Functionally low-literate consumers' use of food labels in the rural area of Valspan in the Northern Cape of South Africa

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Acknowledgements

Summary

Functionally low-literate consumers may often struggle to complete everyday adult tasks, such as reading food labels. Food labels are an important source of information for consumers, and assist them to make informed and wise food purchase decisions. However, the manner in which functionally low-literate consumers read, understand and apply this information to their decision-making, is different to literate consumers, and minimal research has been conducted regarding functionally low-literate consumers and their use of food labels in South Africa. This study was conducted in a predominantly low-literate and low-income rural area of Valspan, South Africa. Therefore, using food labels to make healthy and financially sound food choices may be considered especially important for this group of consumers. The current study served to conduct an in-depth literature review of functionally low-literate consumers' use of food labels in a rural area; explore whether and how functionally low-literate consumers use (read, understand and apply to decision-making) food label information; explore and describe the differences between the demographic characteristics of low-literate consumers and their use (reading, understanding and application) of food labels; make recommendations to educators on how functionally low-literate consumers can improve their use of food labels in a rural area; as well as to make recommendations on how food labels can be adapted to be more user-friendly to functionally low-literate consumers. Data was collected, using 292 interviewer administrated questionnaires, using purposive criterion sampling. The inclusion criteria for respondents were that they: had to be older than 18 years, living in Valspan and must have completed between grades 5 and 8 at school. Data analysis was done, using descriptive statistics, T-tests, ANOVA's, Spearman's rank order correlations and two-way frequency tables. Effect sizes were taken into consideration for all differences and associations. The results showed that respondents in this study did read food labels. They were also able to understand some simple aspects of the food label, but struggled with other aspects. When respondents struggled to understand food labels, they were selective about who they would ask to assist them, favouring the help of familiar family members and friends. Regarding the respondents' ability to apply food label information to their decision-making, respondents were able to identify several store logos, probably due to their tendency to pictorial thinking. Food-related calculations were relatively well completed; however, certain calculation-related terminology was not well understood by respondents. Food label symbols were not well identified, indicating that respondents did not have a good understanding of the meaning of these symbols. Literacy is vital to the use of food labels, as respondents who showed higher literacy levels showed a tendency towards better understanding of food label information, food label symbols and store logos. They also tended to be better equipped to correctly execute product-related calculations. Regarding demographics, respondents who spoke English and Afrikaans and who had a higher income

had a tendency to better understand food label information, than respondents who spoke other languages and belonged to lower-income groups. If food labels are adapted, so that even low-literate consumers are able to efficiently use food labels, they will be able to make informed and wise food product choices. This situation would be beneficial to low-literate and low-income consumers, marketers and retailers, as products with usable labels may consequently become the preferred choice of low-literate consumers and money wary low-income consumers. Additionally, marketers and retailers would be able to capitalise on the mass purchasing power that this target market represents.

Key words

Consumer, food label, functionally low-literate, rural, label use

Opsomming

Lae-geletterde verbruikers mag dalk gereeld sukkel om daaglikse volwasse take te voltooi, soos byvoorbeeld, om voedseletikette te lees. Voedseletikette is 'n belangrike bron van inligting vir verbruikers en help verbruikers om ingeligte en wyse voedsel aankoopbesluite te neem. Die manier waarop lae-geletterde verbruikers egter die inligting lees, verstaan en op hulle besluitnemingsproses toepas, verskil van die van geletterde verbruikers en daar is nog min navorsing oor lae-geletterde verbruikers en hulle gebruik van voedseletikette in Suid-Afrika gedoen. Die studie is in die landelike Valspan area in Suid-Afrika gedoen, waar 'n groot hoeveelheid lae geletterde verbruikers met 'n lae inkomste woon. Om hierdie rede kan die gebruik van voedseletikette om gesonde en finansieel betroubare voedselkeuses te maak, dalk veral belangrik vir hierdie groep verbruikers wees. Die doel van die huidige studie was om 'n in-diepte literatuurstudie van die gebruik van voeldseletikette deur funksionele lae-geletterde verbruikers uit te voer; om uit te vind of en hoe funksionele lae-geletterede verbruikers die inligting op voedseletikette gebruik (lees, verstaan en op die besluitnemingsproses toepas); om die verskille tussen die demografiese eienskappe van lae-geletterede verbruikers en hul gebruik (lees, verstaan en toepassing op die besluitnemingsproses) van voedseletikette te verken en te beskryf; om aanbevelings te maak oor hoe opvoeders funksionele lae-geletterde verbruikers kan help om hul gebruik van voedseletikette in 'n landelike gebied te verbeter; asook om aanbevelings te maak oor hoe voedseletikette aangepas kan word om meer verbruikersvriendelik te wees vir funksionele lae-geletterde verbruikers. Die data is deur 292 vraelyste wat met behulp van onderhoudvoerders geadministreer was, ingesamel deur middel van doelgerigte, kriteriumsteekproefneming. Die insluitingskriteria vir respondents was: hulle moes ouer as 18 jaar wees; in Valspan gebly het, en tussen Graad 5 en 8 op skool voltooi het. Data-analise is deur beskrywende statistiek, T-toets, variansie analises, Spearman se rangorde korrelasies en tweerigting frekwensie tabelle uitgevoer. Effekgroottes is vir alle verskille en assosiasies in ag geneem. Die resultate het aangetoon dat respondente wel voedseletikette lees. Hulle het ook eenvoudige aspekte van die voedseletiket verstaan, maar het met moeiliker aspekte gesukkel. Wanneer respondente gesukkel het om etikette te verstaan, was hulle selektief oor wie hulle om hulp sou vra, en het die hulp van familie en vriende verkies. Met verwysing na die respondente se vermoë om die voedseletiket-inligting op hulle besluitneming toe te pas, is gevind dat respondente verskeie winkels se handelsmerke kon identifiseer, moontlik omdat hulle 'n neiging tot piktografiese denke het. Voedselverwante berekeninge was relatief goed uitgevoer, alhoewel respondente sekere berekeningsverwante terminologie nie goed verstaan het nie. Respondente kon ook nie voedselsimbole goed identifiseer nie, wat daarop dui dat die respondente nie 'n goeie begrip van die betekenis van die simbole gehad het nie. Geletterdheid is noodsaaklik vir die gebruik van voedseletikette, want respondente met

hoër geletterheidsvlakke, het ook 'n neiging tot beter begrip van voedseletiketinligting, simbole en winkelhandelsmerke getoon. Hulle was ook geneig om beter toegerus te wees om produkverwante berekeninge korrek uit te voer. Ten opsigte van demografie, het respondente wat Engels en Afrikaans gepraat het en 'n hoër inkomste gehad het, 'n neiging getoon om inligting op voedseletikette beter te verstaan, as respondent wat ander tale gepraat het en wat in laer inkomstegroepe was. Indien voedseletikette aangepas sou word sodat selfs lae-geletterde verbruikers die voedsletiket doeltreffend kan gebruik, sal hulle in staat wees om ingeligte en wyse voedelprodukkeuses te maak. Hierdie situasie sou voordelig vir lae-geletterde verbruikers, lae-inkomste verbruikers, bemarkers en kleinhandelaars wees, want produkte met bruikbare etikette, sal dalk die voorkeurkeuse vir lae-geletterde sowel as lae inkomste verbruikers word; terwyl bemarkers en kleinhandelaars op die massa aankoopkrag van hierdie teikenmark sou kon kapitaliseer.

Sleutelwoorde

Etiketgebruik, funksionele lae-geletterde, landelike, verbruiker, voeseletiket

Table of Contents

List of Annexures

List of Abbreviations

ANOVA - Analysis of Variance

HIV/AIDS - Human Immunodeficiency Virus/ Acquired Immune Deficiency Virus

IBM - International Business Machine

KMO - Kaiser Meyer Olkin

NWU - North West University

SA - South Africa

SD - Standard deviation

SPSS - Statistical Package for Social Sciences

UNESCO - United Nations Educational, Scientific and Cultural Organisation

UNICEF -United Nations International Children's Emergency Fund

List of Tables

List of Figures

1. CHAPTER 1: INTRODUCTION

1.1 Background and motivation

1.1.1 The South African consumer

In South Africa (SA), approximately 11% of household expenditure is used on food (Statistics South Africa, 2012a:42), indicating that food is an important component of consumers' budget. For consumers living in rural areas, budgets are usually restricted and selecting nutritious food products, which provide good value for money, may be considered less important. Therefore, consulting food labels, which are the primary link between consumers and products, may be recommended to provide information to assist in food selection (Sharf *et al.,* 2012:531).

The South African population represents a range of wealth and education (Prinsloo *et al.,* 2012:94), with the living conditions for consumers varying from wealthy urban areas to less developed, poor areas (Schönfeldt & Gibson, 2010:130; Steyn *et al.,* 2006a:259). This diversity has led to several issues prevalent in SA. Firstly, although the average annual income for South African households was R103 204 per annum for 2011, the lowest two quintiles (40%) of South African households receive no more than R10 009 per year (Statistics SA, 2012a:10, 41), suggesting a very low income for these consumers. A total of 69% of adult consumers in rural areas of SA live in poverty (UNICEF, 2010:7), indicating that the majority of consumers living in rural areas, struggle with a low-income. Secondly, in 2011, a nationwide study showed that 19.1% of South African individuals were functionally low-literate, with an education of grade 7 or less (Statistics SA, 2012b:39), implying that almost one fifth of South African consumers may experience difficulties with reading and writing. In this study, the term functional low-literacy also encompassed the definition of functional illiteracy. Thirdly, SA is challenged by malnutrition, which is influenced by low-income and functional low-literacy. Malnutrition is a condition that develops as a result of improper nutrient consumption and occurs in two extremes, namely, under and over nutrition (Bosman *et al.,* 2011:1372). The prevalence of malnutrition is concerning as many South Africans have inadequate knowledge to choose appropriate types and quantities of healthy foods (Temple & Steyn, 2011:507). This information therefore implies that not all consumers are equipped with the necessary literacy skills to read and understand the information that appears on food labels (Adkins & Ozanne, 2005b:101), to allow them to make informed decisions regarding food products.

Previous studies have focused on consumers' use (Hess *et al.,* 2011; Jacobs *et al.,* 2010; Kempen *et al.,* 2011) and understanding (Jacobs *et al.,* 2010; Sørensen *et al.,* 2012) of food

labels, of which those of Jacobs *et al.* (2010) and Kempen *et al.* (2011) were in a South African context. These studies were food label specific, and similar research by Viswanathan *et al.* (2009a) has investigated low-literate consumers' understanding and use of nutritional aspects of food labels. However, it has been proposed that further research regarding low-literate consumers' use of food labels is necessary (Jay *et al.,* 2009:30), especially in a South African context. Research investigating the connection between poverty and literacy has also been conducted (Krishna, 2006; Yagi, 2006); however, these studies were conducted in India. Nutrition interventions have previously been executed as part of various studies, targeting low-literate and malnourished consumers (Pappas *et al.,* 2008; Pigone *et al.,* 2004). However, social and economic causes, such as poor quality education and low-literacy, in low-income areas have not been addressed by such interventions (Chapora, 2003:645), which might contribute to malnutrition still being prevalent in SA. There is thus a lack of South African research specifically linking functionally low-literate consumers in a rural area to their use of food labels.

1.1.2   Functional low-literacy

In order for consumers to read and understand information found on food products, a specific literacy level is essential (Wallendorf, 2001:505). Literacy is directly related to simple reading, writing (Kirsch & Guthrie, 1977:488; Posel, 2011:41) and calculation tasks (Adkins & Ozanne, 2005b:93), through which literate consumers are able to process and analyse information using critical thinking skills in order to function in today's society (Ntiri, 2009:98; Wallendorf 2001:505). Consequently, consumers with lower literacy skills may experience a poorer understanding of written information (Rothman *et al.,* 2006:392) due to their inability to process and critically analyse information. These consumers are often termed functionally low-literate as they do not have the competency to complete tasks for adequate everyday adult functioning (Kirsch & Guthrie, 1977:488; White, 2011:132), such as reading food labels. This study therefore, specifically targeted functionally low-literate consumers, as this group of consumers experience literacy problems, which could also possibly cause problems with food label use.

1.1.3   Food labels

A food label can be described as information that is written, printed or otherwise attached to a food product (South Africa, 2010:10). Food labels are often considered the most effective source of information to acquire food knowledge (Ali & Kapoor, 2009:725), and, as an external

source of information, aids in-store decision-making to select suitable food products (Barreiro-Hurle *et al.,* 2010:427), by allowing consumers freedom of choice, independent decisions and reducing the effort required to search for product-related information (Barreiro-Hurle *et al.,* 2010:427; Sharf *et al.,* 2012:531).

Consumers generally do not have a good understanding of food label information (Barreiro-Hurle *et al.,* 2010:426) and consequently labels have limited significance for consumers who cannot comprehended and interpret the information, which is prevalent with less literate and educated consumers (Prinsloo *et al.,* 2012:91). These consumers may be disadvantaged with regard to food labels, specifically in reading and understanding the information (Cowburn & Stockley, 2005:24), whereas the ability to use such information would assist them to make suitable, healthy and reasonable food product choices. This study investigated functionally low-literate consumers who might experience difficulty reading, understanding, and applying information found on food labels to their decision-making, with the aim to develop suggestions which will assist these consumers in their use of food labels, in order for them to be able to make more informed food-related decisions in the future.

1.1.4   Functionally low-literate consumers' use of food labels

Reading a food label is an activity with which many functionally low-literate consumers may struggle to apply and engage with (Cooter, 2006:698). Food labels are an essential tool which can be used to assist decision-making (Howard & Allen, 2006:439). A consumer's level of literacy can be viewed as a cognitive, multi-faceted indicator, involving the ability to draw critical, logical conclusions when using written information (Van Staden, 2012:7) as found in food labels. However, literacy cannot be referred to as only a cognitive function, but the social context, such as the retail environment, in which literacy is applied, is also important (Adkins & Ozanne, 2005a:153). Therefore, functionally low-literate consumers who struggle to read food labels may be at a disadvantage when acquiring food product information and making food related decisions.

For functionally low-literate consumers, shopping is often a stressful activity, and they may experience several challenges when interpreting information on food products (Adkins & Ozanne, 2005a:153; Viswanathan *et al.,* 2005:23). These challenges can be regarded as cognitive, product, social and affective-related (Gau & Viswanathan, 2008). When faced with

challenges, consumers may try to manage external and internal demands (Lazarus & Folkman, 1984:141), as will be shown in this study, where the store environment (external) and low-literacy (internal) are combined in order for low-literate consumers to be able to act as capable consumers (Hamilton & Catterall, 2008:551; Viswanathan, 2009:46).

Specifically, regarding cognitive challenges, low-literate consumers may use concrete reasoning and pictorial thinking (Schiffman & Kanuk, 2010:493; Viswanathan, 2009:45; Viswanathan *et al.,* 2005:19,21) when in the retail environment. Concrete thinkers use single pieces of information on which to base decisions, without giving attention to remaining product attributes (Schiffman & Kanuk, 2010:493; Viswanathan, 2009:45). Pictorial thinking can be described as attaching an analogical meaning to information or content (Kunda & Goel, 2008:305) and research has shown that consumers with lower literacy levels often use information indicators, such as pictures or images to process information (Adkins & Ozanne, 2005b: 96; Viswanathan *et al.,* 2005: 21), instead of reading the information. Typical cognitive challenges may include trouble with writing shopping lists (Viswanathan *et al.,* 2008:303) and reading in-store signage, locating products (Viswanathan, 2009:45) and reading nutritional information (Viswanathan *et al.,* 2009a:137). Coping strategies often applied to these challenges include dependency on people (for example, friends and store personnel) to assist with shopping (Adkins & Ozanne, 2005a:155; Ozanne *et al.,* 2005:259; Viswanathan & Gau 2005:189), shopping at familiar stores (Viswanathan *et al.,* 2005: 25; Gau & Viswanathan, 2008), and trusting the cashier with all available money and hoping to receive the correct change (Viswanathan *et al.,* 2005:24; Viswanathan & Gau, 2005:189).

Product-related challenges include aspects involved in product comparison (Gau & Viswanathan, 2008; Viswanathan *et al.,* 2009a:136), and are related to interpreting numerical nutritional information (Borgmeier & Westenhoefer, 2009:185; Maubach *et al.* 2009:297) and comparing product weight, size and prices (Gau & Viswanathan, 2008; Viswanathan *et al.,* 2009a:136). Popular product-related coping strategies may include adopting the same in-store behaviour as literate consumers (Viswanathan, 2009:46), evaluating a product, following only one attribute (Viswanathan & Gau, 2005:189), and exhibiting increased brand loyalty to prevent reading the information of new and unfamiliar products (Sridharan & Viswanathan, 2008:457).

Social related challenges are associated with consumer relationships (Schiffman & Kanuk, 2010:118), such as interaction with hostile sales personnel (Gau & Viswanathan, 2008) and exploitation by store owners (Ozanne *et al.,* 2005:256; Viswanathan *et al.,* 2008:302).

Functionally low-literate consumers cope with these types of challenges through using sight vocabulary (recognising words as pictures) to hide poor literacy skills (Ozanne *et al.,* 2005:258; Sabatini *et al.,* 2010:129), and by often faking a headache or poor eye sight when unable to read product information (Adkins & Ozanne, 2005b:98).

Affective-related challenges are related to emotions (Viswanathan *et al.,* 2005:16), such as consumers experiencing fear that their limited literacy skills will be exposed and also experiencing emotional stress such as embarrassment and shame (Ozanne *et al.,* 2005:256), or anxiety and decreased self-esteem (Viswanathan *et al.,* 2005:23). Common coping strategies used to cope with affective challenges include avoiding asking for help, to prevent embarrassment (Viswanathan *et al.,* 2008:303; Viswanathan *et al.,* 2010:530).

Previous research shows that functionally low-literate consumers clearly experience challenges in the marketplace, not only with reading and writing, related to shopping tasks, but also challenges involving store relationships and paying for products (Gau & Viswanathan, 2008). Although functionally low-literate consumers apply coping strategies to deal with such challenges, in-store decision-making may not be competently completed. Therefore, this study explored functionally low-literate consumers' use of food labels, in addition to the challenges experienced in the food retail environment and the coping strategies that they use.

1.1.5   Malnutrition in South Africa

Globally, and especially in Africa, many communities experience malnutrition (Bosman *et al.,* 2011:1372). Malnutrition is a condition primarily caused by an excessive or deficient intake of energy or nutrients, as well as by diseases (Black *et al.,* 2008:248; Whitney & Rolfes, 2008:20). Although over nutrition (excessive intake of energy/nutrients) is common in rural SA (Kimani-Murage *et al.,* 2011:1114), the present study focused on malnutrition regarding energy and nutrient deficiency. The HIV/AIDS pandemic in South Africa has also led to an increase in malnutrition in South African children (Bourne *et al.,* 2007:234), as HIV/AIDS have a synergistic relationship with malnutrition (Bloem *et al.,* 2010:134S). Underlying causes of malnutrition in SA are household food insecurity and the quality of the diet (Kimani-Murage *et al.,* 2010:165), a limited variety in food and diet (Steyn *et al.,* 2006b: 648), as well as inadequate care, an unhealthy household environment and poverty (Black *et al.,* 2008:248).

The consequences of malnutrition are far reaching (Bosman *et al.,* 2011:1377), since they contribute to 60% of deaths in children under five years old, primarily in rural areas in SA (UNICEF, 2012a:6,9). Malnutrition sufferers may experience underdevelopment as well as related health problems and micronutrient deficiencies (Faber & Wenhold, 2007:393). Malnutrition is also the cause of diseases, stunting, wasting, reduced growth (Black *et al.,* 2008:343), reduced intellectual ability, and weakened immune systems (UNICEF, 2012b:26). The outcome of failing to successfully address malnutrition in SA may result in malnourished children who are unable to perform optimally throughout their school career and subsequently earn a lower income (Victoria *et al.,* 2008:348), which, in turn, contributes to continued poverty in SA (Alkire & Foster, 2011:485). This also affects food purchasing behaviour (Sanlier & Karakus, 2010:141), as low-income households are unable to afford nutritious foods in the correct quantity and quality.

National efforts to address the problem of malnutrition in SA have been undertaken by focusing on the encouragement of good nutrition and a healthy lifestyle (Bourne *et al.,* 2007:231). The National Food Consumption Survey (NFCS), completed in 1999, indicated that many South African children lack a diet containing sufficient energy and nutrients (Labadarios *et al.,* 2005:104) whilst Steyn *et al.* (2006a:273) suggests that insufficient diets are more prevalent among children living in rural areas. Another initiative that targeted primary school children was the National School Nutrition Programme (NSNP), which aimed to improve the health and nutritional status of these children, to enable them to attend school and learn effectively (Public Service Commission, 2008:viii). The Integrated Food Security and Nutrition Programme (IFSNP) aimed to eliminate hunger, malnutrition and food insecurity by 2015, through ensuring that all South Africans had physical, social and economic access to safe and nutritious food (South Africa, 2012).

However, the continued prevalence of malnutrition suggests that the nutrition interventions and studies completed thus far have been inadequate to alleviate food insecurity and malnutrition in SA (Kimani-Murage *et al.,* 2010:169). The present study aimed to explore consumers' use of food labels in a rural area to determine if functionally low-literate consumers used food labels in their decision making, through reading and understanding and applying the information found on food labels. Results of this study may provide consumer scientists, educators, marketers and other food industry role players with information, ideas and suggestions as to how a food label can be used as an information source, to make healthy food choices and contribute to malnutrition prevention in the future.

1.1.6   Low-income rural South Africa

Valspan is a rural community, situated in Jan Kempdorp, on the border of the Northern Cape and western area of the North West Province, with approximately 2000-5000 residents (Collins Maps, 2012). The Valspan community is officially located in the Northern Cape (Maplandia, 2005). In general, consumers living in rural areas have low monthly incomes, as well as low literacy levels (Van Biljon & Jansen van Rensburg, 2011:9549; Vorster *et al.,* 2005:480) and experience high rates of malnutrition (Faber & Wenhold, 2007:396).

