife.unisa.ac.za – 079 265 0714)

-Prof E Kempen (Kempeel@mylife.unisa.ac.za)

KINDLY ANSWER EACH QUESTION AS HONESTLY AND ACCURATELY AS POSSIBLE.

IMPORTANT INFORMATION: ALL INFORMATION WILL REMAIN CONFIDENTIAL AND WILL BE RECORDED

SECTION

A: Demographics

Participant number			For office use only
A.1	Gender		
	Female		
	Male		
A.2	Age (years)		
	18-29		
	30-39		
	40-49		
	50-59		
	60 years and older		
A.3	Highest level of education completed		
	Grade 5-7		
	Grade 8-11		
	Grade 12		
	Diploma / Degree		
A.4	Occupation		
A.5	Indigenous grains	No 1	Yes2
A.5.1	Are you the responsible person for most of your household shopping?		
A.5.2	Are you aware of pearl millet?		

SECTION B: Subjective knowledge

1. When you hear the word indigenous grains, what comes to mind?
2. When you hear the word pearl millet, what comes to mind?
3. What do you know about pearl millet?
4. Do you know if pearl millet has any nutritional advantages, or health benefits?
5. Have you consumed pearl millet?
6. Did you know it was pearl millet?
7. Do you think pearl millet is well known amongst South Africans?
8. Have you seen pearl millet in any retail outlets and if so, which ones?

SECTION C: Objective Knowledge

- 1.What do you think is pearl millet used for?
- 2.Do you know anything about how it can be eaten?
- 3.What do you think does it taste like?
- 4.What do you think does it looks like?

SECTION D: Product-related Experience

View below pictures of pearl millet products and answer questions subsequently:



1. Have you purchased any of these products or similar products containing pearl millet? If not why and if yes, why?
2. Will you purchase one of these products? And why?
3. Do these products offer the perception of great value for money and if so, based on what and if not why?
4. What is your main and most important criteria for purchasing food products?
5. What would be your main and most important criteria for purchasing an indigenous product to South Africa?
6. If you have no prior information or experience about the product but intrigued by it, how will you go about deciding if you will buy it or not?

SECTION E: External attributes influencing consumer's intention to purchase:

Perceived quality:

1. What do you expect when you look at the quality of a product?
2. How important is quality to you when it comes to indigenous products such as pearl millet?
3. If you were to purchase an indigenous grain such as pearl millet what will you be looking for in the quality of the grain?

Perceived price:

4. What do you expect when you look at the price of a product?
5. How important is price to you when it comes to indigenous products such as pearl millet?
6. If you were to purchase an indigenous grain such as pearl millet what will you be looking for in the price of the product?

Packaging

7. What do you expect when you look at the packaging of a product?
8. How important is packaging to you when it comes to indigenous products such as pearl millet?
9. If you were to purchase an indigenous grain such as pearl millet what will you be looking for in the packaging of the grain?
- 10.

Retail store image

13. What do you expect when you look at the retail store image of a product?
14. How important is retail store image to you when it comes to indigenous products such as pearl millet?
15. If you were to purchase an indigenous grain such as pearl millet what will you be looking for in the retail store image the store selling the grain?

Country of origin

17. What do you expect when you look at the country of origin of a product?
18. How important is country of origin to you when it comes to indigenous products such as pearl millet?
19. In which way does country of origin influence your decision to buy a product?

Consumer openness to new products

20. As a consumer how open are you to new products?
21. What will make you consider purchasing a new/unfamiliar product such as pearl millet?

SECTION F: Sentence completion exercise:

1. Behavioural beliefs: what do you want to see the producer/marketer/supplier do regarding an indigenous product such as pearl millet to help you make a decision on whether to purchase it or not.....?
2. Normative beliefs: I will purchase indigenous grains such as pearl millet based on.....?
3. Controlled beliefs: I will not purchase indigenous grains such as pearl millet when?

APPENDIX E: LANGUAGE EDITING CERTIFICATE

Between lines editing

Leatitia Romero
Professional Copy Editor, Translator and Proofreader
(BA HONS)

Cell: 083 236 4536
leatitiaromero@gmail.com
www.betweenthelinesediting.co.za

23 February 2021

To whom it may concern:

I hereby confirm that I have edited the article entitled: “Exploring the role attitude, perception and knowledge plays in consumers’ decision and intention to purchase pearl millet”. Any amendments introduced by the author hereafter are not covered by this confirmation. The author ultimately decided whether to accept or decline any recommendations made by the editor, and it remains the author’s responsibility at all times to confirm the accuracy and originality of the completed work.



Leatitia Romero

Affiliations

PEG: Professional Editors Group (ROM001)
EASA: English Academy of South Africa
SATI: South African Translators’ Institute (1003002)
SEEP: Society for Editors and Proofreaders (15687)
REASA: Research Ethics Committee Association of Southern Africa (104)