In a needs assessment, conducted by Coetzee (2011:17), problematic issues in this community were highlighted by consumers living in the Vaalharts area, which includes Valspan. It was noted that there is a need for reading and writing programmes, especially among the older, illiterate generations, due to limited access to education. Such programmes can uplift the current illiteracy rates present in the communities (Coetzee, 2011:20; Posel, 2011:39). This finding is of importance, as it has been suggested that low literacy and poor socio-economic circumstances can be related to poor health (Nutbeam, 2008:2072). Poverty and high unemployment rates were also visible throughout the Vaalharts area (Coetzee, 2011:20), which could be a direct result of poor education. Low-income consumers do not hold much individual purchasing power, and because of their restricted budgets, often do not have the means to purchase healthy, high quality foods (Maubach *et al.,* 2009:298). Furthermore, as low-income consumers are often also low-literate, they may possibly make uninformed purchase decisions. Therefore, food labels should be presented in a format which all consumers can understand, even consumers with limited literacy skills and income, living in the rural Valspan area, to enable them to select appropriate food products that are nutritious and will provide the best value for money (Viswanathan *et al.,* 2009b:85).

Therefore, the demographic profile of functionally low-literate food label users in this area was also explored, in order to determine the possible connection between food label use, gender, age, monthly income and education level.

1.1.7   Food labels as a tool for improving decision-making

It is important to note that food labels have the potential to impact consumers, both on an individual and community level, and should be considered a public health tool (Sharf *et al.,* 2012:534). However, consumers who are well aware of food labels do not necessarily adopt healthy dietary behaviour (Lewis *et al.,* 2009:1357), and in order to change their habitual

preferences, it is essential that nutritional information is available in an accessible format (Maubach *et al.,* 2009:301). This is even more important for consumers who experience limited literacy skills.

Consumers make food-related decisions daily and it is through the decision-making process (Rousseau, 2007:259) that consumers select which products they need, buy and use (Cant *et al.,* 2006:193; Schiffman & Kanuk, 2010:478). The decision-making process usually follows a sequential order, beginning with need recognition, information search, evaluation of alternatives (pre-purchase decision-making), selection of the product, and concluding with post purchase evaluation (post-purchase decision-making) (Schiffman & Kanuk, 2010:483). It must be noted that functionally low-literate consumers follow unique decision-making processes and may evade some of the stages, such as the pre-purchase search and evaluation of alternatives stages (Viswanathan, 2009:46). The summary below indicates how the information on food labels can be applied at each stage of the decision-making process:

•   Stage 1 – Need recognition. According to Maslow's hierarchy of needs, food is a basic physiological need (Schiffman & Kanuk, 2010:116), triggered by an inner hunger and need for food. However, when consumers are exposed to and see a certain stimulus, the stimulus may trigger a need (Schiffman & Kanuk, 2010:175). An example of such a stimulus is a food label, which may trigger a need for healthy food. Similarly, consumers may have a need to search for information which may allow them to make informed food choices (Jacobs *et al.,* 2010:511), which can be evoked/ recognized by exposure to a food label.

•   Stage 2 – Information search. An effective way to gain food knowledge is to read a food label (Ali & Kapoor, 2009:725), as labels can provide information regarding the product, such as brand name, nutritional content and expiry date. Nutritional information should be presented in a way that it requires little conscious effort and knowledge from the consumer to understand the label (Maubach *et al.,* 2009:297), even so for functionally low-literate consumers.

•   Stage 3 – Evaluation of alternatives. Information found on the food label can be used to evaluate alternative products. Improved understanding of basic nutritional principles reflected on food labels (Sharf *et al.,* 2012:534) and illustrating how food labels should correctly be used, may also assist in encouraging consumers to adopt healthier dietary behaviour (Lewis *et al.,* 2009:1356), such as evaluating products based on nutritional value, not size or colour.

8

•   Stage 4 – Alternative selection. Through label information and education, consumers should be equipped to select more diverse and nutritionally adequate foods (Altman *et al.,* 2009:359), which could also play a role in preventing malnutrition.

•   Stage 5 – Post-purchase evaluation. It is important that consumers are able to read the food label at this stage so that information, such as the expiry date, which indicates the period of time the product is safe to eat (Mackey & Metz, 2009:375; Peters-Texeira & Badrie, 2005:512), is recognised. The comprehension of such information may then assist in ensuring optimal use and value from the product.

Food labels are involved in every aspect of consumers' food related decisions and therefore this study explored functionally low-literate consumers' reading, understanding and application of food label information, in their decision-making.

1.2 Problem statement

Minimal research has been conducted in South Africa, regarding functionally low-literate consumers' use of food labels in a rural area, which has led to a lack of information in this field. Malnutrition and functional low-literacy are issues in South Africa – especially in low-income, rural areas – and the former can be alleviated through the consumption of nutritious, healthy foods. Food labels are a source of information, with the potential to assist consumers to make healthy food choices, since consumers are exposed to these labels on a daily basis. However, being equipped to comprehend food label information is essential to allow consumers to make informed decisions. Unfortunately, some functionally low-literate consumers are unable to read and effectively comprehend the information found on food labels. Such low-literate consumers may experience cognitive, product-related, social and affective challenges when entering the retail environment, and apply coping strategies to attempt to cope with these challenges, to present themselves as competent consumers. Therefore, low-literate consumers may be unable to effectively assess a food product or select the most nutritious product for the best value for money, thus putting them at a disadvantage, when compared to functionally literate consumers.

1.3 Research questions

With reference to functionally low-literate consumers' use of food labels, the following research questions will guide this study:

•   Do functionally low-literate consumers read food labels and, if so, when?

•   Do functionally low-literate consumers understand food labels?

•   Do functionally low-literate consumers apply the information found on food labels to their decision-making and post purchase evaluations and, if so, how?

•   Are there differences between the use (reading, understanding and application) of food labels for low-literate consumers with different demographics?

•   Are there ways in which functionally low-literate consumers' use of food labels in a rural area can be improved?

1.4   Aims and objectives

1.4.1   Aim

The main research aim of this study was to explore and describe functionally low-literate consumers' use of food labels in the rural area of Valspan in the Northern Cape of South Africa.

1.4.2   Objectives

The specific objectives of this study were to:

•   Explore and describe whether and when functionally low-literate consumers read food labels;

•   Explore and describe functionally low-literate consumers' understanding of food labels;

•   Explore and describe whether and how functionally low-literate consumers apply the information found on food labels during their pre- and post-purchase decision-making;

•   Explore and describe the differences between the demographic characteristics of low-literate consumers and their use (reading, understanding and application) of food labels;

•   Make recommendations to educators on how functionally low-literate consumers can improve their use of food labels in a rural area; and

•   Make recommendations on how food labels can be modified to be more user-friendly to functionally low-literate consumers.

1.5   Conceptual framework

The conceptual framework presented in Figure 1 serves as a guide to the dissertation. It provides different concepts of functional low-literacy, food label use and recommendations; showing how these concepts fit together in this study.

```
                                          ┌──────────────────────────┐
                                          │  FUNCTIONALLY LOW-       │
                                          │  LITERATE CONSUMER       │
                                          └──────────────────────────┘
┌──────────────────────────────┐                      │
│ Functional low-literacy       │                     │
│                                │                     ▼
│   • Literacy level            │──────────▶┌──────────────────────────┐
│                                │           │      Food labels         │
│   • Rural area                │           └──────────────────────────┘
│                                │                     │
│   • Income (Low)              │                     ▼
└──────────────────────────────┘           ┌──────────────────────────┐
                                            │ Food label use           │
                                            │                           │
                                            │   • Reading               │
                                            │                           │
                                            │   • Understanding         │
                                            │                           │
                                            │   • Application of        │
                                            │     information to        │
                                            │     decision-making       │
                                            └──────────────────────────┘
                                                      │
                                                      ▼
                                            ┌──────────────────────────┐
                                            │ Recommendations          │
                                            │   • Food industry         │
                                            │   • Consumers             │
                                            └──────────────────────────┘
```
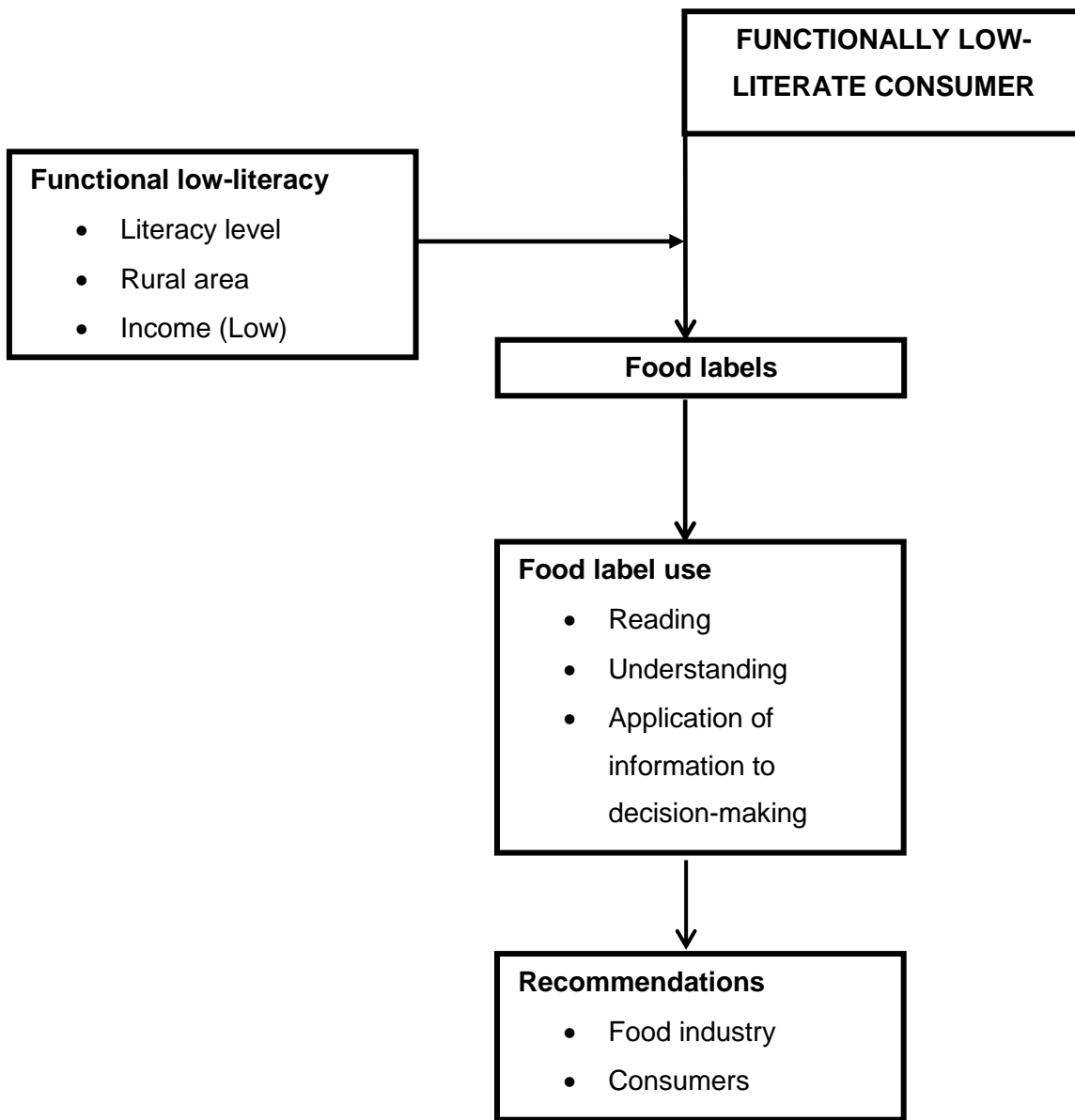
Figure 1: Conceptual framework: The use (reading, understanding and application of information to decision-making) of food labels by functionally low-literate consumers in a rural area.

As shown in Figure 1, functional low-literacy is associated with literacy level, residing area which in this case is a rural area and the socio-economic status (low-income). These factors affect the food label use. This study and subsequent chapters show the interrelation between these factors.

1.6   Concept clarification

Consumer

A person who recognises a need or desire, makes a purchase and disposes of a product (Solomon, 2011:647).

Consumer application of food labels

Application to decision-making is associated with how consumers employ the information provided on a food label, to make decisions and post-purchase evaluations.

Food label

A food label is any means written, printed, or permanently attached to a food product through a tag, brand, mark, pictorial, graphic or other descriptive matter, with the purpose of promoting the foodstuffs' sale or disposal (South Africa, 2010:10).

Food label attributes

Food label attributes include the physical attributes (product dimensions, legibility of font size and style) and label information which transfers attributes such as the ingredient list, expiry date, health and nutrition-related claims, nutritional information, country of origin, allergen information, logos, identification and address of the manufacturer, quality guarantee, instructions for use, number of servings (Prinsloo *et al.,* 2012:93)

Food label use

For the purpose of this study, the term food label use will include three components, namely, reading, understanding and applying of food label information.

Functional literacy

Functional literacy is the term used to describe the competency required to complete individual and community related tasks, required for everyday adequate adult functioning (Kirsch & Guthrie, 1977:488; UNESCO, 2006:154), in addition to using reading, writing and calculation to further personal development (UNESCO, 2006:154).

Functional low-literacy

School qualification can be used as an indicator of functional literacy, as grade 7 or lower represents functionally low-literate consumers (Statistic South Africa, 2012b:39). It is important

to consider that there is no finite demarcation to define consumers as literate or non-literate and that the connection between low literacy and literacy, rather, is a continuum (Mårtensson & Hensing, 2012:156; Stedman & Kaestle, 1987:10).

Literacy

The definition of literacy involves reading and writing and includes information processing and critical thinking skills required by consumers to function in the modern marketplace (Ntiri, 2009:98; Wallendorf, 2001:505).

Rural area

A rural area is regarded as a formal or semi-formal village or settlement without a local authority and is characterised by houses, huts and rondavels (Statistics South Africa, 2003:4), a lack of socio-economic development, infrastructure, opportunities for employment and income generation (Kehler, 2013:46), as well as malnutrition (Kimani-Murage *et al.,* 2010:165) and high HIV/AIDS rates (Bärnighausen *et al.,* 2008:142).

Reading

Reading comprises of two components: word recognition (which converts print into language) and language comprehension (which makes sense of the printed information) (Catts *et al.,* 2006:279).

Understanding

The ability to comprehend, know or grasp the intended meaning of information presented (Cowburn & Stockley, 2005:22).

1.7   Structure of the dissertation

This dissertation is presented in article format. **Chapter 1** provides an introduction to the study and contains the background and motivation of the study, as well as the conceptual framework, problem statement, aim and objectives. Literature review regarding literacy in South Africa, food labels, the low-literate consumer and low-income, rural South Africa is provided in **Chapter 2. Chapter 3** consists of a research article, which was written and is to be submitted to the *International Journal of Emerging Markets*, and contains an overview as well as the results of the study. The format and references for this article were done in accordance with the journal's editorial and referencing guidelines. The dissertation is concluded in **Chapter 4,** with a summary of the results. The limitations of the study are also discussed and recommendations for future research are made. Each chapter contains a reference list, written according to the Harvard referencing style, as required by the North-West University. Additionally, **Annexures,** such as an overall in-depth description of the study's research methodology. For comprehensiveness, the questionnaire and show cards, letter of consent, additional information, findings and results are also attached (see Annexures).

1.8   Authors' contributions

The study reported in this dissertation was designed and conducted by a team of researchers. The contribution of each researcher is given in Table 1 below:

Table 1: Authors' contribution to the study.

NAME	ROLE IN STUDY
Miss F. Irvine	Author, responsible for literature research and adaption of questionnaire and further questionnaire development, the gathering and interpretation of data, and preparation of this dissertation.
Prof M. van der Merwe	Supervisor: Study leader and co-author, supervising of literature research and questionnaire development, interpretation of results, as well as completion of this dissertation. Provided funding for statistical analysis and assisted in obtaining additional funding for this study.
Prof M.J.C. Bosman	Co-supervisor: Co-study leader and co-author, supervising of literature research and questionnaire development, interpretation of results, as well as completion of this dissertation.
Dr H. van Staden	Co-supervisor: Co-study leader and co-author, supervising of literature research and questionnaire development, interpretation of results, as well as completion of this dissertation.
Dr S. Ellis	Co-author of research article: Responsible for all data analyses as well as interpretation of data and results.

The following is a statement from the co-authors, confirming their individual role in the study and giving their permission that the article may form part of this dissertation.

I declare that I have approved the article included in this dissertation, that my role in the study, as indicated above, is representative of my actual contribution and that I hereby give my consent that it may be published as part of the Magister in Consumer Sciences' dissertation of Ms. F. Irvine.

_____   _____

Fay Irvine   Prof M. van der Merwe

Student   Supervisor

_____   _____

Prof M.J.C. Bosman   Dr H. van Staden

Co-supervisor   Co-supervisor

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Dr S.M. Ellis

Co-author of the research article

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2. CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

South Africa (SA) is a diverse, multicultural and multilingual country (Jacobs *et al.,* 2010:510; Mubangizi & Mubangizi, 2005:277). The South African population - speaking 11 official languages - represents a range of wealth and education (Nel *et al.,* 2012:920, Prinsloo *et al.,* 2012:94). South Africa is a unique country in that the living conditions vary widely, ranging from wealthy urban suburbs to less developed, poorer rural areas (Schönfeldt & Gibson, 2010:130; Steyn *et al.,* 2006:259). Consumers in rural areas are predominantly less wealthy than their urban counterparts and it is common that consumers living in such areas are often classified in lower socio-economic groups, where both monthly income and literacy levels are low (Howells *et al.*, 2005:1835; Van Biljon & Jansen van Rensburg, 2011:9549; Vorster *et al.,* 2005: 480) (Figure 1). In poorer areas, malnutrition is present (Oldewage-Theron & Slabbert, 2008:96), particularly in rural areas (Faber & Wenhold, 2007:396). People who experience malnutrition are prone to micro-nutrient deficiencies which may cause health problems, such as physical underdevelopment (Faber & Wenhold, 2007:393) and poor cognition (Whitney & Rolfes, 2008:606). Therefore, literate or low-literate, urban or rural, wealthy or poor, healthy or malnourished, South Africans share the common need to make informed food choices (Jacobs *et al.,* 2010:510).

Food related behaviour fulfils a variety of functions, namely, communicating culturally and socially acceptable behaviour and values, satisfying nutritional needs and providing emotional comfort (Whitney & Rolfes, 2008:4). Food purchases, which often comprise the majority of a household's income, are important to consumers' physical, social, emotional and cultural well-being (Prinsloo *et al.,* 2012:94; Schönfeldt & Gibson, 2010:128; Von Braun, 2008:32). Food labels are a primary source of information that provide product-related information (Campos *et al.,* 2011:1496; Kempen *et al.,* 2012:20) and, specifically, nutritional information which is important for consumers when comparing products and making informed, nutritionally appropriate purchase decisions (Grunert & Wills, 2007:385; Kempen *et al.,* 2012:20). For this reason, food labels fulfil an integral role in consumers' everyday lives. For consumers to be able to use a food label, a certain level of literacy is required, in order to read and interpret the information presented (Kumar *et al.,* 2010:314).

The term literacy encompasses not only competency in reading and writing (Kirsch & Guthrie, 1977; Posel, 2011:41), but also being able to make mathematical calculations (UNESCO, 2006:155). Due to South Africa's unique history, the consequence of the apartheid era is that many adults experience low levels of literacy (Posel, 2011:39), which can be problematic in a society where reading and writing form the basis of many everyday tasks. Functional literacy is the term used to describe the competency of an adult to complete tasks for adequate, everyday functioning (Kirsch & Guthrie, 1977:488), for example, the use of written information (Wallendorf, 2001:505), such as the information found on food labels which can be used to assist in making informed and healthy food related decisions. Despite potential benefits related to food labels, many consumers do not use food label information provided, and difficultly in comprehending food label information has been marked as a primary barrier to food label use, specifically in consumer groups where literacy levels are low (Jay *et al.,* 2009:25).

A definite link between low-literacy and malnutrition has been identified (Nutbeam, 2008:2072) and, in the past, there have been nutrition interventions, targeting poor and malnourished consumers. However, such interventions have failed to address the wider causes of malnutrition, such as social and economic causes (Chapora, 2003:645), which may include a lack of education and low-literacy in low-income areas. Additionally, previous studies have focused largely on literate consumers, and research investigating the association between the use of nutritional information on food products and literacy is almost non-existent (Viswanathan *et al.,* 2009a:135). It is evident therefore that further food label research should be conducted, which takes consumers' knowledge, preferences and problems experienced into consideration (Prinsloo *et al.,* 2012:94).

A food label related problem that South African consumers experience is the difficulty in understanding information on food labels (Jacobs *et al.,* 2010:520; Kempen *et al.,* 2011:70). Low-literate consumers' use and understanding of food labels, as well as their behaviour in the retail environment (Gau & Viswanathan, 2008; Sabatini *et al.,* 2010:122), specifically in less wealthy markets (Van Biljon & Jansen van Rensburg, 2011:9548), is limited. It is important to investigate the food buying behaviour of this group of low-literate consumers, as they contribute to the larger group of consumers in SA holding much of the purchasing power (Hanushek & Woessmann, 2008:653). This review of literature aims to encompass all the themes mentioned in the theoretical framework (Figure 2), in order to illustrate how functionally low-literate consumers, who live in rural areas, cope with the challenges surrounding daily food purchases, and further to highlight the importance of literacy, in order to make optimal food choices to

prevent malnutrition. Although care was taken to include the most recent research in this area, some classic sources were also incorporated for comprehensiveness.

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                    ┌─────────────────────────────────┐
                    │  FUNCTIONALLY LOW-LITERATE       │
                    │          CONSUMERS               │
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FUNCTIONALLY LOW-LITERATE CONSUMERS

- Challenges encountered by functionally low-literate consumers and coping strategies applied.
  - Cognitive
  - Product related
  - Social
  - Affective
- Cognitive predilections of functionally low-literate consumers
  - Pictorial thinking
  - Concrete thinking
- Consumer decision-making
  - Types of decisions

LITERACY

- Literacy in SA
- Causes of low-literacy in SA
- Literacy measured

FOOD LABELS

- Food label attributes
- Consumers' food label knowledge
- Consumers' use of food labels
  - Reading
  - Understanding
  - Application

RURAL AREAS

- Rural areas in South Africa
- Vaalharts rural community
- Malnutrition
- Low-income consumers

Figure 2: Theoretical framework to illustrate the connection between functionally low-literate consumers, food labels and rural areas.

This theoretical framework (Figure 2) serves to orientate the reader to the study. The role of literacy and food labels, the behaviour of functionally low-literate consumers, the state of literacy in SA and the measurement thereof, will be addressed in more detail in the literature review. This review serves to discuss food labels and food label attributes in general, and to investigate functionally low-literate consumers' use of food labels (which include using reading,

understanding and application). In addition to challenges that these consumers may encounter in the retail setting, the coping strategies they apply to manage (cope with) these challenges, as well as the cognitive predilections and relevant decision-making approaches of functionally low-literate consumers, will also be addressed. An overview of rural areas in SA is presented, with the focus on the Valspan rural community in which the study was conducted. Malnutrition and low-income consumers are also discussed, as these issues are often associated with rural areas.

2.2   Literacy

2.2.1   Literacy defined

The term literacy has encompassed the connection between basic reading and writing competencies (Kirsch & Guthrie, 1977:488; Posel, 2011:41). However, the definition of literacy no longer involves simply reading and writing, but rather includes information processing and critical thinking skills required by consumers to function in the modern marketplace (Ntiri, 2009:98; Wallendorf, 2001:505). Global innovation and development has led to new literacy spheres, such as financial literacy, media literacy, computer literacy and health literacy (Ntiri, 2009:98). Furthermore, literacy cannot be isolated from social (Bengtsson & Firat, 2006:375), cultural and political contexts in which it functions (Ntiri, 2009:98). Shared cultural and social factors differentiate people from different cultures from one another. These values are often facilitated by language (Rousseau, 2007b:48) and the attitudes and values associated with reading will affect home, school, work and community literacy, as well as the materials and practices used to teach others about literacy (Pretorius, 2002:170).

2.2.2   Literacy in South Africa

To be functionally literate is important because of consumers' dependence on the use of text and processing of information (Wallendorf, 2001:505), which allows them to fully participate in society – both economically and socially (Nutbeam, 2008:2072). Literate consumers are able to obtain employment, acquire transport and cope with economic necessities (Kirsch & Guthrie, 1977:490) better, and with more control than non-literate consumers (Nutbeam, 2008:2072). Literacy also ensures that consumers are able to learn facts, encourages the development of general knowledge and assists in learning certain procedures and related skills (Abdi & Cleghorn, 2005:7). Such procedures and skills may include those carried out when purchasing

food, such as reading food label information, comparing different products and paying for selected items.

According to the results of the census that took place in 2011, there were approximately 51.8 million consumers living in SA (Statistics South Africa, 2012:14). Of these consumers, 8.6% adults aged 15 years and older had not received any formal education, while 19.1% had only completed formal education of Grade 7 or less (Statistics South Africa, 2012:39). This indicates that, for many South African adults, education and consequent literacy levels are low, which places SA in a predicament as many adults are not suitably equipped to complete everyday adult tasks.

Low-literacy levels are found among all racial groups in SA, but significantly more among black adults (Posel, 2011:40; Statistics South Africa, 2012:39). With regard to the nine provinces in SA, the Eastern Cape has the highest level of functional low-literacy (26,4%), whilst the Northern Cape has the third highest functional low-literacy rate at 26% (Statistics South Africa, 2012:39), implying that these provinces may require interventions to improve literacy education the most. Female consumers exhibit higher percentages of functional low-literacy than males (Statistics South Africa, 2012:39), which is of importance seeing that in many households, females are primary caregivers, responsible for household food purchases and preparation (Lake *et al.,* 2006:483; Patel *et al.,* 2006:39). If a caregiver is unable to read or interpret product information, such as food label information, it may result in poor decision-making (Wallendorf, 2001:509), substandard food product choices and consequent poor nutrition. The South African society is multilingual, and to read product information that is mostly provided in English (South Africa, 2010:15), which is often not the mother tongue for many South Africans (Pretorius, 2002:174), may be difficult for these consumers. Furthermore, consumers' attitude or motivation towards reading will determine the level of motivation they have to read, (Morgan & Fuchs, 2007:177), for example, information on food labels.

2.2.3   Causes of low-literacy in South Africa

The possible causes of low-literacy levels in SA are multi-dimensional. In previously disadvantaged schools, learning and teaching quality was influenced by factors such as under-qualified staff and poor infrastructure (Posel, 2011:40). Another issue which has led to current literacy problems, is the failure of education departments to provide quality services to schools,

such as the timely delivering of textbooks (Bornman *et al.,* 2013:26,31). In some South African schools, text books are a scarce resource and can possibly result in poor reading development (Van der Berg, 2008:148), and consequent low-literacy levels. The student-teacher ratio can also be considered a factor leading to low-literacy (Posel, 2011:40), as the average ratio is 31 students to one teacher in schools across SA (UNESCO, 2010). In the past, the ratio was as high as 41 students to one teacher in black schools in 1989 (Kirlidog & Zeeman, 2011:49), which is applicable today, as it is the students educated in previous years who represent functionally low-literate adult consumers today. However, specifically in rural schools, it has been reported that 60% of rural school teachers teach classes of 46 students or more (Phurutse, 2005:5). It must be noted that these are average values, and it is probable that there are and were classes of both smaller and bigger sizes than what the average values suggest. Additionally, some South African schools still do not have access to electricity (Bornman *et al.,* 2013:9) and, consequently, light, which may affect the children's' ability to productively work in the classroom.

Language is another obstacle that contributed to low-literacy levels in SA. Minimal printed texts are available in African languages, with English text books and learning material dominating the market (Setati, 2008:106), resulting, in many cases, that learners are taught in a language different to the one most frequently spoken at home (Hornberger & Vaish, 2009:305). Additionally, parents play an important role in assisting their children with homework and influence their reading abilities too (Law, 2008:41) as some may not be able to assist with homework involving basic reading, writing and calculations. Moreover, it is often black African children who are brought up in cultures where an oral language culture is encouraged, where stories are not read from books but rather passed on from generation to generation by word of mouth (Pretorius, 2002:190). Culture is important in communicating values, beliefs and customs to guide consumers to behave in culturally acceptable ways (Schiffman & Kanuk, 2010:366), and although verbal story-telling may still lead to learning, the lack of exposure to written content may hinder literacy development.

Many rural, low-income households in SA lack modern sources of energy to provide heat and light in their homes (Javidi *et al.,* 2013:403). These households, which do not have access to electricity, may result in homework and reading after dark becoming problematic (Fleisch, 2008:51), which could discourage learners from reading and improving their literacy skills. As a result of poverty, consumers may be prone to consuming fewer nutritious foods, which makes

listening, learning and concentrating challenging (Jansen, 2013:24). Consequently, poverty can also be considered a contributing factor responsible for low levels of literacy in SA.

2.2.4 Literacy measurement

Literacy can be measured, using level of education, such as the number of school years completed (Kirsch & Guthrie, 1977:407). In SA, functional literacy has been measured by the completion of Grade 6 or 7 (Posel, 2011:41). When studying consumers, it is important to consider that there is no finite demarcation to define consumers as literate or non-literate and that the connection between low-literacy and literacy, rather, is a continuum (Mårtensson & Hensing, 2012:156; Stedman & Kaestle, 1987:10). This suggests that level of education should be used as a guideline to measuring functional literacy and not a concrete measurement. When considering school qualification as an indicator of functional literacy, almost one fifth of the population can be regarded as functionally low-literate, as only 19.1% of South Africans 15 years and older completed Grade 7 or lower (Statistic South Africa, 2012:39).

There are several problems associated with the measurement of literacy, using education levels. Firstly, when using level of education it must also be noted that whilst such measurement may be applicable to school children, education as a level of measurement may not be suitable for adults, due to the complex skills required in today's society (Dowse *et al.,* 2010:464). Examples of complex skills may include calculating percentage changes in price and reading and understanding complex, abstract information found on food labels. Furthermore, this method of measurement may not necessarily reflect consumers' reading and writing abilities, as many South Africans do not speak English as mother tongue and may obtain literacy skills outside of formal education (Posel, 2011:41). Another issue associated with the measurement of consumer literacy, using education level, is that an education attainment does not necessarily reflect literacy, especially in SA where the quality of education may differ from school to school (Posel, 2011:40). Furthermore, there is often a variation of consumers' individual cognitive abilities and specific learning skills within each grade at school level (Kirsch & Guthrie, 1977:493), which may make it difficult to classify consumers into groups, using education level as a primary indicator. Regardless of these issues, literacy in SA is still measured, using the grade of completed education (Statistics South Africa, 2012:39).

2.3 Functionally low-literate consumers

In today's shopping environment, consumers are required to complete a variety of activities before making a purchase. Consumers need to negotiate store floor plans, use labels to select a suitable product and calculate product prices; this makes simple shopping quite an intimidating task (Viswanathan *et al.,* 2005:15). Consumers, who are placed in low-literacy groups, are often only able to read straightforward passages and draw simple deductions from written text. In most cases, more challenging reading material and complicated terminology is too difficult for them to process (Jae *et al.,* 2008:441; Sabatini *et al.,* 2010:122). Even straightforward tasks may cause functionally low-literate consumers to feel as if they are exerting considerable effort (Wallendorf, 2001:508). Functionally low-literate consumers may thus struggle to comprehend information found on food labels, as well as make basic calculations, relative to food labels, and decipher store layouts (Viswanathan *et al.,* 2005:16). Consequently, functional literacy is of specific importance where consumers are presented with a variety of product displays, brands and sizes (Viswanathan & Gau, 2005:188) to select from daily.

Previous studies have proved that consumers with low functional literacy skills take considerable time to locate and compare products, compared to functionally literate consumers (Viswanathan *et al.,* 2009a:136). Further research completed by Viswanathan *et al.* (2009a:136) shows that processing a single attribute at a time is possible for functionally low-literate consumers, but relating two attributes (such as product price and size) simultaneously, is more difficult. This means that functionally low-literate consumers may make decisions grounded on a single product attribute, such as price, size or expiry date. Additionally, functionally low-literate consumers may favour reliance on product advertising and packaging to make product choices (Jae & DelVecchio, 2004:344), without looking at information such as expiry date or nutrition information. Research into functionally low-literate consumers' use of food labels is important, as food labels educate consumers to ensure they are informed and able to make nutritionally sound food choices (Wills *et al.,* 2009:102). As functionally low-literate South Africans are a unique group of consumers, research exploring their use and understanding of food labels and consequent decision-making behaviour regarding food purchases, is essential in order to assist them to make better food choices in the future.

2.4 Food labels

Food labels serve as a primary source of information to consumers when shopping and a communication tool between consumers and retailers (Grunert & Wills, 2007:385; Wills *et al.,* 2009:102,105). As a result, it is of utmost importance that consumers understand the information provided at the point-of-purchase, as it is often used to guide decision-making (Cowburn & Stockley, 2005:22).

Many consumers often find it easy to understand simple terms found on food labels, but difficult to comprehend more complex information (Cowburn & Stockley, 2005:23; Grunert & Wills, 2007:386), such as nutritional information. Consequently, consumers with low-literacy skills may find it even more challenging to read, understand and apply the information found on food labels (Jay *et al.,* 2009:25; Rothman *et al.,* 2006:396), when compared to literate consumers, who perform such tasks with modest effort (Viswanathan *et al.,* 2009a:136). Some consumers experience food labels as too complicated to use and feel that labels should be refined to simplify the use, whilst others differ in opinion, believing food labels are useful in aiding improved food choices (Borra, 2006:1235). For consumers with lower levels of education, food label information can be perceived as daunting (Prinsloo *et al.,* 2012:87), and for this reason consumers may choose not to use food labels. The misinterpretation of information or the decision not to use food labels at all, may disadvantage consumers and effectively cause them to make suboptimal food related decisions.

2.4.1   Food label information and attributes

Food label attributes include: the physical characteristics (product dimensions, legibility of font size and style) and label information, which transfers product information, such as the nutritional information, ingredient list, health and nutrition-related claims, expiry date, country of origin, allergen information, logos, identification and address of the manufacturer, quality guarantee, instructions for use, as well as number of servings (Prinsloo *et al.,* 2012:93). Currently, food labels are regulated in SA and this regulation is important in order to protect consumers (especially vulnerable groups of consumers, such as low-literate consumers) who do not have the ability, skills or means to query information (Prinsloo *et al.,* 2012:85) displayed on products. Labels are to be presented in English and should be both visible and legible (South Africa, 2010:15) on the food product. The following information and attributes are mandatory for food labels in SA.

- The name of the food product (South Africa, 2010:16);
- The name and address of the manufacturer or importer or seller;
- Specific storage conditions;
- The net content of the product;
- The country of origin;
- A best before/ use by or sell by date;
- Instructions describing how the product should be used (South Africa, 2010:17);
- An ingredient list (South Africa, 2010:20);
- Possible allergens used in the product (South Africa, 2010:25);
- Nutritional information (South Africa, 2010:28); and
- Approved health claims (South Africa, 2010:28).

This information is important, as it guides consumers in their decision making and selection process, specific to their personal preferences and needs (Annunziata *et al.,* 2011:519). However, this information is rendered useless if consumers cannot interpret it or make use of the information found on food labels (Dimara & Skuras, 2005:92), which might occur with low-literate consumers (Prinsloo *et al.,* 2012:91). Therefore, it is imperative that the information presented on food labels is clear and concise (Annunziata *et al,* 2011:520), so that all consumers are able to understand and use the label to make food purchases.

Different consumer groups may find different attributes or information important, and thus pay special attention to that given attribute. For example, some consumers may consider nutritional value important (Barreiro-Hurle´ *et al.,* 2008:180), whilst other consumers may be attracted to energy values (Sharf *et al.,* 2012:533). In a South African-based study, it was found that some food label nutritional attributes concerning weight and health, such as fat, kilojoules, carbohydrate and protein content, were of importance (Van der Merwe *et al.,* 2010:14-15). Some consumers may consider the appearance of a label and specific information, such as ingredients and price, of importance (Van der Merwe *et al.,* 2010:14), whilst others consider manufacturing information, such as the expiry date and preparation of food, important (Van der Merwe *et al.,* 2010:15). Most consumers' use (including reading, understanding and application of food label information to decision-making) is influenced by factors such as age, social class and interest in health and nutrition (Grunert *et al.,* 2010:276), which affect the attributes in which consumers are interested.

Functionally low-literate consumers may struggle to evaluate more than one product attribute simultaneously. Although price is not mandatory information that must appear on a food label, it is often indicated above or below the product, or placed on the product with a sticker and is an attribute that functionally low-literate consumers often base their purchase decisions on, without evaluating the other product information or the product as a whole (Viswanathan *et al.,* 2005:19; Viswanathan, 2009:45). Functionally low-literate consumers also often select the cheapest product, without comparing the size-price ratio (Viswanathan, 2009:45), which may lead to selecting products that are lower in value or products that do not optimally fulfil their needs. As price and nutritional information are both important factors in making food related decisions, there might be a need for assisting consumers to select the most nutritious product at the best value price, by using the food label (Jacobs *et al.,* 2010:520).

2.4.2   Consumers' use of food labels

For the purpose of this study, the term food label use will include three components, namely, reading, understanding and application of food label information. Primary reasons that motivate consumers to use food labels include buying a product for the first time and checking nutritional information (Kempen *et al.,* 2011:70), the expiry date (Jacobs *et al.,* 2010:520), and ingredient list (Singla, 2010:90). Additionally, cultural, economic and demographic factors also have an influence on food label use (Kempen *et al.,* 2011:70). For example, studies have found that women are primary users of food labels (Cowburn & Stockley, 2005:24; Satia *et al.,* 2005:392), and that these consumers are of a relatively higher social class (Cowburn & Stockley, 2005:24). Consumers with greater health awareness are also more likely to use food labels than other consumer groups (Cowburn & Stockley, 2005:24; Satia *et al.,* 2005:392), and it is these groups of consumers that read, interpret and evaluate the information found on food labels (Jacobs *et al.,* 2010:512). The effective use of information can be linked to nutrition-related knowledge and skills, which may improve consumers' productrelated decision-making, and consumers who use food labels may have a higher tendency to follow a healthier diet (Fitzgerald *et al.,* 2008:964).

2.4.3   Consumers' reading of food label information

Academic success is often related to superior reading skills (Logan *et al.,* 2011:124), and similarly, good food selection can be attributed to consumers' ability to successfully read food labels. Reading is especially important when consumers are required to select from a number of choices on supermarket shelves, to select nutritional food products (Sanlier & Karakus,

2010:144). Therefore, consumers require realistic, trustworthy and applicable nutritional information in order to make informed food choices (Schönfeldt & Gibson, 2010:132). There are various potential benefits related to using food labels, such as making healthy dietary choices (Graham *et al.,* 2012:417), comparing products and selecting products with or without certain ingredients, and selecting products to follow a specific diet. However, many consumers do not read to make use of information found on food labels (Jay *et al.,* 2009:25).

Consumers' lack of reading and using food label information could be attributed to a number of reasons discussed below. Information found on food labels is often presented in one language only, due to size and space constraints (Prinsloo *et al.,* 2012:91), which can be problematic because SA has 11 official languages and non-English speaking consumers may not understand the information presented in English. Some consumers may simply find the information on food labels too difficult to comprehend (Borra, 2006:1235; Cowburn & Stockley, 2005:24; Singla, 2010:90), or they may not have adequate literacy skills to read the label (Jay *et al.,* 2009:25; Rothman *et al.,* 2006:396). Additionally, in some cases, the size of the letters on food labels are too small to read (Cowburn & Stockley, 2005:24; Singla, 2010:90). Many consumers may not be willing to sacrifice their time reading nutrition labels (Cowburn & Stockley, 2005:24; Drichoutis *et al.,* 2006:2), unless such reading results in a direct benefit to them, such as guaranteed health improvement. It is therefore important that role players in the food industry be realistic about consumers' reading of food labels (Borra, 2006:1235), so that food labels can be designed to better suit consumers' needs and encourage them to read them.

Research has indicated that interpretational aids (such as pictures and symbols) may be useful in reading label information (Cowburn & Stockley, 2005:25; Grunet & Wills, 2007:386), and also in assisting consumers to use the nutritional value on food labels and enabling consumers to make educated and healthier product selections. Such interpretational aids can be of specific importance to low-literate consumers, who may avoid relying on labels for information such as nutrition related information (Viswanathan *et al.,* 2009a:143), possibly because they are unable to use the information. Alternatively, for consumers to overcome literacy problems that may be encountered when using food labels, imagery can be used on labels and packaging (Jacobs *et al.,* 2010:521; Van Biljon & Van Rensburg, 2011:9557).

2.4.4   Consumers' understanding of food label information

Being able to understand a food label is imperative in order to effectively use food labels and maximise the benefits that labels can provide (Jacobs *et al.,* 2010:520). Understanding is of specific importance as low-literate consumers may be able to read simple text but are unable to read and understand more challenging reading material at a higher level (Sabatini *et al.,* 2010:122). They are also only able to extract low level deductions from text (Adkins & Ozanne, 2005b:93; Sabatini *et al.,* 2010:122). Furthermore, food label information is better understood by consumers who have higher education qualifications (Jacobs *et al.,* 2010:519). Consumers' successful search for information regarding a product is often dependent on their ability to perceive and process information (Dimara & Skuras, 2005:92), which may be limited in the case of low-literate consumers. Consequently, consumers' use and interpretation of a food label is also affected by their knowledge of the information (Prinsloo *et al.,* 2012:91), and therefore consumers with better food label knowledge or education may use and interpret labels optimally. Unfortunately, it is has been suggested that it is difficult to introduce initiatives to teach or assist less educated consumers to better make use of food label information (Prinsloo *et al.,* 2012:91) and improve their use of food labels.

Consumers' degree of understanding of food label information depends largely on their cognitive ability to read and deduce the meaning of text (Cowburn & Stockley, 2005:22). Consumers often lack the ability to understand the information presented on food labels (Schönfeldt & Gibson, 2010:132) and are confused by technical and numerical information (Cowburn & Stockley, 2005:23). Functionally low-literate consumers may further struggle to understand abstract information, such as calories and nutritional value (Viswanathan *et al.,* 2009a:136), and make product related calculations, such as price discounts and cumulative totals (Viswanathan *et al.,* 2008:303; Viswanathan *et al.,* 2009a:136). Through simplifying the language used on food labels, low-literate consumers may be able to better evaluate products (Jae & DelVecchio, 2004:352) and consequently make better choices. In a previous study by Jay *et al.* (2009:29), results show that short, interactive interventions that made use of multimedia were more effective than standard printed government materials, in improving consumers' understanding of food labels. Nutritional information may also be better compared if the relevant information is summarised on the front on the package (Wills *et al.,* 2009:102), as consumers are often reluctant to exert considerable effort in searching for information.

2.4.5 Consumers' application of food label information

Application of information during decision-making is associated with determining how functionally low-literate consumers use information available to them to make decisions (Viswanathan *et al.,* 2005:22). It further includes how the information provided (such as price, brand logos or nutritional tables) may affect their decision-making and post-purchase evaluation of a product. This is supported by Wills *et al.* (2009:102), who agree that food labels are a helpful tool in assisting consumers to make informed decisions and therefore consumers must be able to easily read, understand and apply information on these labels (Prinsloo *et al.,* 2012:86), without confusion.

2.5 Cognitive predilections of functionally low-literate consumers

Functionally low-literate consumers demonstrate unique cognitive predilections (Viswanathan *et al.,* 2005:16) and decision-making styles (Viswanathan *et al.,* 2009a:137), which assist them in coping and interacting in the marketplace and with other consumers. Low-literate consumers may practice different cognitive approaches when using information on food labels (Viswanthan *et al.,* 2009a:137), evident in their use of concrete reasoning and pictorial thinking.

2.5.1 Concrete reasoning

Functionally low-literate consumers reveal concrete reasoning when they use single pieces of information on which to base a decision, without giving attention to remaining product attributes (Schiffman & Kanuk, 2010:493; Viswanathan *et al.,* 2005:19; Viswanathan, 2009:45). An attribute that functionally low-literate consumers commonly focus on is price, as mentioned before, which often causes a price fixation as a result of concrete reasoning (Viswanathan *et al.,* 2005:19). This results in minimal or no consideration of the relationship between price and size, in order to calculate value for money (Schiffman & Kanuk, 2010:493). Concrete reasoning is further evident when consumers prefer to shop at familiar stores and purchase familiar products, and learn to use numerical information, such as expiry date and price, without fully understanding its meaning (Viswanathan, 2009:45). This way of thinking is problematic when consumers need to draw abstract conclusions from information provided on food labels (such as the nutritional value of food or terminology, for example, kilojoule values in nutritional tables) to critically select and pay for products.

When low-literate consumers use concrete reasoning to make decisions, trade-offs often take place. If consumers must choose between two products, it leads to a trade-off, where one attribute is sacrificed or compromised, for another. Emotional trade-offs occur when consumers make decisions based on emotions, due to unsuccessful interaction in the marketplace (Viswanathan *et al.,* 2010:529). For example, some consumers may rather take the risk of selecting an incorrect, or more expensive product, than asking someone to help them read a food label and admit their lack of literacy skills and experience related emotions. Emotions, which consumers might experience, include frustration and anxiety (Gau & Viswanathan, 2008), which in the case of the functionally low-literate consumers, might be the result of not understanding food labels, not being able to locate label information, or calculating prices, or paying for items purchased. Low-literate consumers often struggle to draw logical inferences and think critically when they have to make purchase decisions (Wallendorf, 2001:505), which can be attributed to their tendency to reason concretely.

2.5.2   Pictorial thinking

Pictorial thinking can be described as attaching an analogical meaning to information or content (Kunda & Goel, 2008:305), and is illustrated as low-literate consumers often use information signals, such as pictures, to process information (Adkins & Ozanne, 2005b: 96; Jae & DelVecchio, 2004: 343; Viswanathan *et al.,* 2005:21). Functionally low-literate consumers may, for example, visualise the quantity of a product they may need to buy (Viswanathan *et al.,* 2009a:136), in relation to the actual product, instead of using the information provided on the label, such as volume or weight, to select a more accurate product. Additionally, consumers who make use of pictorial thinking may recall the required ingredients to make a specific dish and purchase items accordingly. They may also envision the money they have available and products they desire in pictures, relative to one another in pictures, to be able to determine if they can afford specific items or not (Viswanathan *et al.,* 2009a:136).

For years, pictures or symbols have been used as an effective tool in communicating important information, such as road signage, direction boards and other icons (Dowse & Ehlers, 2004:687), which form an integral part of everyday life. An effective method of conveying information to consumers who struggle with literacy is to make use of visual aids, such as pictograms (Richler *et al.,* 2012:220). Pictograms convey meaning to a physical object through resemblance, in order to stimulate consumer imagination and allow consumers to identify and recall instructions or information, without reading written words (Dowse & Ehlers, 2004:688).

This means that consumers attach a literal meaning to a pictorial element, such as pictures, colour, font or words. By doing so, consumers are able to process visual information and link such information to a concept, without struggling with text (Viswanathan *et al.,* 2010:527). This technique is useful for low-literate consumers who may struggle to read large quantities of text.

Functionally low-literate consumers rely on pictures and symbolic information to a high degree (Schiffman & Kanuk, 2010:493), and also memorise brands as a combination of letters and images, without reading the brand name as a word (Viswanathan *et al.,* 2009b:3). Therefore, when a colour or font is altered (on a name, package or signage) confusion is experienced by functionally low-literate consumers (Viswanathan *et al.,* 2005:21). The result of such thinking is that consumers may make brand or product comparisons, based on the pictures they see, rather than reading and using specific product information, such as product weight or actual price (Schiffman & Kanuk, 2010:493).

Some studies have shown that pictorial thinking may be also advantageous to assist low-literate consumers in remembering brands (Viswanathan *et al.,* 2009a:136). Brand literacy is described as the ability of the consumer to engage with a certain brand or brand image, and can be acquired through consumption of goods, advertising, interaction with other consumers, and cultural media (Bengtsson & Firat, 2006:375). Brand literacy is important as it has an effect on consumer consumption processes and the consumer-brand relationship (Bengtsson & Firat, 2006:379), which can encourage or discourage a consumer to purchase a specific brand. Brand signatures, including brand logo and associated pictures, result in superior brand recall and familiarity for low-literate consumers (Viswanathan *et al.,* 2009b:91), which may increase consumer loyalty and purchases of a specific brand. The disadvantage of this type of thinking is that enhanced brand literacy and loyalty may discourage consumers from exploring other products and brands, whereby they may exclude themselves from exposure to better quality, lower priced and more advantageous alternatives.

Pictorial thinking is relative to functionally low-literate consumers as some label concepts, such as nutritional information, cannot easily be visualised, due to their abstract nature (Viswanathan *et al.,* 2009a:136). This means that functionally low-literate consumers may experience difficulty in comprehending nutritional information, expiry dates and other abstract information (Jay *et al.,* 2009:25; Rothman *et al.,* 2006:396). Functionally low-literate consumers do not function in a

symbolic and abstract domain, but rather visually and concretely (Viswanathan *et al.,* 2005:22), which explains their tendency to pictorial thinking.

2.6   Challenges encountered and coping strategies applied by functionally low-literate consumers

Purchase encounters are often a stressful activity for functionally low-literate consumers (Viswanathan *et al.,* 2005:23), that might result in incorrect decisions, or selecting a product or service of poor quality (Duhachek & Iacobucci, 2005:52). Functionally low-literate consumers, who do not have the skills and knowledge to function adequately in the marketplace, may experience several more challenges when interpreting product information and selecting food products, than the average consumer (Adkins & Ozanne, 2005a:153). When attempting to process information, difficulties experienced by functionally low-literate consumers include cognitive risks and high levels of anxiety (Schiffman & Kanuk, 2010:493; Wallendorf, 2001:508), and are categorised as cognitive, product related, social and affective challenges (Gau & Viswanathan, 2008).

When consumers cannot act competently, due to their low-literacy skills (Ozanne *et al.,* 2005:265), they display unique coping behaviour, sometimes in ingenious and creative ways (Viswanathan *et al.,* 2005:16; Viswanathan, 2009:44). Coping is the term used to describe both continually transforming behavioural and cognitive endeavours that consumers use to manage external (store environment) and internal (low-literacy) demands (Lazarus & Folkman, 1984:141), to be able to act as competent consumers whilst maintaining a positive self-identity when making a purchase (Adkins & Ozanne, 2005b:99; Hamilton & Catterall, 2008:551; Viswanathan, 2009:46). The coping behaviour can be either emotional, behavioural or task orientated in nature (Skinner & Zimmer-Gembeck, 2007:123), and therefore different strategies may be applied by consumers in different situations, which cannot be viewed separately from one another.

2.6.1   Cognitive challenges and coping strategies

Cognitive learning involves making a decision or solving a problem after processing specific information (Schiffman & Kanuk, 2010:228), such as reading text or interpreting numbers. A major cognitive challenge that functionally low-literate consumers may experience is an overload of information and product choice in a retail store (Gau & Viswanathan, 2008), and

consequent inability to process the information and select a product. Additionally, tasks which may be routine for literate consumers require additional time and effort from functionally low-literate consumers (Viswanathan *et al.,* 2005:16; Viswanathan, 2009:45). Consumers in this group may also struggle to complete tasks, such as writing a shopping list and comparing and checking prices (Viswanathan *et al.,* 2008:303), which may lead to anxiety – especially when entering a new store (Viswanathan *et al.,* 2005:20). Low-literate consumers may also find it difficult to locate stores, read in-store signage and locate specific products (Gau & Viswanathan, 2008; Viswanathan *et al.,* 2005:15; Viswanathan, 2009:45). Regarding nutritional information found on food labels, functionally low-literate consumers are often unable to interpret the meaning of numerical nutritional terms (Viswanathan *et al.,* 2009a:137). Consequently, there are a variety of reading, writing and numerical cognitive challenges with which low-literate consumers are faced.

As a way of coping with the cognitive challenges that shopping poses, low-literate consumers often depend on others to assist them with shopping tasks (Viswanathan *et al.,* 2010:530). Some functionally low-literate consumers may plan their shopping visits around the shifts of store personnel, so that these visits coincide with familiar and helpful store assistants (Ozanne *et al.,* 2005:259; Viswanathan *et al.,* 2005:23). Similarly, they may rely on family or friends to assist them whilst shopping (Adkins & Ozanne, 2005a:155), and to help write shopping lists (Jay & Rohl, 2005:61). Some low-literate consumers are even able to make coded lists to assist them in remembering to purchase specific products, without having to correctly spell the item (Adkins & Ozanne, 2005b:97). Functionally low-literate consumers may pay higher prices or forfeit functional product attributes (Viswanathan & Gau, 2005:189), for example, when buying a product with poor nutritional value, in order to appear competent. Low-literate consumers are loyal to trusted and familiar brands (Sridharan & Viswanathan, 2008:457), and this can be attributed to their tendency to use pictographic thinking, which links images and brands and the consumer's memory (Viswanathan *et al.,* 2009a:136). Another coping strategy that functionally low-literate consumers may implement to overcome cognitive challenges is to avoid promotions where percentage price calculations must be made (Viswanathan *et al.,* 2005:24). Furthermore, some functionally low-literate consumers may hand all of their cash available to cashiers, trusting that the cashier will return the correct change (Viswanathan & Gau, 2005:189; Viswanathan *et al.,* 2005:24), in order to avoid making total cost calculations themselves. Another method of calculating the total cost of products purchased is to round prices up or down to the closest whole number, then add the total up and compare it to the money available to the consumer (Adkins & Ozanne, 2005b:98).

2.6.2 Product related challenges and coping strategies

Product-related challenges are directly linked to consumers struggling to understand or make use of various product attributes, and are associated with cognitive challenges as much of the information that needs to be processed regarding a product requires cognitive thinking (Schiffman & Kanuk, 2010:228), which makes use of working memory (Welsh *et al.,* 2010:43). Product-related challenges include the difficulty that consumers experience in comparing product attributes, such as weight, size and price (Viswanathan *et al.,* 2009a:136), as well as problems in processing numerical product information, for instance calculating unit prices, discount prices and price checking at the counter (Gau & Viswanathan, 2008; Viswanathan, 2009:45). Functionally low-literate consumers may also experience that processing written product information, including unfamiliar brand names and label information, is difficult. This may lead to misinterpretation of information or using visual cues, such as colours and pictures, to gather information (Gau & Viswanathan, 2008). Low-literate consumers may also use a single aspect of nutritional information found on food labels (for example, the presence or absence of an ingredient) to base decisions on without making their judgment relative to other product attributes or compared to similar products (Viswanathan *et al.,* 2009a:136). Consumers with low-literacy skills may find it difficult to apply information (such as nutritional tables and symbols) found on the food label to their decision-making (Gau & Viswanathan, 2008), and, in some instances, may fail to cook food correctly (Ozanne *et al.,* 2005:258), as they struggle to read and understand preparation instructions.

After purchasing a product, few functionally low-literate consumers rationally re-evaluate their purchases. If a purchase was found unsatisfactory, they often blame someone else (Viswanathan *et al.,* 2005:26), perhaps not realising that it is due to their low-literacy skills that they were unsatisfied with the product. This example of post purchase evaluation could cause the consumer to feel dissatisfied, as their previous expectations of the purchase were disconfirmed (Schiffman & Kanuk, 2010:498). To cope with product-related challenges, functionally low-literate consumers may adopt the same type of in-store behaviour as literate consumers (Viswanathan, 2009:46), so that others may think they are able to function competently. Another coping strategy low-literate consumers may apply is to evaluate an entire product, based on one product attribute (Viswanathan & Gau, 2005:189), such as appearance, price, size, brand name or other information relevant to the food label.

2.6.3   Social challenges and coping strategies

Social challenges and coping strategies are linked to inter-consumer relationships and are driven by emotions, such as belonging and acceptance (Schiffman & Kanuk, 2010:118). Social challenges that functionally low-literate consumers face include language barriers and difficulty interacting with other consumers and store personnel. A primary reason for this challenge might be that information on food labels, advertisements and product related information, are presented in English, and although this is the primary language to convey product information in SA (Dowse *et al.,* 2010:465), it is often not the consumer's first language (Wallendorf, 2001:507). The result of this language challenge is that consumers may purchase lower quality goods that they may not actually want, as they cannot effectively read, interpret or communicate the information available. Furthermore, storekeepers may exploit or cheat consumers (Ozanne *et al.,* 2005:256; Viswanathan *et al.,* 2008:302), who are unable to act capably, due to social challenges. Functionally low-literate consumers may also experience fear that their limited literacy skills will be exposed to other consumers, who might judge them (Ozanne *et al.,* 2005:256).

Coping strategies that low-literate consumers may apply to cope with social challenges vary. Functionally low-literate consumers may hide their poor reading and decoding skills with sight vocabulary (Ozanne *et al.,* 2005:258; Sabatini *et al.,* 2010:129). In other words, these consumers may not read text, but simply read familiar words based on the appearance of the word and not the comprehension thereof. This action increases brand loyalty, as consumers return to favourable and familiar products for repeat purchases (Rousseau, 2007a:272; Solomon, 2011:360). Poor reading abilities may force some consumers to fake vision problems by pretending to have forgotten their glasses, standing in an aisle pretending to compare products or claiming insufficient time to read, and having a headache (Adkins & Ozanne, 2005b:98; Viswanathan *et al.,* 2005:24). These are strategies that functionally low-literate consumers apply to avoid reading product-related information (Adkins & Ozanne, 2005b:98), in order to prevent store personnel and other consumers from detecting their inability to read (Viswanathan *et al.,* 2005:24). Therefore, consumers may rely on friends and family members to assist them in obtaining product-related information when shopping (Viswanathan & Gau, 2005; 189). Low-literate shoppers may also prefer to visit stores that are smaller and familiar (Viswanathan *et al.,* 2005: 25), as such stores that may offer a comfortable, non-threatening environment.

2.6.4   Affective challenges and coping strategies

Functional low-literacy can be the cause of emotional stress in consumers (Viswanathan *et al.,* 2005:16), and is considered an affective challenge. Functionally low-literate consumers, who experience a poor understanding of product information and encounters with sales personnel, who may appear hostile, can experience negative emotions (Adkins & Ozanne, 2005b:93; Gau & Viswanathan, 2008), such as embarrassment and shame (Ozanne *et al.,* 2005:256), anxiety and decreased self-esteem (Viswanathan *et al.,* 2005:23). In some cases, a stigma may be attached to functionally low-literate consumers, resulting in the fact that consumers may choose to accept or fight such a stigma (Adkins & Ozanne, 2005b:96; Gau *et al.,* 2012:1687), which can also affect the consumer's self-esteem.

In order to avoid feelings of humiliation and to protect their self-esteem, functionally low-literate consumers may make use of trade-offs, by using functional attributes or prices of products (Viswanathan *et al.,* 2010:525) to justify their decisions. Consumers may pay higher prices or select products that do not optimally fulfil their needs, to prevent embarrassment. Some consumers may also leave the store if they are unable to locate a specific product (Viswanathan *et al.,* 2010:530). Another avoidance coping strategy is to evade any emotionally charged situation, such as asking someone for help, in order to prevent embarrassment (Viswanathan *et al.,* 2008:303; Viswanathan *et al.,* 2010:530). In many cases, where purchased goods are defective or incorrect, consumers may try to give away the product or alternatively retain it in order to prevent interactions which may leave them feeling misunderstood or which reveal their lack of knowledge (Viswanathan *et al.,* 2010:530). This post purchase behaviour is important, as it may encourage consumers to search for an alternative that will better fulfil their needs in the future (Schiffman & Kanuk, 2010:498).

Low-literate consumers are faced with a variety of task-orientated and emotional challenges on a daily basis. It is important to note that different coping strategies may be applied by consumers, to allow them to cope with the retail environment, to make objective purchase decisions and function effectively as consumers.

2.7   The consumer decision-making process

Consumer decision-making is a procedure that occurs on a daily basis (Rousseau, 2007a:259) and determines which products and services consumers want, buy and use (Cant *et al.,* 2006:193; Schiffman & Kanuk, 2010:478). It is a cognitive procedure that aims to release tension caused by an unfulfilled need or problem (Solomon, 2011:337). The decision-making process usually follows a sequential order, beginning with need recognition, information search, evaluation of alternatives (pre-purchase decision-making), selection of the product, and concluding with post purchase evaluation (post-purchase decision-making) (Schiffman & Kanuk, 2010:483). However, the stages in the decision-making process do not necessarily maintain a chronological order, and therefore consumers are often able to skip stages or engage in any of the five stages at any time (Cant *et al.,* 2006:193). It must be noted that functionally low-literate consumers follow unique decision-making processes and may pay minimal attention to some stages of the decision-making process and, in some cases, even evade some stages (Viswanathan, 2009:46). In today's retail environment, where consumers are faced with self-service product displays and multiple choices, decision-making for functionally low-literate consumers is important (Viswanathan & Gau, 2005:188). There are four different types of characters exhibited during decision-making, which include the economic individual, passive individual, emotional individual and cognitive individual (Schiffman & Kanuk, 2010:481). These groups may also use the model differently, according to their priorities and needs. Economic individuals make rational decisions that have been carefully calculated, based on inclusive education. Passive individuals act impulsively and irrationally, as these consumers are not very knowledgeable and can easily be manipulated by marketers (Schiffman & Kanuk, 2010:480). Emotional individuals base their decisions on personal and unreasonable needs (Schiffman & Kanuk, 2010:482). Consumers placed in the cognitive individual group base their decisions on information, social groups, attitudes, perceptions and previous personal experiences. This type of consumer will make use of all the evaluation criteria and will seek additional information before making a decision (Schiffman & Kanuk, 2010:481). Low-literate consumers may be at a disadvantage when having to process information, like economic and cognitive consumers do, and therefore may be inclined to make passive or emotional decisions.

The first stage in the consumer decision-making process is need or problem recognition, which commences when consumers realise that they have an unfulfilled need (Rousseau, 2007a:263; Solomon, 2011:332), and may occur at every stage of the decision-making process (Cant *et al.,* 2006:196). For many functionally low-literate consumers, just to recognise their need and to

locate the product, can be extremely challenging, and they may, after locating the product, continue directly to the purchase phase (Viswanathan, 2009:46).

Information search and processing is the second stage in the process, whereby consumers make use of various resources to seek and process information (Solomon, 2011:337). Consumers choose information relative to their needs, and in harmony with their beliefs and attitudes (Cant *et al.,* 2006:197; Rousseau, 2007a:267). They may search for information in two ways: internally and externally. An internal search includes using information stored in a consumer's memory from past experiences and learning (Cant *et al.,* 2006:197; Schiffman & Kanuk, 2010:485). Examples of such information include past experiences with sales people, store layout, availability and price of items (Cant *et al.,* 2006:198; Rousseau, 2007a:267), with price often being the primary determinant for low-literate consumers when making purchases (Viswanathan, 2009:46). For low-literate consumers, an internal search for information may be evident in brand loyalty, as a result of familiar images and pictographic thinking (Sridharan & Viswanathan, 2008:457). External information searches occur when consumers make use of resources such as family members, reference groups, cultural and social groups, the economy, advertisements, promotions and sales staff, or other businesses which are external to their own, to make decisions (Rousseau, 2007a:267). The food label can also be considered as an external information source, which may influence consumers' purchase decisions (Jacobs *et al.,* 2010:511). Low-literate consumers often rely on family members or friends to assist them with their shopping activities (Viswanathan & Gau, 2005:189; Viswanathan *et al.,* 2010:530), which is the exhibition of external information searches during in-store decision-making. It is through the search and processing of information (external or internal) that consumers learn and become aware of different brands, stores, prices and consumer services (Cant *et al.,* 2006:197).

The third stage in the consumer decision-making process is the evaluation of alternative solutions to fulfil the need, identified in stage one (Cant *et al.,* 2006:201). Evaluation involves assessing and comparing the characteristics of the product, in order to determine the advantages and disadvantages of each characteristic (Rousseau, 2007a:267; Solomon, 2011:351). Consumers make use of different criteria for different purchase decisions, in response either to a situation or a specific environment (Schiffman & Kanuk, 2010:490). As functionally low-literate consumers often rely on concrete reasoning on which to base their decisions, it can be said that they may apply only one attribute, for example price, to compare products (Viswanathan, 2009:47).

The action part of the consumer decision-making process occurs in the fourth stage, when consumers make a decision to purchase the product, or not (Cant *et al.,* 2006:202). The purchase stage involves consumers making the most suitable choice between evaluated alternatives (Rousseau, 2007a:268). Appropriate selection and decision-making depends on sufficient information and consumers' ability to effectively use the information (Cant *et al.,* 2006:202), which may not always be the case with low-literate consumers, due to the challenges they experience when reading and comprehending food label information (Adkins & Ozanne, 2005a:153; Viswanathan *et al.,* 2005:23) and the difficulty they encounter when required to complete product related comparisons and calculations (Gau & Viswanathan, 2008; Viswanathan *et al.,* 2009a:136).

The concluding stage in the decision-making process is post purchase evaluation (Cant *et al.,* 2006:202). This stage involves the assessment of the performance of the service or product purchased, in light of the consumers' expectations of the product (Rousseau, 2007a:269; Schiffman & Kanuk, 2010:498). The result of consumers' evaluation of a purchased product can be positive and satisfying, negative and dissatisfying, or neutral and indifferent (Rousseau, 2007a:269). This stage in the decision-making process is of specific importance for future purchase behaviour. A positive evaluation may result in repeat purchases or increased brand loyalty. If the product or service was unsatisfactory, consumers may voice their dissatisfaction by switching to a different brand (Rousseau, 2007a:269; Schiffman & Kanuk, 2010:498). In extreme cases, functionally low-literate consumers will avoid the entire decision-making process by simply mimicking the decisions of other consumers, or by entrusting their shopping responsibilities and decision-making to others (Viswanathan, 2009:46).

2.7.1   Single attribute decision making

It has been found that functionally low-literate consumers may base purchase decisions on a single product attribute, repeat decisions habitually or make completely random decisions (Viswanathan & Gau, 2005:189). When consumers make a decision based on a single product attribute, such as price, ingredient or size, they are applying concrete reasoning to the situation (Viswanathan *et al.,* 2005:19). Accordingly, functionally low-literate consumers may shop until their money is finished, without making price or size comparisons. As a result, these consumers may not have enough food to sustain their household for a month, due to their inability to make informed purchase decisions (Viswanathan *et al.,* 2005:19), which is especially problematic in lower income, rural areas where money is scarce. It has also been found that some functionally

low-literate consumers attempt to use the size of product packaging to deduce a size-price ratio, but such calculations were unsuccessful. Consumers in the functionally low-literate group may also use the presence or absence of a specific ingredient on which to base their decision (Viswanathan *et al.,* 2009a:136), such as sugar or sodium content (Viswanathan *et al.,* 2005:20). This type of decision-making contrasts that of functionally literate consumers, who consider and compare multiple attributes before selecting a product (Viswanathan *et al.,* 2005:22).

2.7.2   Habitual decision-making

Habitual decisions are made with minimal conscious effort (Solomon, 2011:335) and are the result of repeat purchases, based on initial product satisfaction (Cant *et al.,* 2006:199; Rousseau, 2007a:272). This type of decision-making is associated with limited information search and brand evaluation, and consequent simplified decision-making (Cant *et al.,* 2006:200). Such purchases are not repeated as a result of complex information processing, but rather on familiarity (Van Biljon & Jansen van Rensburg, 2011:9551; Viswanathan, 2010:527; Wallendorf, 2001:508) of a colour, package or logo. Furthermore, some consumers habitually select the smaller size of every product following the belief that smaller items will be cheaper (Viswanathan *et al.,* 2005:22). This means consumers are able to ensure product or service satisfaction, whilst reducing the need to seek information to evaluate a product, service or brand (Rousseau, 2007a:271).

Habitual decision-making is important for low-literate consumers, as it allows for the consumers to save time and energy when making purchases. This type of decision making also reduces risks, which occur when consumers have to make decisions (Wallendorf, 2001:508), and the outcome or consequence of their decision is uncertain (Schiffman & Kanuk, 2010:201). The types of risks that consumers may encounter are functional, financial and social. Functional risks include the possibility that the given product may not perform as well as expected. Financial risk occurs when the product may not be equal in value to the cost; and social risk may be present when consumers are uncertain if the product choice will result in social approval or rejection (Schiffman & Kanuk, 2010:202). Random decision-making may occur when the consumer may select the first item that meets the eye, be it a planned or unplanned purchase (Viswanathan *et al.,* 2009a:46).

2.8   Low-income consumers

Low-literacy is related to low-income and consumers who are living in lower income areas, are generally not well educated (Viswanathan, 2009:44; Viswanathan *et al.,* 2005:16). Many low-income consumers face a variety of challenges that restrict their ability to obtain required goods and services, apart from common literacy related problems. Such challenges may leave consumers experiencing a loss of control and alienation from normal consumer culture (Hamilton & Catterall, 2008:551).

However, previous research has shown that low-income consumers display great skill in controlling their lives and their immediate environment, to adapt to their financial constraints (Hamilton & Catterall, 2008:552). These consumers may use strategies such as price comparisons, discount stores, as well as using products and brands in innovative ways, in order to cope with their financial circumstances (Hamilton & Catterall, 2008:552). Conversely, functionally low-literate consumers may be unable to successfully compare product prices and discounted prices, due to their limited literacy skills. Within the marketplace, low-income consumers may often have to accept lower quality goods and services, often making use of second hand products (Hamilton, 2009:545). Many low-income consumers also shop with lists and a budget (Hamilton, 2009:548); however, for some, list making may be considered difficult and these consumers may purchase items until their money is spent. Alternatively, those who are able to make lists might use abbreviations, letters or symbols to denote the product they want to purchase, for example B = bread (Adkins & Ozanne, 2005b:97). For low-literate consumers, who struggle with numbers and writing and reading, this adaption technique may not be applicable.

Socio-economic indicators, such as level of education and employment (Khumalo *et al.,* 2012:422), are often used to group consumers into different social classes. According to Mubangizi and Mubangizi (2005:278), there is a noteworthy correlation between standard of living, and educational attainment, whilst Jansen (2013:24) suggests a connection between cognitive development and low-income households. Both sources essentially suggest a link between income and education and, consequently, literacy. Poverty and low-income households are not bound to any particular race or gender, however are more prevalent among female-headed households and African consumers (Mubangizi & Mubangizi, 2005:278), possibly because females earn half or just more than half of what their male counterparts earn (Statistics South Africa, 2012:41).

2.9   Rural areas in South Africa

South Africa is categorised as a developing country of middle income, and the living conditions for consumers in this country range from wealthy suburbs, to underdeveloped, poor rural areas (Steyn *et al.,* 2006:259). However, in comparison to other middle income countries, South Africa also has exceptionally high levels of outright poverty (Altman *et al.,* 2009:345), mostly found in rural areas where good infrastructure lacks (Shackleton *et al.,* 2007:559) and consequently access to stores too. Rural areas also have fewer resources when compared to urban counterparts, setting rural areas in a disadvantaged position (Bonthuys *et al.,* 2011:424). In SA, approximately 38% of the land is classified as rural (UNESCO, 2010), and as a result, consumers living in such areas must travel to larger stores to buy groceries and other household items (Viswanathan *et al.,* 2008:302).

It is common that consumers living in rural areas are often from lower socio-economic groups and that their literacy levels and monthly income is low (Howells *et al.,* 2005:1835; Van Biljon & Jansen van Rensburg, 2011:9549; Vorster *et al.,* 2005: 480). Furthermore, consumers in rural areas in SA tend to be troubled by poor psychological well-being and related problems (Khumalo *et al.,* 2012: 437). A concerning problem in many poorer South African households is also the prevalence of HIV/AIDS (Bärnighausen *et al.,* 2010:30; Mabungizi & Mabungizi, 2005:278), which adds to problems in rural areas, as poor households often have to cope with fewer income-bearing members, as well as higher financial expenses, due to funeral, medical and additional child care costs (Mabungizi & Mabungizi, 2005:288), resulting in less available money for basic needs, such as food.

A dependence on locally produced foods is common for consumers in rural areas of SA, and such foods can often be both scarce and expensive (Kruger *et al.,* 2005:366). These consumers often eat unfortified starchy foods, such as porridge and maize meal, bread and rice, and include minimal quantities of animal-based proteins or vegetables in their diet (D'Haese & Van Huylenbroeck, 2005:109; Faber & Wenhold, 2007: 396; Kruger *et al.,* 2005:369). The lack of variety in rural consumers' diets could be due to lower income and limited access to stores (D'Haese & Van Huylenbroeck, 2005:109; Kruger *et al.,* 2005:373). The consequences of such a diet are that in many cases micro nutrients, for example: iron, zinc and vitamin A (Faber & Wenhold, 2007:394) intake is low, which increases the risk of developing multiple micro nutrient deficiencies and related diseases (Faber & Wenhold, 2007:393; Kruger *et al.,* 2005:372).

2.9.1 Stores in rural areas

Lower income households spend approximately 60% of their income on food (Von Braun, 2008:32), which is often more than their urban counterparts (Altman *et al.,* 2009:352). Consumers in rural areas may face poor quality products sold at high prices and in limited variety compared to bigger supermarkets (D'Haese & Van Huylenbroeck, 2005:98). As a result they may not consume balanced diets or receive adequate nutrition (Subrahmanyan & Gomez-Arias, 2008:403). There have been initiatives from companies to offer nutritious foods such as iodised salt (Whitney & Rolfes, 2008:456), high-calcium yoghurt and milk (Whitney & Rolfes, 2008:418) in smaller sizes so that lower income households can afford such products (Subrahmanyan & Gomez-Arias, 2008:405). This may then allow lower income consumers to receive nutritional benefits from these products. Consumers in this group also typically buy groceries and other household items from cash-and-carry wholesalers (Makro and Metro), retailers (Spar and Pick n Pay) as well as informal spaza stores (Van Biljon & Jansen van Rensburg, 2011:9549). Vendors, small stores and spaza (Zulu for "hidden") stores are often the primary retail outlets in rural communities (D'Haese & Van Huylenbroeck, 2005:98).

Spaza stores generally stock several basic products in large quantities (D'Haese & Van Huylenbroeck, 2005:98), such as cold drinks, cigarettes, candles, maize meal, alcohol, bread and sugar (Ligthelm, 2005:208). Advantages of spaza stores to consumers living in rural areas is that such stores are often close to or within walking distance of consumers' homes, service offered is good and friendly with credit extension available, trading hours are often longer than other stores (Ligthelm, 2005:210) and bargaining with store owners is possible (Viswanathan *et al.,* 2008: 303). Furthermore, spaza stores, run by home owners, are a unique and successful way of generating income and alleviating poverty in rural areas (Ligthelm, 2005:212). Spaza shop store owners benefit as they are able to manage word-of-mouth marketing and personally handle difficult customer situations (Viswanathan *et al.,* 2008:303). However, good service is not always experienced by low-literate consumers as some shop owners may try to cheat and disrespect consumers (Viswanathan *et al.,* 2008:302) who do not have the knowledge or skills to protect themselves. Further disadvantages of spaza shops are that these stores may have stock shortages, are prone to be dirty store environments and offer poor product quality in addition to expensive prices (Beneke, 2010:205; Ligthelm, 2005:210). Spaza stores also do not stock cheaper, private label brands, due to their location (Beneke, 2010:205).

High income, educated consumers are often well informed and knowledgeable about food products and are generally health conscious (Prinsloo *et al.,* 2012:87). However, in rural communities income levels are low, while low-literacy rates are high, and these consumers have limited options regarding education (Viswanathan & Gau, 2005:187). Consumers in these areas may be regarded as functionally low-literate and may not use food labels to the same degree as their educated urban counterparts, resulting in fewer healthy food selections. Nevertheless, in SA, the lower-income groups are generating increasing interest in marketers, due to their brand loyalty and purchasing power (Van Biljon & Jansen van Rensburg, 2011:9548). As supermarkets are obtaining a large portion of the food retail share, many retailers need to start targeting low-income consumers in order to increase their market share of food purchased (Humphrey, 2007:435), and recognise the collective purchasing power of these consumers (Guesalaga & Marshall, 2008:413) for basic necessities, such as food, in order to capitalise on the quantity of basic needs products this target market purchases.

2.9.2 Valspan rural community

Valspan is a rural community, situated on the border of the Northern Cape and the western area of the North West Province, with approximately 2000-5000 residents (Collins Maps, 2012) but is officially located in the Northern Cape (Maplandia, 2005). Communities, such as Valspan and other communities in the area, experience poverty, which is often associated with a low quality of life (Bonthuys *et al.,* 2011:424). This has several effects on rural development and planning when living standards and overall health are examined (Bonthuys *et al.,* 2011:424). In this community, a programme, Lifeplan®, has been developed in order to extend knowledge, encourage interpersonal skills, promote thinking and planning, as well as motivation and action. This programme strives to improve the well-being of individuals through health and nutrition (Bonthuys *et al.,* 2011:423), which has been widely identified in numerous studies as a factor contributing to well-being (Oldewage-Theron & Egal, 2009:45; Prinsloo *et al.,* 2012:94; Schönfeldt & Gibson, 2010:128). Food choice can be considered a major factor in consumer health, and is influenced by information found on food labels, and the association between them can be considered of importance for the Lifeplan® programme. The Valspan community has a high unemployment rate, and many community members are seasonal farm workers, which implies that household incomes are inconsistent, due to the seasonal availability of work and consequent income.

In a needs assessment conducted by Coetzee (2011:17), ten related themes were highlighted by consumers living in the Vaalharts area, which includes Valspan. Some of the needs included the need for basic government services, such as birth, death, and passport and identity document registration. Regarding basic municipal services, results showed that the communities are concerned about the availability of electricity, running water, draining systems and waste management (Coetzee, 2011:19). Communities in the Vaalharts area also experience a need for agricultural knowledge and skills, as well as improved and affordable grocery stores (Coetzee, 2011:21). This need is typical of rural areas where consumers are often offered substandard products at inflated prices when compared to larger stores (D'Haese & Van Huylenbroeck, 2005:98). With regard to infrastructure, housing is an important issue in the area, as most houses are overcrowded. Recreational facilities, hospitals and clinics are desired by most communities in the Vaalharts area, in addition to improved roads and reliable transport (Coetzee, 2011:21). Improved roads and reliable transport may encourage the consumers in this region to shop at larger, more affordable stores, as poor infrastructure is currently a factor preventing them from doing so (Van Biljon & Jansen van Rensburg, 2011:9548).

Education is also an important aspect for the communities living in the Vaalharts area, and related problems include: high school dropouts; unpaid school fees; minimal tertiary education opportunities; and lack of parental involvement at schools (Coetzee, 2011:19). It was also noted that there is a need for reading and writing programmes, especially among the older, low-literate generations, due to previously limited access to education. Such programmes can uplift the current illiteracy rates present in the communities (Coetzee, 2011:20; Posel, 2011:39). This finding is of importance, as it has been suggested that low-literacy and poor socio economic circumstances can be related to poor health (Nutbeam, 2008:2072). Poverty and high unemployment rates were also visible throughout the Vaalharts area (Coetzee, 2011:20), which could be a direct result of poor education.

Clothing and food are two important items that many community members cannot afford to purchase or produce themselves (Coetzee, 2011:22). In Valspan, 80.7% of respondents indicated their need for food in the community (Coetzee, 2011:38), and, consequently, a need for nutrient-dense foods. The consumption of these foods might be encouraged through informative, consumer-friendly labels, which can also be suitable for consumers with low-literacy skills. Diet plays a vital role in supporting health and preventing diseases (Singla, 2010:89; Whitney & Rolfes, 2008:24). Diseases, such as TB, hypertension and HIV/AIDS, are common in

the Valspan area (Coetzee, 2011:22), therefore consumers in this area should aim to maintain a healthy immune system through their diet, to minimise the effects of such diseases. Therefore, assisting low-literate consumers to use food labels to increase their consumption of nutritious foods may assist in disease prevention and potentially improve the health status at individual and community level (Sharf *et al.,* 2012:534).

Lastly, a need for awareness campaigns addressing issues such as HIV/AIDS, nutrition and exercise, family issues, hypertension, substance abuse, general coping skills and sanitation, was expressed (Coetzee, 2011:23). This finding shows that issues, such as malnutrition and nutrient deficiencies, have not been well addressed in Africa (Vorster *et al.,* 2011:430), and the residents of Valspan seek more information regarding similar nutrition issues (Coetzee, 2011:23). This finding is encouraging, as it shows that these consumers are aware of, interested in, and willing to improve their nutrition and health status.

2.10 Malnutrition in South Africa

There have been substantial changes in the South African consumer's food consumption patterns over recent decades (Kruger *et al.,* 2005:366). Urbanisation is increasing in SA, and with this transition the general black population is changing their diet, too. Traditional high carbohydrate, high fibre diets are changing to refined carbohydrate intake, coupled with a high animal source protein intake, along with salt and sugar (Schönfeldt & Gibson, 2010:129; Steyn *et al.,* 2006:268). The prevalence of malnutrition is often higher in rural areas (Faber & Wenhold, 2007:394) and issues, such as high rates of unemployment, HIV/AIDS morbidity and mortality, also affect consumers' (especially child consumers') access to adequate nutrition (Madhavan & Townsend, 2007:108). Furthermore, and of specific importance to this review of the literature, is the relationship between low-literacy and poor health (Nutbeam, 2008:2072), including malnutrition.

Developing countries experience the double burden of malnutrition, illustrated by people who are overweight and others who are underweight. Malnutrition can be referred to as under and over nutrition, whereby under nutrition is characterised by insufficient dietary intake with regard to energy, protein, vitamins and minerals (Altman *et al.,* 2009:350; Whitney & Rolfes, 2008:20). Results of malnutrition may include stunting and being underweight, which can lead to poor cognitive development and low educational achievement (Altman *et al.,* 2009:350) in later life,

which could, in turn, influence employment (Banerjee *et al.,* 2008:727) and poverty. Over nutrition is defined as an excess intake of energy or nutrients (Whitney & Rolfes, 2008:20), and although common in rural SA (Kimani-Murage *et al.,* 2011:1114), will not be the focus of this study.

In SA, consumers who are under-nourished and, consequently, underweight and stunted, are susceptible to increased morbidity and mortality (Mamabolo *et al.,* 2005:501). Unemployment and increased household size are all factors that play a role in the poor nutritional status of these consumers (Steyn *et al.,* 2005:11). Conversely, consumers who are well nourished progress quicker and further academically at school (Yamauchi, 2008:679), suggesting malnutrition might affect literacy levels in SA. Consumers who experience over nutrition may also experience diabetes and heart-related diseases (Whitney & Rolfes, 2008:20). Unfortunately, reducing malnutrition and hunger in SA remains a challenge (Oldewage-Theron & Slabbert, 2008:92). A key factor involved in malnutrition is poor nutritional knowledge, and if sources of health communication, such as food labels, can be improved, the nutritional status of South Africans might also improve (Schönfeldt & Gibson, 2010:131). However, if functionally low-literate consumers cannot understand the information presented on the food labels, such methods will not be effective in combatting malnutrition in SA.

Previous studies aimed to address issues such as disease, malnutrition, illiteracy and poverty, in order to promote urban development and national health (Oldewage-Theron & Slabbert, 2008:92), and suggestions for the need for interventions to address malnutrition in SA, were made (Kimani-Murage *et al.,* 2010:165). These results should be used to conduct future studies in the field of consumer science and implement possible interventions to combat malnutrition in South African communities, as healthy food choices are imperative to preventing malnutrition and promoting consumer well-being (Oldewage-Theron & Egal, 2009:45)

Poverty, malnutrition and infectious disease co-exist (Faber & Wenhold, 2007:393), and a link between literacy and health is suggested by Wallendorf (2001:509). Chronic diseases, such as heart disease, hypertension and diabetes, can all be managed with the assistance of reading food labels and implementing this information in food purchases (Post *et al.,* 2010:631). Oldewage-Theron and Egal (2009:45) suggest that healthy food choices are imperative to preventing malnutrition and promoting consumer well-being, whilst Schönfeldt and Gibson

(2010:131) suggest that improved and nutritionally rich food products, combined with health communication, such as food labels, that encourage consumers to make healthier food choices, may be key to improving consumers' nutritional status, not only in SA, but globally.

2.11 Conclusion

It can be said, in conclusion to this literature review, that SA is a country with low-literacy rates and many functionally low-literate consumers. Functionally low-literate consumers experience a variety of challenges within the retail environment, some cognitive, others product based, social or affective in nature. It can also be speculated from available literature that these consumers might struggle with the reading of food labels. However, functionally low-literate consumers have developed methods of coping in order to deal with such challenges. Functionally low-literate consumers generally make use of concrete reasoning and pictorial thinking on which to base their decisions, and often do not follow the conventional consumer decision-making process. Currently, many consumers (literate and low-literate) struggle to understand and use the information available on food labels. Understanding the information on a food label is important, as many decisions can be based on this information. Food labels may be easier to understand if important information is summarised on the label.

Valspan is a rural area, situated in the Northern Cape of SA, where low-literacy, low-income and malnutrition are common problems. In a need assessment completed in the Valspan community, one of the issues that was revealed was the need for education on health and nutrition. A food label is one of the most effective communication mediums to convey information, and thus should be recognised as an integral part of consumer's daily life, essential in assisting consumers to make good, informed food-related decisions.

2.12 Reference list

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3. CHAPTER 3: RESEARCH ARTICLE

TITLE

Functionally low-literate consumers' use of food labels in the rural area of Valspan in the Northern Cape of South Africa

(Manuscript to be submitted for publication in the International Journal of Emerging Markets)

This article has been written according to the author guidelines for this journal, and is provided in Annexure 6.

Abstract

Purpose – The purpose of the study was to investigate and explore functionally low-literate consumers living in a rural area of South Africa, and their use of food labels.

Research design, approach and method – Data was collected, using interviewer administrated questionnaires and purposive criterion sampling. The inclusion criteria for respondents were that they had to be over 18 years old, living in Valspan, and must have at least completed between grades 5 and 8 at school.

Main findings – Respondents reported sometimes reading food labels, both in-store and at home, often by themselves or with the assistance of their children (especially older respondents). The most popular quality indicators used by respondents were best before date, brand names and store logos. Seventy two percent of the respondents read simple food label information, but struggled with more complex aspects such as nutritional aspects of food labels. A practically significant correlation between literacy and correctly identifying "Complex nutritional information" was identified. Consumers who were able to understand "Complex nutrition related information," also showed a practically significantly, better "Ability to correctly identify food-related symbols," and tended to calculate products, "50% off product" prices, correctly.

Practical implications – If marketers and industry role-players are able to make food labels easy to understand for low-literate consumers, and can provide information to assist low-literate consumers to make informed purchase decisions and food choices, a situation benefitting both consumer and company can be created. Role players need to find ways of assisting low-literate consumers to improve their purchase decisions and experience.

Originality/value – The study is unique as it is the first to focus on variables, such as low-literate, low-income consumers' use of food labels in rural South Africa. Recommendations provided will enable industry role players to better cater to the needs of low-literate consumers living in rural areas.

Keywords - Consumer, food label, functionally low-literate, rural, label use

Paper type - Research paper

3.1 Introduction and background

A fast growing segment of the world's population is consumers living in rural areas of emerging market countries (Craig and Douglas, 2011). Emerging countries are characterised by high economic growth rates (Jansson, 2007), and include South Africa (SA) (Ramamurti, 2008). It has been suggested that key growth potential of emerging markets lies in the large proportion of lower income consumers living in rural areas, rather than higher income, elite consumers living in urban areas (Mahajan and Banga, 2006).

The association between low-income and rural areas is apparent in SA, as a total of 69% of adult consumers living in rural areas live in poverty (UNICEF, 2010). During 2011, the lowest two quintiles (40%) of South African households received no more than R10 009 per year (Statistics SA, 2012). Low-income has been linked to low-literacy (Viswanathan, 2009; Viswanathan *et al.,* 2005), which presents the problem of low-literacy in low-income, rural areas. The characteristic rural consumer, struggling with low-income and living conditions, has thus led to significantly different needs and purchasing practices, when compared to urban consumers (Craig and Douglas, 2011; Schönfeldt and Gibson, 2010).

Budgets are usually restricted for consumers living in rural areas, and selecting a nutritious product which provides good value for money can be assisted through consulting food labels, which are the primary link between consumers and products (Sharf *et al.,* 2012). However, with the prevalence of functional low-literacy currently in SA, reading food labels and making informed purchase decisions poses challenges to both consumers and industry role players. Consumers are challenged as they attempt to manage the retail environment as competent consumers, selecting and paying for products, without drawing unnecessary attention to their lack of literacy skills. Industry role players are challenged as they discover the need to adapt their marketing strategy to low-income, rural areas, incorporating factors, such as literacy levels, into their labelling and marketing mix (Craig and Douglas, 2011).

Lower-income groups are generating increasing interest to marketers in SA, due to the brand loyalty they exhibit and purchasing power they hold (Van Biljon and Jansen van Rensburg, 2011). Retailers need to start targeting low-income consumers in order to increase their market share of food purchased (Humphrey, 2007), and recognise the collective purchasing power of these consumers (Guesalaga and Marshall, 2008) for basic necessities, such as food, to capitalise on the quantity of basic needs products that this market purchases. This study serves to determine how functionally low-literate consumers in rural areas read, use and apply the information found on food labels to their decision-making, as well as highlight demographic differences and associations regarding label use.

3.2   Literature review

3.2.1   Low-income, rural South Africa

In SA, approximately 38% of the land is classified as rural (UNESCO, 2010), housing consumers from lower socio-economic groups, whose literacy levels and monthly income is low (Van Biljon and Jansen van Rensburg, 2011; Vorster *et al.,* 2005). Consumers categorised into low-income households spend approximately 60% of their income on food (Von Braun, 2008), often more than their urban counterparts (Altman *et al.,* 2009). Low-income consumers typically buy groceries from cash-and-carry wholesalers (Makro and Metro), retailers (Spar and Pick n Pay), and informal spaza stores, which are said often to be the primary retail outlets in rural communities (D'Haese and Van Huylenbroeck, 2005). Consumers in this group face a variety of challenges that restrict their ability to obtain required goods and services; however, research has shown that they display great skill in controlling their lives and their immediate environment, to adapt to their financial constraints (Hamilton and Catterall, 2008).

Strategies, such as price comparisons and using products and brands in innovative ways, in order to cope with financial constraints, are common among low-literate consumers (Hamilton and Catterall, 2008). For example, they may shop with lists and a budget (Hamilton, 2009), although list making may be considered difficult, and some prefer to buy items until their money is spent. Additionally, low-income consumers may accept lower quality goods and services, often making use of second-hand products (Hamilton, 2009). Valspan is a rural community used for this study, and is situated in the Northern Cape (Maplandia, 2005). A recent study in this area indicated that 80.7% of respondents specified their need for food in the community (Coetzee, 2011), illustrating a clear need for food for these low-income, rural consumers.

3.2.2   Functionally low-literate consumers

Functional literacy can be measured, using level of education, such as the number of school years completed (Kirsch and Guthrie, 1977) which is grade 6 or 7 in SA (Posel, 2011). There is no finite demarcation to define consumers as literate or low-literate, and the connection between low literacy and literacy, rather, is a continuum (Mårtensson and Hensing, 2012; Stedman and Kaestle, 1987), and therefore level of education should be used as a guideline for measuring literacy, and not a concrete measurement.

Functional literacy allows consumers to fully participate in society – both economically and socially (Nutbeam, 2008), and gain employment, acquire transport and cope with economic necessities (Kirsch and Guthrie, 1977) better and with more control than non-literate consumers (Nutbeam, 2008). Literacy also promotes the learning of facts and increase of knowledge, while

assisting in the learning of procedures and skills (Abdi and Cleghorn, 2005). Such procedures and skills may include those carried out when purchasing food.

Functionally low-literate consumers may experience several challenges when interpreting information on food labels and food packaging (Adkins and Ozanne, 2005a; Viswanathan *et al.,* 2005). These challenges can be regarded as cognitive-, product-, social- and affective-related (Gau and Viswanathan, 2008). When faced with cognitive challenges, functionally low-literate consumers may have a tendency to make use of concrete reasoning and pictorial thinking (Viswanathan, 2009; Viswanathan *et al.,* 2005), when in the retail environment. When resorting to concrete reasoning, consumers may use single pieces of information on which to base decisions, without giving attention to remaining product attributes (Viswanathan, 2009). This means that functionally low-literate consumers may make decisions grounded on a single product attribute, such as price, size, or expiry date. As low-literate consumers have an inclination, or tendency, to pictorial thinking, they attach an analogical meaning to information or content (Kunda and Goel, 2008). Low-literate consumers often use information signals, such as graphics or pictures, to process information (Adkins and Ozanne, 2005b; Viswanathan *et al.,* 2005), instead of reading the information. Product-related challenges include aspects involved in product comparison (Gau and Viswanathan, 2008; Viswanathan *et al.,* 2009), whilst social and affective-related challenges are similar in that both are related to consumer relationships (Schiffman and Kanuk, 2010) and emotions (Viswanathan *et al.,* 2005).

3.3   Food labels

Food labels serve as a link between consumer and retailer, while also acting as a primary source of information when shopping (Grunert and Wills, 2007; Wills *et al.,* 2009). Consequently, it is essential that consumers understand the information provided at the point-of-purchase, as this information is often used to guide decision-making (Cowburn and Stockley, 2005). Simple terms found on food labels are often well understood; however, more complex information is often difficult to comprehend (Cowburn and Stockley, 2005; Grunert and Wills, 2007), even more so for consumers with low-literacy skills, who may find it even more difficult to read, understand and apply the information found on food labels (Jay *et al.,* 2009). Through the misinterpretation of information, or inability to comprehend the information found on food labels, consumers may consequently make poor food-related decisions.

For the purpose of this article, the term 'food label use' will include three components; namely, reading, understanding and applying of food label information to decision-making. Consumers may be motivated to read food labels, especially when buying a product for the first time, and when checking nutritional information (Kempen *et al.,* 2011), the expiry date (Jacobs

et al., 2010), and ingredient list (Singla, 2010). Due to the variety of choices available on supermarket shelves, reading is especially important, to select nutritional food products (Sanlier and Karakus, 2010). Pictures, symbols (Cowburn and Stockley, 2005; Grunet and Wills, 2007) and imagery (Jacobs *et al.,* 2010; Van Biljon and van Rensburg, 2011) may be useful in conveying the information found on food labels to consumers (Cowburn and Stockley, 2005; Grunet and Wills, 2007), which may be of specific importance to low-literate consumers who may avoid relying on labels for information (Viswanathan *et al.,* 2009), possibly because they are unable to use (read, understand and apply) the information.

Understanding the information on a food label is imperative, in order to effectively use food labels and maximise the benefits that labels can provide (Jacobs *et al.,* 2010). Cognitive ability plays an important role in determining the extent to which consumers are able to understand information found on food labels (Cowburn and Stockley, 2005). For functionally low-literate consumers, understanding abstract information, such as kilojoules and nutritional value, may be even more difficult (Viswanathan *et al.,* 2009) than for functionally literate consumers. It is additionally difficult for low-literate consumers to make product related calculations, such as price discounts and cumulative totals (Viswanathan *et al.,* 2008; Viswanathan *et al.,* 2009).

The third component of food label use, application of information during decision-making, is associated with determining how functionally low-literate consumers use information available to them to make decisions (Viswanathan *et al.,* 2005), as well as how the information provided (such as price, brand logos or nutritional tables) may affect their decision-making and post purchase evaluation of a product.

3.4   Methodology

3.4.1   Research design

A quantitative research approach was used, in order to provide objective statistical results for the study (Maree and Pietersen, 2010), to provide an indication of the relationship between the variables that were investigated in the study (Leedy and Ormrod, 2010). A cross-sectional survey, employing a descriptive design was used.

3.4.2   Ethical considerations

Ethical approval for this study was obtained from the ethics committee of the NWU (NWU-00040-13-A1). Participation was voluntary, and respondents were able to withdraw from the process at any time. Verbal consent was also obtained from the respondents, due to difficulties with reading and writing, and anonymity was assured at all times (Christensen *et al.,* 2011).

3.4.3   Sampling

Respondents were recruited by means of a convenience sampling method, namely, purposive sampling. Respondents completed a basic literacy test, in order to classify their level of literacy, before completing the food label questionnaire with the field worker. Inclusive criteria for respondents to fill out the questionnaire included:

- Respondents must have been 18 years or older;

- Respondents must have been classified as functionally low-literate (by level of education);

- Respondents must have been living in the Valspan rural area.

3.4.4   Data collection

To prevent potential misinterpretation (Leedy and Ormrod, 2010), the questionnaire was administered through an interviewer-administered approach. Trained field workers who spoke both English and the local language (Setswana) conducted face-to-face interviews with respondents in order to ensure that they understood and filled out all the questions of the questionnaire, as recommended by Christensen *et al.* (2011) to overcome any literacy-related problems. The questionnaire was translated and printed in two languages, English (as food label information is printed in English) and Setswana (as this is the first language of many potential respondents and field workers in Valspan). After discarding four questionnaires, the final analysis was completed on 292 questionnaires.

3.5   Measuring instrument

3.5.1   Low-literate consumers' literacy assessment

The assessment was designed, using an international literacy survey conducted by Statistics Canada, as a guideline, and aimed to measure prose and document literacy, numeracy, and problem solving, as suggested by the published report (Statistics Canada, 2011). The literacy assessment was also approved by an expert in literacy at the North West University (NWU).

3.5.2   Measuring low-literate consumers' use of food labels

The relationships between the variables (functionally low-literate consumers, food label use, and a rural area) were observed and described, using descriptive theory (Bordens and Abbott, 2011). As research investigating the use of food labels by functionally low-literate consumers in a rural area is relatively scarce, this study has subsequently provided new information and valuable insight (Babbie, 2010), as an exploratory study (Babbie, 2010; Fouché and De Vos, 2011), focussing on the specific group of functionally low-literate consumers and their use of food labels. The questionnaire was adapted from two previous questionnaires, which focused on consumers' food label knowledge (Van der Merwe *et al.*, 2012), and black, female low-literate consumers' use of clothing labels (Van Staden, 2012).

The respondents' reading of food labels was self-reported, and thus reflects the subjective opinion of respondents. Respondents were asked questions determining if they had ever noticed food labels, how frequently they shopped for food and used food labels, and whether they used the label information in the store, or at their home.

Respondents' understanding of food labels was objectively tested, using food label relevant show cards to test their understanding. Similar show cards were successfully used in a previous study (Van Staden, 2012), and were adapted to suit this study. Respondents were asked to correctly identify specific food label information, and make product related calculations.

Respondents' application of the information found on food labels to their decision making (either in-store or at home) was self-reported. Additionally, their tendency to pictographic thinking was explored, using show cards representing modified brand names or logos, and asking respondents to correctly identify the brand name or logo, also adapted from Van Staden, 2012.

3.6   Data analysis

The data collected for this study was analysed by the Statistical Consultation Services of the NWU, Potchefstroom Campus. The statistical package used was the International Business Machine (IBM) Statistical Package for Social Sciences (SPSS) Statistics Version 20, Release 20.0. Analyses that were applied included: descriptive statistics, T tests, Analysis of Variance (ANOVA's), Spearman's rankorder correlation, and two-way frequency tables. A one-way ANOVA was used to determine the statistical difference at $p \leq 0.05$ levels, between demographic information and label understanding. Practical significance was determined, using Cohen's effect sizes: medium ($d = 0.5$) and large ($d = 0.8$) (Ellis and Steyn, 2003), where practical significance was indicated by large effect sizes and medium effect sizes as an

indication of tendencies (Ellis and Steyn, 2003). For this study, $d \geq 0.45$ and $d \geq 0.7$ were interpreted as medium and large effect sizes, respectively.

Statistically significant correlations ($p \leq 0.05$) were determined between demographics and respondents' reading, use and application of food labels to decision-making. Spearman's correlation coefficients (r-value) vary, and scores of ≥ 0.30 indicate a medium effect size, and ≥ 0.45, a large effect size (Ellis and Steyn, 2003). Large effect sizes indicated practical significance, whilst medium coefficients indicate practically significant tendencies. For the purpose of this study, r- values ≥ 0.25 were considered as medium effect sizes, and reported. Bivariate analyses were conducted, including cross tabulations as measures of association between variables. Cramer's V measured the strength of the association between categorical variables (Field, 2009), where values ≥ 0.25 were considered medium, and ≥ 0.40 were considered large, and indicated practical significance.

3.7 Results and discussion

The results of this study are presented, according to the objectives of the study.

3.7.1 Demographics

The demographic characteristics of the sample are depicted in Table I. Seventy two percent of respondents were female. Many low-income households are headed by females (Kumanyika and Grier, 2006), who were more likely to participate and have a higher likelihood of being low-literate, compared to males (Statistics SA, 2012). The largest age groups were the 30-39 year (32%) and 40-49 year (30%) olds, whilst only 12 respondents were 60 years and older. It is significant that, despite changes to access in education and a focus on improving adult literacy in SA (Posel, 2011), 21% of the study population were under the age of 30, and still not well educated. The level of education among respondents was relatively evenly dispersed between Grades 5 to 8, suggesting that respondents would not exhibit exemplary literacy levels and were functionally low-literate (Posel, 2011). Almost 60% of the respondents were Setswana, followed by IsiXhosa (19%) and Afrikaans (12%), which are the primary languages spoken in the Northern Cape (Statistics SA, 2012). Regarding employment, 44% of respondents were unemployed, which supports previous research, suggesting high unemployment rates in the Valspan rural area (Coetzee, 2011), and that low-literate consumers may struggle to obtain employment in general (Dent, 2007; Dugdale and Clark, 2008). Regarding respondents' monthly income, 33% received R500 (± US$50) or less, whilst 13% received more than R2000 (± US$200), which is significant as a connection between low-income and low-literacy has also been identified in previous studies (Van Biljon and Jansen van Rensburg, 2011; Vorster *et al.,* 2005). Half of the respondents were never married, whilst 29% indicated they were married.

Over 80% of respondents had between one and three children living in their household, whilst fewer than 10% of respondents cared for 5 or more children.

Demographic characteristics	Total number of respondents (n)	Percentage of total sample (% of n)
Gender (n = 283)		
Male	80	28
Female	203	72
Age (n = 288)		
18-29	60	21
30-39	92	32
40-49	87	30
50-59	37	13
60+	12	4
Grade (n = 288)		
Grade 5	73	25
Grade 6	72	25
Grade 7	82	29
Grade 8	61	21
Primary household language (n = 283)	999	
Afrikaans	35	12
English	7	3
Setswana	166	59
IsiXhosa	53	19
IsiZulu	4	1
Sesotho	18	6
Employment (n = 286)		
Unemployed	127	44
Cleaner	32	11
Domestic worker	52	18
Salesperson	19	7
Farmer	16	6
Pensioner	29	10
Teacher	11	4
Income (n = 284)		
Less than R500	94	33
R501-R1000	90	32
R1001-R2000	62	22
More than R2000	38	13
Marital status (n = 287)		
Never married	143	50
Married	84	29
Cohabiting	46	16
Divorced	6	2
Widowed	8	3
Number of children living in household (n = 283)		
1-3	231	81
4	33	12
5+	19	7

Table I: Demographic distribution of the sample

3.7.2 Respondents' literacy levels assessment

Factor analysis was performed on the literacy assessment, and a medium Kaiser Meyer Olkin (KMO) value of 0.69, was obtained (Hutcheson and Sofroniou, 1999). The extracted factors were able to explain 52.02% of the variance in the data, accounting for over half the spread. The range of communalities from 0.38 to 0.75 suggests the factors represent different proportions of common variance (Field, 2009). Four factors were extracted, which explain four different types of literacy and included: "Comparison literacy", "Comprehension literacy", "Numerical addition literacy" and "Higher order thinking/ application literacy".

The Chronbach alpha coefficient, however, proved to be unreliable for the factor "Higher order thinking/ application literacy". Therefore, the reliability analysis was done for only one literacy score, with one item, "Michael wants to buy coffee. However, he is uncertain as to which tin will provide him the best value of money. Help Michael by selecting the best value for money coffee tin." omitted and analysed separately. This item, which was viewed individually, related to the respondents' ability to compare two products and decide which would provide the best value for money. In total, 62% of respondents answered this question correctly, indicating a good general understanding of price comparison. A Chronbach alpha value of 0.63 was calculated, using the remaining items, which was considered reliable as a psychological construct (literacy) was being measured, in which case values ≤ 0.7 are acceptable (Kline, 1999).

The remaining items grouped together, using factor analysis, was named 'Literacy'. This literacy assessment was used to assess the respondents' literacy levels, in addition to their school qualification, to determine their functional literacy in the food marketplace. No respondent answered every question in the literacy assessment correctly (mean = 79% correct), which, when used in conjunction with education level, confirmed that all respondents were functionally low-literate and met the inclusion criterion for this study.

3.7.3 Functionally low-literate consumers' use of food labels

3.7.3.1 Functionally low-literate consumers' reading of food labels

The majority of respondents shopped for food once a month (70%), whilst only a few (4%) shopped weekly. When shopping, 66% of the respondents reported noticing food label information on food products, and 67% indicated that they sometimes used food labels, implying that one third of the study population did not notice or use food labels. With regard to reading labels, 15% of respondents never read labels in-store and 18% never read labels at home. Respondents were not objectively tested to see if they read labels and thus results reflect their subjective responses. Respondents, who confirmed that they do read food labels, where

1=often; 2=sometimes; 3=never, were inclined to sometimes reading labels in store (mean = 1.69; SD ± .72), and at home (mean = 1.76; SD ± .74).

Consumers who are unable to read food labels, but still require food label information, may use different resources to assist them to read labels and act as capable consumers when making a purchase, as summarised in Table II and confirmed by Hamilton and Catterall (2008), as well as Viswanathan (2009).

	People assisting with food label reading	(n)	Often (%)	Sometimes (%)	Never (%)	Mean	SD
Table II: Different resources used to read food labels	Respondent self	260	72.3	18.1	9.2	1.38	.67
	Child	216	54.6	25.0	20.4	1.66	.80
	Family member	198	37.4	48.0	14.6	1.77	.69
	Store assistant	201	25.4	34.8	39.8	2.14	.80
	Friend	196	13.3	49.5	37.2	2.24	.67

SD = standard deviation

Often=1; Sometimes=2; Never=3

Results are ranked from highest to lowest, using "Often"

Regarding label reading, most respondents indicated that they often (72.3%) read labels themselves, while more than half often (54.4%) asked their children for assistance when reading food labels. Results confirm previous research, suggesting that low-literate consumers rely on family members for assistance in reading tasks (Adkins and Ozanne, 2005b). Respondents did not make use of the help of store assistants (39.8%) or friends (37.2%), as functional low-literacy is often the cause of emotional stress for consumers (Viswanathan *et al.,* 2005), linked to humiliation and shame (Ozanne *et al.,* 2005), which may occur when their literacy skills are exposed through asking for assistance.

The results indicated problems that may often be reasons why functionally low-literate respondents did not read food labels, which are presented in Table III. Previous research shows that consumers experience label related problems, specifically with nutrition terms, technical terms and calculations (Grunert and Wills, 2007).

	Problems with food labels	(n)	Often (%)	Sometimes (%)	Never (%)	Mean	SD
	Words too small to read	262	48.9	34.7	16.4	1.68	.74
	Too many words on label	260	43.5	42.3	14.2	1.71	.70
	Take too much time to read	268	39.6	43.7	16.8	1.77	.72
	Labels are not important	247	33.2	33.6	33.2	2.00	.82
	Do not trust labels	242	31.4	40.9	27.7	1.96	.77
Table III: Reasons for not reading food labels	Do not understand words	259	29.3	44.0	26.6	1.97	.75
	Do not read food labels	241	26.1	39.4	34.4	2.08	.78
	Cannot find information	239	18.4	43.1	38.5	2.20	.73

SD = standard deviation

Often=1; Sometimes=2; Never=3

Results are ranked, from highest to lowest, according to "Often"

The main problem often experienced by almost 50% of respondents was that the words were too small to read, consistent with previous research (Cowburn and Stockley, 2005; Singla, 2010). On average, 18-49% of respondents reported often experiencing various problems regarding food labels, indicating that food labels are not necessarily consumer friendly to low-literate respondents.

3.7.3.2   Functionally low-literate consumers' understanding of food labels

Regarding low-literate respondents' ability to understand food label information, two reliable factors, "Simple, obvious information" and "Complex nutrition-related information," were extracted (Table IV). The KMO score of 0.72 was considered good (Hutcheson and Sofroniou, 1999), and an acceptable variance of 59.61% explained the data spread. The question regarding the specific vitamin on the product label had a communality of 0.16, and did not fall into the acceptable range, suggesting minimal variance was explained for this item within the factor (Field, 2009). The item was, however, not omitted from the factor analysis since it made theoretically sense to include it, and since the whole factor analysis pattern made sense. The remaining range in communalities was 0.47 to 0.80, suggesting that variables in these factors were acceptable (Hair *et al.,* 1998). However, in the average score, each item had equal weight and therefore this limitation did not have any consequences. A Chronbach alpha score of ≤ 0.7 is acceptable when testing cognitive thinking (Kline, 1999), and thus the value of 0.63 is

acceptable. Respondents' responses to the question were interpreted as Wrong = 0; Correct = 1.

	Item	Factor loading	
		1 – Simple, obvious information	2 –Complex nutrition related information
	What vitamin is in the maize?		0.39
	What is the best before date?	0.77	
	What is the brand of the maize?	0.68	
	What is the weight of the product?	0.82	
	How many kilojoules are in 100g of this food?		0.85
	How much fat is in 100g of this food?		0.90
	How much dietary fibre is in 100g of this food?		0.89
	Range of communalities	0.42-0.67	0.16-0.80
Table IV: Summary of exploratory factor analysis of respondents' understanding of food labels (N = 292)	**Chronbach alpha coefficient**	0.62	0.72
	Mean factor score ± SD	81.85 ±29.01	25.0 ±27.34
	Total variance explained by extracted sub-factors (%)	59.61	
	KMO	0.72	

SD = standard deviation

The factor "Simple obvious information" rendered a mean factor score of 81.85%, indicating that the information was correctly identified by the majority of respondents. Results may suggest that respondents have been exposed to this type of information as it was well understood. Concerning "Complex nutrition related information", the mean factor score was 25%. The respondent's ability to correctly identify the vitamin in the product was an exception, probably since the word vitamin was indicated on the label, and 63% were able to identify the vitamin correctly. Furthermore, only 25% of respondents could correctly identify kilojoules, fat, and fibre quantities. This illustrates how low-literate consumers are able to understand simple information, but struggle to comprehend challenging reading material (Jae *et al.,* 2008; Sabatini *et al.,* 2010), proven by the overall poor mean factor score. It is evident that low-literate respondents did not understand (in particular) complex nutrition related food label information. Without understanding information, it may be difficult to seek the necessary information (Schiffman and Kanuk, 2010) to make decisions.

When identifying food-related symbols on the label, one factor, "Ability to correctly identify symbols," was extracted. Respondents' responses to the question were interpreted as Wrong = 0; Correct = 1. The KMO value of 0.74 was considered good (Hutcheson and Sofroniou, 1999). The variance of 56.34% accounts for the distribution in the data. The communalities found in the

data ranged from 0.70 to 0.78, indicating acceptable common variance (Hair *et al.,* 1998), and a Chronbach alpha value of 0.7 showed acceptable internal reliability (Field, 2009).

A mere 11% of respondents correctly identified food-related symbols according to the mean factor score, and almost 90% of respondents were therefore unable to identify the meaning of food label symbols. The item "recycle" was most often correctly identified by 27% of respondents, possibly due to exposure of recycle symbols on a variety of non-food related sources, such as paper and plastic. However, 73% of respondents could not correctly identify this symbol, suggesting that their understanding of food label symbols was poor, although low-literate consumers tend to use pictorial thinking and often use symbols to process information (Adkins and Ozanne, 2005b; Jae and DelVecchio, 2004; Viswanathan *et al.,* 2005). Results propose that it is important to ensure that consumers understand the meaning of the symbols that are used, before attempting to assist low-literate consumers through use of pictures and symbols, as the value of using a symbol is lost if its meaning is not effectively conveyed.

3.7.3.3 Low-literate consumers' application of food label information during pre- and post-purchase decision-making

Low-literate respondents ability to identify store information was explored as part of pre-purchase decision-making by providing altered store logos (colour and shape) to them, and testing their ability to identify them correctly. Respondents' responses to the question were interpreted as Wrong = 0; Correct = 1. Factor analysis yielded one reliable factor, "Identification of the stores". The KMO value of 0.81 was considered exemplary (Hutcheson and Sofroniou, 1999), and 59,12% variance was explained by the factor (data not shown). Communalities ranged from 0.36-0.74, indicating that the factor shared a variety of common variance between items. A Chronbach alpha value of .85 was obtained, indicating acceptable internal reliability.

In general, 79% of the respondents could identify the store logos correctly, suggesting previous exposure to these logos. Pick 'n Pay and OK were the best recognised logos, as 83% and 81% of respondents correctly identified these logos, respectively. Shoprite (73%), Checkers (74%), Spar (73%), and Choppies (71%), were less well identified, although more than 70% of respondents identified these logos correctly. Many respondents were able to successfully identify most store logos after the font and shape had been altered, similar to previous research in clothing stores (Van Staden, 2012), indicating a strong familiarity with store logos, possibly due to repeated exposure to the logos, and respondents' tendency to use pictorial thinking to recognise store logos as a picture or shape, and not a word.

During the investigation of respondents' application of information on a food label during pre- and post-purchase decision-making (often = 1; sometime = 2; neve*r* =3), 82% reported

using the information frequently (often to sometimes) in-store (pre-purchase), whereas 85% of respondents frequently (often to sometimes) used the information at home (post-purchase). These results show that these low-literate respondents did not have a preference for using information in-store or at home, and that they claimed to use this information frequently during both pre-and post- purchase decision-making. This application of information to decision-making was, however, not objectively tested, and respondents may have inaccurately reported their use of food label information, possibly to impress field-workers, hide their lack of use of labels, and prevent embarrassment (Ozanne *et al.,* 2005).

When completing the numeracy application questions, 95% of the respondents correctly added the cost of two products. This unexpectedly high frequency could be due to the calculation being basic. Similarly, 89% could correctly calculate the unit price of a product. Only one third of respondents could correctly calculate the cost of a product marked "50% off", possibly due to the confusing terminology (Gau and Viswanathan, 2008), thus affecting their ability to correctly interpret and calculate the new cost. A solution to this problem could be to include pictorial representation of this phrase, which may assist low-literate consumers' understanding of the discounted price concept (Adkins and Ozanne, 2005b). The different techniques that functionally low-literate respondents used to address calculation- related aspects of shopping were investigated and summarised in Table V.

	Calculation technique	(n)	Often (%)	Sometimes (%)	Never (%)	Mean	SD
Table V: Product related calculation techniques displayed by functionally low-literate respondents	Check for enough money in purse	276	75.7	15.9	8.3	1.33	.62
	Use cell phone to calculate total price	284	52.5	27.1	20.4	1.70	.79
	Pay for food products one at a time	277	42.6	31.8	25.6	1.83	.81
	Calculate cost in head	274	34.7	38.0	27.4	1.93	.79
	Ask someone to help calculate total price	280	21.4	38.2	40.4	2.19	.76

SD =standard deviation

Often=1; Sometimes=2; Never=3

Results are ranked from highest to lowest, according to "Often"

Numeracy skills and calculation techniques were investigated, using the scale: often = 1; sometimes = 2 and never = 3. Most respondents often (75.7%) checked to see if there was enough money in their purse to purchase desired products. The majority preferred not to ask someone to assist in calculating the cost of two or more products, with 40% reporting that they

never ask for help. Using a calculator to add the cost of two or more products was a popular method used by more than half (52.5%) of the respondents. This illustrates that some low-literate consumers are often (34.7%) unable to add up multiple numbers in their heads, and are comfortable using technological devices to assist them in managing retail environments (Shankar *et al.,* 2010). When this technique is applied, it may be to avoid the shame (Ozanne *et al.,* 2005) of not having enough money to pay for purchases (Hamilton, 2009). More than 40% often paid for products, one at a time. This indicates their preference to concretely use one piece of information (price) at a time, to calculate the total cost (Viswanathan, 2009). Paying for items one at a time is also a coping strategy used to avoid the embarrassment of asking someone for help (Viswanathan *et al.,* 2008; Viswanathan *et al.,* 2010).

Quality is an important aspect of food products, and indicates a specific value level (Verbeke and Roosen, 2009). The brand name and store indicated quality to just fewer than 80% of the respondents, and are commonly used by low-literate consumers as motivation to buy certain products (Ozanne *et al.,* 2005). Best before date and price were highlighted as quality indicators by over 90% of respondents, whilst 67% valued appearance of the product as an indicator, suggesting these attributes are popular motives for purchases (Grunert, 2005; Verbeke and Roosen, 2009). When using a single quality aspect on which to base a purchase decision, low-literate respondents also confirmed their tendency to practise concrete thinking. They refrain from comparing product attributes, and make decisions, using single pieces of information (Viswanathan, 2009; Viswanathan *et al.,* 2005). Additionally, low-literate consumers may also develop shortcuts or rules, such as the presence of a useful and relevant quality indicator, to assist with information overload and make a decision (Bloemer *et al.,* 2009; Schiffman and Kanuk, 2010), known as heuristics. This was evident in the study, as consumers who could identify store logos, and also confirmed store logos as an indicator of quality could be using the store logo as a heuristic to indicate quality.

3.7.4 Demographic differences between low-literate respondents and their use (reading, understanding and application) of food labels

For the one way ANOVA, the languages were divided into the following groups: English and Afrikaans, as well as IsiXhosa, IsiZulu, and Sesotho. Setswana was grouped on its own, since, with Afrikaans and English, it is one of the most spoken languages in the Valspan area. There was a tendency for English and Afrikaans- speaking respondents to better correctly identify "Advanced nutrition related information" on the food label ($d =$.60), than respondents who spoke Setswana ($d =$.60) and IsiXhosa, IsiZulu and Sesotho ($d =$.44). Additionally, English and Afrikaans- speaking respondents also showed a higher tendency and "Ability to correctly identify symbols" ($d =$.44), better than respondents who spoke Setswana, showing a tendency that

English and Afrikaans- speaking respondents had a better understanding of food label information, possibly because food labels are printed primarily in English (South Africa, 2010), making it easier for English- speaking respondents to understand. Afrikaans- speaking consumers in SA are often bilingual in English (Deumert, 2005), which could account for their better understanding of food labels than those speaking Tswana or other African languages.

There was a positive correlation of medium effect size between "Income" and understanding the "Complex nutrition related information" factor (r = 0.25), suggesting a tendency that higher income respondents were better able to understand the more difficult aspects of food labels, possibly due to their tendency to demand more information about food products (Ali and Kapoor, 2009), and their better knowledge of food products (Du Plessis and Rosseau, 2003) than their low-income counterparts. Additionally, consumers in lower income groups are less often targeted by marketing initiatives (Trujillo *et al.,* 2010), and therefore may not be exposed to more media sources, such as television and magazines, which could account for their poorer understanding of food labels, than consumers in higher income groups.

Regarding age, older respondents tended to ask their children to assist with reading food labels, more often than younger respondents (r =-0.30), possibly as a coping strategy. When low-literate consumers are able to build a trusting relationship with someone who can assist them with their shopping activities (Adkins and Ozanne, 2005a; Viswanathan and Gau, 2005), such as their children, they are able to save time and effort (Viswanathan, 2009, Viswanathan *et al.,* 2005;), and prevent exposing their poor literacy skills (Ozanne *et al.,* 2005). Secondly, younger respondents tended to use the cell phone calculator to calculate the cost of two or more products (r = 0.25), more than older respondents, which can be explained by an overall cell- phone adoption avoidance by older respondents (Auter, 2007).

More cleaners (91%) and pensioners (70%) had a greater tendency to ask their children to help them read food labels (Cramer's V = 0.29), than salespersons (64%), unemployed respondents (48%), farmworkers (46%), domestic workers (44%) and respondents with other occupations (17%). Both cleaners and pensioners may approach their children to assist them in reading food labels as a coping mechanism, primarily because they may be unable to read and require a reliable resource to help them read food labels (Adkins and Ozanne, 2005b; Viswanathan *et al.,* 2010), and hide their low literacy skills. Additionally, the small font on food labels may be difficult for pensioners to read, as older consumers' eyesight often deteriorates with age (Faraldo-García *et al.,* 2012).

3.7.5 Associations among demographic variables and use (reading, understanding and application) of food labels by functionally low-literate respondents

Correlations were determined between literacy levels and the application of literacy skills, when using food labels. A practically significant correlation ($r = 0.43$) was identified between the factors "Literacy" and "Complex nutrition related information," illustrating that respondents with higher literacy levels had a better understanding of complex nutrition- related information, as such nutrient and kilojoule quantities. This highlights that respondents with lower literacy levels did not understand vital components of the food label, which is important for product comparison and making informed, nutritionally appropriate food product decisions (Grunert and Wills, 2007; Kempen *et al.,* 2012).

The factor "Literacy" correlated positively with a medium effect size, with respondents' "Noticing food labels" ($r = 0.28$), indicating that those with higher literacy levels, tended to notice food labels more often and read them on a regular basis, which might lead to better label understanding (Kolodinsky *et al.,* 2008). The remaining four medium- effect- sized correlations were between the factor "Literacy" and food label information and food product related calculations, such as the factors, "Identifying food related symbols" ($r = 0.27$), and "Identifying shops" ($r = 0.29$), as well as the items "Calculation - 50% off" ($r = .29$), and "Calculation – cost of two products" ($r = 0.26$). These correlations indicate a tendency between underlying literacy and the identification of label symbols, as well as numeracy skills, identified by Rothman *et al.* (2006). Thus, respondents with better literacy levels tended to be able to more effectively apply their literacy skills to food labels, indicating a possible better understanding of food label symbols and numeracy, than respondents with lower literacy levels.

The factor "Ability to correctly identify food related symbols" correlated practically, significantly with the item relating to the cost of "50% off product" ($r = 0.46$), and the factor "Complex nutrition-related information" ($r = 0.53$). Similarly, respondents who understood "Complex nutrition-related information" tended to be able to calculate the "50% off product" price ($r = 0.30$). As the majority of respondents did not correctly identify food related symbols (≥72%), complex nutrition- related information (≥50%), and incorrectly calculated "50% off" (≥66%), understanding this information and completing these more difficult tasks (Jae *et al.,* 2008; Sabatini *et al.,* 2010), explains why the ability to correctly perform these three tasks were correlated.

In conclusion, the results show that literacy is imperative to the use of food labels, and respondents with higher literacy levels were able to use food labels more effectively, than their less literate counterparts. This suggests that improving literacy is essential in improving food label use among low-literate consumers. English and Afrikaans- speaking respondents, and respondents with higher income levels, understood aspects of the food label better than respondents who spoke African languages and received a lower income. Therefore, it is the

demographic groups who speak African languages and belonging to lower income groups that should be targeted for label related interventions. Alternatively, role players in the food industry can review the possibility of introducing food labels printed in an African language, to assist consumers in this demographic group.

Retailers and marketers aiming to improve sales among this target group should concentrate on improving and strengthening the power of their store and brand name, as these two aspects commonly represent quality to low-literate consumers. Low-literate respondents were able to complete basic calculations, however, certain terminology confused them. Retailers and marketers should be aware of this, and possibly aim to assist their low-literate customers by providing a picture-based representation of percentage-based promotions. This will also suit the low-literate consumer's tendency to pictographic thinking.

The study showed that the majority of the respondents did read food labels, often themselves, and also reported checking to see if they had enough money in their purses to pay for all the items they wished to purchase, indicating a tendency to remain independent when shopping. This behaviour should be accommodated by marketers and retailers aiming to encourage low-literate consumers to retain their independence, by avoiding initiatives and in-store programmes that require help from a store assistant, especially as store assistants were not a popular resource often used by low-literate respondents to assist with label reading. If marketers are able to incorporate these primary results into their food label design, and develop initiatives to assist low-literate, low-income consumers living in rural areas, they will be able better to fulfil the needs of low-literate consumers, and capitalise on the mass purchasing power that this emerging market represents. Such development is important in developing countries, such as SA, where consumers are diverse in areas of education, income and purchasing practices.

Food industry regulators should continue to present important aspects of the food label, such as best before date, brand name and weight, in a simple and easy to understand manner, as these aspects were well identified by low-literate respondents. Regulators should also, however, strive to make aspects, such as nutrition related information and food symbols, just as easy to understand, in order to assist in improving functionally low-literate consumers' understanding and consequent use of food labels.

3.8   Practical implications

Minimal research has been completed, investigating functionally low-literate consumer's use of food labels in a rural area. This study shows that there is a need for consumers living in rural areas to improve their use of food label information. This can be done through improving the consumer's literacy levels, or alternatively adapting food labels to cater better to the needs of

low-literate consumers living in rural SA. Additionally, store assistants can be trained to be aware that low-literate consumers may require assistance reading food labels, and to be sensitive to their needs when making product purchases. This will support low-literate consumers to make more informed purchase decisions, and improve their food shopping experience, whilst simultaneously assisting marketers, retailers and other food industry role players in maximising their sales to low-literate, low-income consumers living in rural areas. This target market should be recognised as important to marketers and retailers, as low-literate, low-income consumers form a large percentage of the emerging market and South African population.

3.9   Limitations and future research prospects

A limitation in this study was that the respondent's use of food labels was subjectively reported and not objectively tested. However, the results gathered from this study have provided insight into functionally low-literate consumers' use of food labels, and can be used as a starting point for further research in this field. The exploratory nature of the study, and probability method of sampling used suggest that the results cannot be generalised to all low-literate South African consumers living in rural area. The results and consequent recommendations, however, can be used to assist consumers in the Valspan community in an attempt to improve their food label use in the future.

The results of this study can be used to pursue several future research avenues. Firstly, the link/s between rural areas, low-income, low-literacy, food labels and malnutrition could be investigated. Secondly, ways in which marketers and food industry role players could adapt products to appear more low-literate consumer- friendly can be researched and recommended and, finally, an investigation into how low-income consumers, living in a rural area, can improve their purchase decisions, can be pursued. Similar research can also be conducted in other rural areas of SA, to investigate the similarities and differences between functionally low-literate consumers living in different areas, while a similar methodology could be adopted to investigate food label use among low-literate consumers in other developing countries.

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4.   CHAPTER 4: CONCLUSION

4.1   Introduction

This chapter serves to conclude the research dissertation, as well as discuss how the results of the research can be applied by different interest groups. The value of this study for each group differs; for example, low-literate consumers need to be able to read, understand and apply the food label information, in order to be able to make informed purchase decisions. Manufacturers, marketers and regulators need to know how product labels and packaging can be adapted, so that the unique needs of low-literate consumers can be addressed. The scale and the nature of the study will also be addressed, and aspects, which may have restricted the outcomes of the study, will be discussed in the limitations. Recommendations for future studies will also be provided.

4.2   Conclusion

The objectives of the study were to explore whether and when functionally low-literate consumers use (read, understand and apply) food label information to assist their decision-making; secondly, to explore the demographic differences between low-literate consumers and their use of food labels; finally, to make recommendations on how food label use can be improved and modified to be more friendly to low-literate consumers. A questionnaire was used to collect data to achieve the specific objectives. The questionnaire included a literacy assessment, which revealed that all the respondents in the study were functionally low-literate, further confirmed by the respondents' level of education completed.

Regarding functionally low-literate consumer's ability to read food labels, the majority of the respondents reported reading food labels. However, they also employed a variety of resources, such as their children, other family members, and cell phone calculators, to assist them to read food labels and cope in the retail environment. This suggests that, although they did report reading food labels, they were not able to independently use food labels, and may look for assistance to prevent experiencing emotions, such as humiliation and shame. Many respondents refrained from asking store assistants for help, possibly to avoid emotional stress and exposing their low-literacy skills. The challenges these consumers face are not lessened by the presentation and format of food labels, as the study revealed that many respondents felt that there are too many words on food labels, which are often too small to read.

When reviewing the respondents' understanding of food labels, the simple and obvious information was well understood, perhaps due to frequent exposure to this type of information.

Conversely, complex-nutrition related information and food-related symbols, in their current format, were more difficult for respondents to understand. This result is significant, as although low-literate consumers often self-report reading food labels, when their understanding of the information is tested, results reflect that they are unable to comprehend multiple aspects of food label information. Additionally, although low-literate consumers tend to use pictorial thinking and symbols to process information, results suggest that if the meaning of a symbol or picture is not effectively conveyed, the value of using a symbol or picture is lost.

The application of food label information to decision-making was also investigated and, in contrast to the symbols, many respondents were able to correctly identify altered store logos, indicating their tendency to use pictorial thinking. The high percentage of correctly identified logos, possibly could also be due to repeated exposure to these logos. Respondents in the study claimed to read food label information regularly, during both pre- and post-decision making, and did not appear to favour applying food label information, either in-store or at-home.

Regarding numeracy, the respondents were able to complete simple addition calculations correctly, but experienced difficulty in calculating the cost of discounted products, probably due to the confusing terminology associated with such calculations, and their limited numeracy skills. To avoid embarrassment, many respondents often checked if they had enough money in their purse before paying for the desired products, and also made use of cell phone calculators to assist adding the cost of two or more products, illustrating that they are not hesitant to use technology to assist their decision-making, especially those younger in age. Respondents in the study also displayed concrete reasoning, when preferring to pay for items singly, to avoid calculating the total cost of multiple products. These results show that respondents are sensitive to taking precautions to ensure they develop coping strategies, which ensure they have enough money, to pay for the desired products, when shopping.

Best before date, brand name and store were the most popular quality indicators used by respondents in this study, and these findings have been confirmed by previous research. These food label attributes and store logos acting as quality indicators could be due to a common familiarity and increased exposure to these aspects of the food label, as both best before date and brand name were correctly identified by the majority of respondents in the study. Similarly, the majority of respondents also correctly identified store logos, and confirmed them as an indicator of quality, which shows a tendency to use label attributes, or the store logo, as a heuristic shortcut, to indicate a certain level of quality.

Most respondents in the study were female, aged between 30-49 years, and had completed between Grade 5 and Grade 8 at school, perhaps due to a female-headed household tendency

among low-literate consumers. The majority of respondents spoke Setswana, and a large percentage were unemployed and earned R500 or less monthly, indicating low-income. Half the respondents were never married, and the majority had between one and three children living in their household. Regarding the demographic similarities and differences of respondents in this study, English and Afrikaans- speaking respondents showed a tendency to better understand advanced nutrition related information and food related symbols, probably because food labels are printed in English, and Afrikaans- speaking South Africans are often bilingual in English. Additionally, respondents in higher income groups showed a tendency to superior understanding of complex nutrition-related information, possibly due to an increased interest in food label information. Older respondents and cleaners, who may struggle to read or have deteriorated eyesight, favoured asking their children to assist them with food label use, and older consumers also tended to avoid using a cell phone calculator to assist their in- store product calculations, which could represent older generations avoidance of using technological appliances.

There was also a practically significant correlation between literacy and correctly identifying "Complex nutritional information". Similarly, consumers who understood "Complex nutrition related information," also showed a practically significantly, better "Ability to correctly identify food-related symbols," and tended to calculate products, "50% off product" prices, correctly. These tendencies collectively indicate that these are more difficult label-related tasks, and that higher literacy levels may possibly lead to a better understanding of the more complex aspects of food labels and numeracy, while also illustrating the importance of literacy and food label use. In contrast, results from the study also show that consumers with lower literacy skills may struggle to understand these aspects of food labels the most.

4.3   Practical applications of the research

4.3.1   Applications for functionally low-literate consumers

Literacy is an important skill required by modern day consumers to effectively function in the marketplace. Retailers and marketers primarily address the needs of literate consumers, and low-literate consumers are often faced with a variety of challenges when making food purchases. When consumers purchase food products, they often make use of the food label as a source of information to assist their decision-making process. If functionally low-literate consumers were equipped and able to better understand the information available to them on a food label, they might be able to evaluate two or more similar products better, and make more informed, healthy and economic food choices in the retail environment. Additionally, if the

information on the food label can be used to increase the consumer's product knowledge on aspects such as expiry date, recommendations for use and storage, as well as nutritional information, consumers could be able to, better use the food product, avoid consuming already expired products, and would be able to ensure products were stored in optimal conditions. This would all contribute to improved safety for the consumer and, in turn, to improved post-purchase satisfaction. Functionally low-literate consumers, who struggle financially, may also be assisted to make wiser, more economical food choices, if their understanding of monetary terminology and calculations of the food retail environment were improved.

These recommendations can be communicated to low-literate consumers through community centred classes, Church groups and health clinics. The consumers can be educated about different aspects of shopping, such as: how to read a food label, the meanings of food label symbols, and how to calculate discounted prices. Practical food label education involving both parents and children and store related tasks, can also be implemented at schools.

4.3.2   Applications for product manufacturers, marketers and retailers

Although the research was conducted from a consumer point of view, the results are also applicable and advantageous for product manufacturers, marketers and retailers. Minimal research has previously been conducted regarding functionally low-literate consumers and their use of food labels; therefore, this study provides valuable insight in this regard. Manufacturers and marketers should be aware of the specific terminology that low-literate consumes do and do not understand. The phrase "50% off" should be avoided, as many low-literate consumers are unable to understand it or, alternatively, a simple pictorial representation of the phrase should be included by marketers to visually represent the meaning of the phrase.

Manufacturers and marketers should also investigate using simplified symbols and pictures to which low-literate consumers can relate, to convey information as to the meanings behind the symbols, as the symbols currently used in food labels were not well interpreted by respondents.

If manufacturers and marketers are able to design a food label, which adult functionally low-literate consumers are able to easily understand, the possibility that school children, who also have completed grades 5 to 8, will also be able to understand the information on the food label, and their ability to apply it to their decision-making, will also improve. Thus, marketers will be able to reach different aged target markets, simultaneously. Additionally, if the food labels developed by manufacturers and marketers meet the needs of functionally low-literate South

African consumers, retailers will be able to capitalise on the large quantity of everyday food products that this market purchases.

Retailers should also aim to train store assistants to better assist functionally low-literate consumers, and make these assistants aware of the problems low-literate consumers may experience, and special needs they have with regard to receiving assistance with reading the information on the food label, and treating the low-literate customer with respect, to avoid humiliation. Retail groups should also avoid changing store logos, since the low-literate consumers' tendency to pictorial thinking currently assists them in correctly identifying store logos.

4.3.3   Applications for the food industry regulators

The food industry regulators can use the findings to adapt regulations regarding food labelling, to meet the demands of consumers in general, and improve the presentation of food labels so that the information is easy to read and understand. It is recommended that food labelling requirements be reviewed, as many functionally low-literate consumers are unable to understand the information on food labels. Specifically, regulators could explore different formats of presenting the information, such as the quantities of nutrients in the product, in order to allow even functionally low-literate consumers to understand the complex nutritional information presented on labels. A possible solution would be to explore the effectiveness of introducing the traffic light food label system and format, currently implemented in other countries. The reasons that low-literate respondents presented in this study for not reading food labels should also be addressed, and, where possible, the size of the letters on food labels should be increased, and number of words decreased.

4.4   Recommendations regarding consumer education

Government and educators may be able to assist low-literate consumers by aiming to improve literacy levels in the Valspan rural area, as better literacy levels tend to reflect a better understanding of complex aspects of food labels. Consumer scientists and educators can also undertake interventions to assist low-literate adult consumers to learn how to make purchase-related calculations, such as: calculating discounted prices; educate them to learn how to compare the different prices and sizes of similar products; to encourage value for money purchases; and assist low-literate consumers to understand the meaning of the information found in nutrition tables.

Educators and consumer scientists can also ensure that the meaning of symbols and pictures, which appear on food labels, are correctly explained and communicated to consumers, because, at present, the respondents in this study showed a poor understanding of what these images mean. If consumer scientists were able to assist low-literate consumers to better understand the important terminology and food label aspects, related to food purchases, such as "50% off" and "Food related symbols," these consumers may be able to improve their food label use and make better informed and economical food choices. Additionally, they may be encouraged to overcome the challenges they are faced with, and may also decrease the anxiety, stress and humiliation often experienced by them.

Consumer scientists can also strive to work with retailers, to ensure that shop assistants are trained to accommodate low-literate consumers, with regard to the specific assistance they may require, when shopping and using food labels. Additionally, they can encourage retailers to make use of sales assistance in a verbal format, instead of written assistance material (such as pamphlets and signs), so that even low-literate consumers, who struggle to read, are provided with product information. Similarly, consumer scientists may also look to encourage retailers to verbally advertise the nutritional benefits of their products. Finally, educators could collaborate with the health industry to encourage patients to critically review and compare food products, before making a purchase, in order to select the most nutritious product available.

4.5   Applications for future research

This study provides a good starting point for future research investigating variables, such as: food label use; functionally low-literate consumers; and rural areas. Future research in this field could include investigating the link between low-literacy and malnutrition, and low-literacy and actual food consumption. Additionally, the results of this study could be used to develop an educational or intervention programme, which specifically suits the needs of low-literate South African consumers. Similar programmes may then also be implemented in other developing countries, and could aim to improve low-literate consumers' food label use and, possibly, improve their food related purchases, and feasibly alleviate malnutrition. Future health and nutrition related research may also benefit from this research in providing important results regarding low-literate consumers.

4.6   Limitations and recommendations

The sample size of the study was 292 respondents, recruited by purposive, probability sampling methods. The size of the sample was determined at an accuracy level of 5%, and the sample probabilities will not differ by more than 0.05 from the true population probabilities. However, by using a larger sample size, the sample probabilities would not differ by more than 0.01 from the true population probabilities (at an accuracy level of 1%).

Due to the probability sampling method used and the exploratory nature of this study, the results were not intended to be generalised to all consumers living in rural areas of SA. The results of this study however can be of assistance as a basis, when conducting further research regarding functionally low-literate consumer's, their use of food labels, and other additional research involving consumers living in a rural area.

As the study was based in the Valspan community in the Northern Cape, individuals were recruited exclusively from this province. Future studies can be conducted in the remaining eight provinces of SA, in order to determine if functionally low-literate consumers living in different rural areas of SA share common characteristics, or display differences in their use of food labels. Additionally, such research could result in a nationwide study.

ANNEXURES

Annexure 1: Declaration of dissertation submission

SOLEMN DECLARATION

1. Solemn declaration by student

I, _Fay Irvine_

declare herewith that the thesis/dissertation/mini-dissertation/article entitled (exactly as registered/ approved title),

Functionally low-literate consumers' use of food labels in the rural area of Valspan in the Northern Cape of South Africa.

which I herewith submit to the North-West University, Potchefstroom Campus, in compliance / partial compliance with the requirements set for the _Magister Scientiae Consumer Science_ degree, is my own work, has been language edited and has not already been submitted to any other university.

I understand and accept that the copies that are submitted for examination are the property of the University.

Signature of student _[signature]_ University number _2168414b_

Signed at _Durban_ this _19_ day of _May_ 20.14

Declared before me on this _19_ day of _MAY_ 20.14

Commissioner of Oaths: _[signature]_ w/

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COMMISSIONER OF OATHS
Stamp of Commissioner of Oaths
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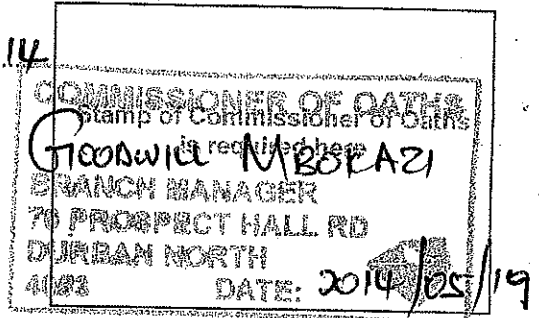
PLEASE NOTE: If a thesis/dissertation/mini-dissertation/article of a student is submitted after the deadline for submission, the period available for examination is limited. No guarantee can therefore be given that (should the examiners' reports be positive) the degree will be conferred at the next applicable graduation ceremony. It may also imply that the student would have to re-register for the following academic year.

2. Declaration by supervisor

The undersigned declares:

	Yes	No
1. The student is hereby granted permission to submit his/her mini-dissertation/dissertation or thesis.	✓	
2. That the student's work has been submitted to Turnitin and a satisfactory report has been obtained.	✓	-

Signature Supervisor/Promoter: _[signature]_ Date: _11 / 09 / 2014_

Annexure 2: Research methodology

1.   Research design

This study focused on functionally low-literate consumers' use of food labels in the Valspan rural area in the Northern Cape. Researchers have different beliefs and views about research and, as a result, the ways in which research is conducted vary. Certain standards and principles serve to direct researchers' actions, which lead to a framework of beliefs and guidelines that are referred to as a paradigm (Christensen *et al.,* 2011:10; Nieuwenhuis, 2010:47). It is important to identify the paradigm used in a study, to provide insight as to why certain research approaches and designs are used. A positivistic research paradigm, which typically provides simple explanations of data based on objective findings (Nieuwenhuis, 2010:49), was applicable to this study. In collaboration with a positivistic paradigm, a quantitative research approach was used, in order to provide objective statistical results for the study (Maree & Pietersen, 2010c:145). This approach was able to provide an indication of the association between the variables that were investigated in the study (Leedy & Ormrod, 2010:94).

The relationships between the variables (functionally low-literate consumers, food label use, and a rural area), were observed and described, using descriptive theory (Bordens & Abbott, 2011:39). As research investigating the use of food labels by functionally low-literate consumers in a rural area is relatively scarce, this study aimed to provide new information and valuable insight (Babbie, 2010:93), as an exploratory study (Babbie, 2010:92; Fouché & De Vos, 2011:95). These variables were measured, using a survey (Leedy & Ormrod, 2010:94), which is suitable for non-experimental research (Christensen *et al.,* 2011:330; Maree & Pietersen, 2010c: 152). The survey was used to capture quantitative information about the research topic (Maree & Pietersen, 2010c:152), and was suitable to gather information and measure multiple variables simultaneously for this study (Maree & Pietersen, 2010b:155). Additionally, the survey allowed the researcher to measure activities and beliefs (Christensen *et al.,* 2011:333), which were appropriate for this study in which consumers' use (activities), of food labels was investigated.

2. Sampling and study population

The following section will explain the different aspects of the sampling process.

The study population included respondents from the Valspan community in the Northern Cape. Respondents were recruited by means of purposive sampling methods. Adult respondents, who had completed schooling between grades 5 and 8, were included in this study. Although educational levels between grades 6 and 7 are used to classify functional low-literacy in South Africa (Posel, 2011:41), the larger inclusion criteria range allowed more respondents to participate in the study. This was of particular importance to this study, as it was difficult to locate adult respondents with the desired education levels. Respondents completed a basic literacy test (Addendum A), in order to classify their level of literacy, before completing the food label questionnaire with the field worker (Addendum B). Inclusive criteria for respondents to fill out the questionnaire included that they must have been:

- 18 years or older;
- classified as functionally low-literate (by level of education);and
- living in the Valspan rural area

The study was performed in the Valspan community in the Northern Cape. This area was selected because of an existing collaborative relationship between the NWU and the Valspan community. Furthermore, Valspan is a rural area with many low-literate consumers, a prerequisite for the study, thus further making it a suitable location. The questionnaires were filled out by the field workers at the respondents' homes. Permission to conduct this study was granted by community leaders in the Valspan community, by the Phokwane Municipality and the NWU, which was facilitated by the project manager of the Water Innovative Network (WIN), project co-ordinator, Miss Liesbet Barratt.

Purposive criterion sampling was used to select respondents for the general household survey. This method of sampling suggests that respondents were selected due to specific characteristics they possessed, which were needed for the study (Nieuwenhuis, 2011:79). The characteristics of respondents were determined during the research design phase of the study and included: age, level of education and residence (Nieuwenhuis, 2011:80). This non-probability method of sampling cannot be used to make conclusions about the South African low-literate population in general (Maree & Pietersen, 2011a:176), but allowed researchers to collect valuable data specific to the Valspan community. The methods used in this study can

also be used as a reference for future studies on how studies regarding functionally low-literate consumers can be approached, and where alternative sampling methods can be incorporated.

As this was a quantitative study, a survey using a large number of respondents was required (Fouché & Delport, 2011:64; Maree & Pietersen, 2010b:155), in order to calculate meaningful statistical results from which valid conclusions about functionally low-literate respondents' use of food labels could be drawn. Initially, the sample size depended on the number of respondents who are classified as functionally low-literate in the population. It was suggested by the Statistical Consultation Services of the NWU, that a minimum number of 200 respondents would be ideal for the study. In total, 292 questionnaires were completed and used in the study.

3. Data collection

The data for this study was collected by a survey, using a questionnaire as the measuring instrument (Singh, 2007:69). The use of a questionnaire was valuable in gathering the necessary information regarding variables from respondents (Maree & Pietersen, 2010c:152). Questionnaires may often be misinterpreted, due to respondents' reading and writing skills (Leedy & Ormrod, 2010:189), and therefore, to prevent potential misinterpretation, the questionnaire was administered through an interviewer-administered approach. Trained field workers walked from house to house in the Valspan community and conducted face-to-face interviews with respondents, in order to ensure that they understood all the questions in the questionnaire and helped fill out the questionnaire on behalf of the respondent, as recommended by Christensen *et al.* (2011:337), to overcome literacy-related problems.

Trained field workers conducted data collection for this study, and because the field workers were able to speak English, Afrikaans and Setswana, language barriers were prevented. These field workers were trained by the researcher to successfully assist respondents in completing the questionnaire, without giving respondents the right answer. Issues such as reliability, remuneration and the importance of collecting the respondents' honest answers, were also addressed. This training took place 5 days prior to the data collection. Show cards (Annexure 9), are a resource which was used to assist respondents in answering certain questions in the questionnaire, employing three different show cards.

Card 1 - showed an example of a maize meal label and nutritional information - to test the respondents' food label knowledge

Card 2 - presented various products and their prices – to test the respondents' ability to calculate prices

Card 3 - showed various grocery shop logos and names – to test the respondents' brand recognition and pictorial thinking.

These show cards were essential to the study, as they allowed the researcher to realistically test respondents' use of food labels.

Respondents were recruited from within the Valspan community. Field workers, who had been trained by the WIN project leaders and researchers, filled out the questionnaire together with the respondents. The researcher of the present study was also involved in the training of the field workers.

The collection of data was conducted from 9 September 2013 to 17 September 2013. Data was collected at the respondents' homes, which is typical for a face-to-face interview method (Bordens & Abbott, 2008:272; Christensen *et al.,* 2011:337). During the afternoons, where possible, honours students accompanied the field workers to the interview. Many field workers also completed the interviews after hours.

4. Measuring instrument

The questionnaire was adapted to suit this study from two previous questionnaires, which focused on consumers' food label knowledge (Van der Merwe *et al.,* 2012), and clothing label use by black female low-literate consumers (Van Staden, 2012), , since no exact previous scales were available, addressing the same objectives as the present study. Additionally, a range of demographic questions were included in the questionnaire, so that the demographic profile of respondents who participated in the study could be determined.

The questionnaire was translated and printed in two languages, English and Setswana. English was chosen, as food label information is presented in English in South Africa, and thus

consumers may be familiar with the English terms used. The questionnaire was also provided in Setswana, as this is the first language of many respondents and field workers in the Valspan area, and thus assisted in preventing miscommunication regarding the questionnaire used in this study. The questionnaire was translated from English to Setswana by an accredited translator and was translated back into English from Setswana by a Setswana mother tongue speaking University employee. This ensured that the meaning of the original questionnaire was not lost in the translation of the document. Section A of the questionnaire was used to determine the demographic profile of the respondents who participated in the study. Section B followed, with questions regarding the respondent's use of food labels and purchasing behaviour, as well as challenges they may experience and coping strategies they may adopt, when using food labels. Table 4 provides a summary of the questions, where the questions originated from, and how they were used in this study.

The respondents were also asked to perform label related tasks, using realistic show cards (Annexure 9), to test their abilities to read a food label, calculate prices and recognise brands. These questions were included as part of section B of the questionnaire.

Table 1: Table to show relevant information of the questions used in the questionnaire

NUMBER	QUESTION	ORIGINALLY USED IN	ORIGINAL QUESTION NUMBER	QUESTION ORIGINAL/ EDITED	SCALE USED
B1	What is your age?	Van Staden (2012)	A1	Original	Ordinal
B2	What is your job?	Van Staden (2012)	A2	Edited	Nominal
B3	What is your household monthly income?	Van Staden (2012)	A5	Original	Interval
B4	What is the highest level that you passed in school?	Van Staden (2012)	A3	Original	Ordinal
B5	What is your marital status?	Van Staden (2012)	A4	Edited	Nominal
B6	How many children under the age of 18 live with you?	Van Der Merwe *et al.* (2012)	II.8	Original	Ordinal
B7	Main language of household?	Van Der Merwe *et al.* (2012)	II. 6	Original	Nominal
B8	What is your gender?	New	New	New	Ordinal
C1	Have you ever noticed the food label information on food products?	New	New	New	Ordinal
C2	How often do you make use of food labels?	Van Der Merwe *et al.* (2012)	25	Edited	Ordinal Likert
C3	How often do you shop for food?	Van Der Merwe *et al.* (2012)	11	Edited	Nominal
C4	Who do you ask to help you to read food labels?	Van Staden (2012)	B	Original	Ordinal
C5	What problems do you experience with food labels?	Van Der Merwe *et al.* (2012)	26	Edited	Ordinal Likert
C6	Do you do the following things when you buy food?	Van Staden (2012)	19	Edited	Ordinal Likert
C7	Please tell me when do you use the information on a label?	Van Staden (2012)	45-46	Edited	Ordinal Likert
C8	Do the following tell you something about the quality of the food?	Van Staden (2012)	47-54	Edited	Nominal
C9	Please tell me the following on the food label. Show card 1.	Van Staden (2012)	13	Edited	
C10	Please tell me the meaning of the symbol to you?	Van Der Merwe *et al.* (2012)	48-51	Edited	
C11	Please work out the following. Show card 2.	Van Staden (2012)	24-26	Edited	
C12	Can you identify (tell the names of), the following shops? Show card 3.	Van Staden (2012)	30-38	Edited	

110

5. Pilot study

A pilot study serves to execute data collection on a small scale (Grinnel & Unrau, 2008:336), to determine if the methodology, sampling, questionnaire and analyses are suitable (Bless *et al.,* 2006:184). Prior to the small scale pilot study, cognitive interviewing was completed, which involved asking potential respondents about the questionnaire, (Boeije & Willis, 2013:87), to determine if the questions were worded in such a way that the meaning of the question was understood. The cognitive interviewing showed that all the questions were understood. Following cognitive interviewing, the pilot study took place one week prior to the commencement of the data collection, to determine if there were any problems with the questionnaire or methodology that needed to be resolved. The pilot study was valuable, as it highlighted minor errors researchers had previously missed, such as incorrect numbering and missing Setswana words. From the pilot study, it was also recommended that in several questions the phrase "Choose 1" be included, to simplify the questionnaire requirements for the respondent.

6. Data analysis

The data collected for this study was analysed by the Statistical Consultation Services of the NWU, Potchefstroom Campus. IBM SPSS Statistics Version 20, Release 20.0.0., was the statistical package used. Analyses that were applied include: descriptive statistics, T tests, ANOVA's, Spearman's rank order correlation, and two-way frequency tables. Although *P*-values were calculated, effect sizes were taken into consideration for practical significance of all differences and associations.

A one-way ANOVA was used to determine the statistical difference at $p \leq 0.05$ levels between demographic information (employment and language), and label understanding. Practical significance was determined, using Cohen's effect sizes: medium ($d = 0.5$), indicating practically significant tendencies and large ($d = 0.8$), (Ellis & Steyn, 2003:52), effect sizes were considered practically significant. For the purpose of this study $d \geq 0.5$ and $d \geq 0.7$ were interpreted as medium and large effect sizes, respectively.

Statistically significant correlations ($p \leq .05$), were determined between demographics and respondents' reading, use and application of food labels, to decision-making. Spearman's

correlation coefficients (*r*-value) vary, and scores of ≥ 0.25 indicate a medium effect size, and ≥ 0.40, a large effect size (Ellis & Steyn 2003:53). Large effect sizes indicated practical significance, whilst medium coefficients indicate practically significant tendencies. Only *r*- values ≥ 0.25 were reported in this study. Bivariate analyses were conducted, including cross tabulations as measures of association between variables. Cramer's V measured the strength of the association between categorical variables (Field, 2009:727), where values ≥ 0.25 are considered medium, and ≥ 0.40 are considered large, and indicated practical significance.

7. Ethical considerations

Ethical approval for this study was obtained from the Ethical Committee of the North-West University (NWU), under the umbrella project, namely, "Sustainable livelihoods, health and well-being in rural communities in South Africa – a trans disciplinary multi-level approach" (NWU-00040-13-A1). An application for approval for this sub-study of the umbrella project was submitted, after receiving the approval of the research proposal. In addition to the aspects addressed in the ethical application, the following considerations deserve to be mentioned:

- Potential respondents were not forced to participate in the study, as participation was completely voluntary (Babbie, 2010:64; Christensen *et al.,* 2011:106), and participants were given the opportunity to withdraw from the study at any time (Leedy & Ormrod, 2010:101; Mechling & Gast, 2010:34).
- Before the respondents answered the questionnaire, they were required to agree to a consent form, where they gave their permission to participate in the study, after being informed about any possible risks the study may have posed (Babbie, 2010:66; Christensen *et al.,* 2011:106). The consent form was verbally accepted after the respondent had first been read a letter by the field worker, which provided the researcher's personal details and contact information (Leedy & Ormrod, 2010:102).
- The procedures employed in this study ensured that respondents were not harmed, physically or emotionally (Christensen *et al.,* 2012:107; Mechling & Gast, 2010:34), and that personal information that could embarrass them (such as monthly income and literacy level), was not revealed (Babbie, 2010:65). Furthermore, during the cognitive interviewing process, if a respondent did not understand something, or gave the incorrect answer, the researcher acted with sensitivity - not allowing the respondent to see that the answer was incorrect.
- The data collected in the study was also kept partly confidential (Christensen *et al.,* 2011:124; Leedy & Ormrod, 2010:102), meaning that data is not publicly available and

only accessed for research purposes, with permission from the NWU. As respondents did not reveal their name or identity number, partial confidentiality was ensured.

- The raw data is currently stored and archived in locked cabinets in building F15 (Consumer Sciences), of the Potchefstroom campus of the NWU, and will remain there for at least seven years. Permission to see the original data needs to be obtained from the NWU. The data was also coded and computerised and protected by a unique password, kept by the principle researcher. The data will be destroyed after the completed storage period, according to the regulations of the NWU.

- The researcher also ensured that when the dissertation was written, information was not falsified, data was represented as accurately as possible, and that plagiarism was not committed (Christensen *et al.,* 2011:128).

- The researcher acted at all times with sensitivity and was aware of the disruption that the study may cause (Mechling & Gast, 2010:39), to the Valspan community. The researcher was also supervised by knowledgeable and experienced researchers (Mechling & Gast, 2010:54), who ensured that the correct ethical practices were followed.

8. Validity and reliability

Validity involves determining the extent to which the instrument (questionnaire), measures what it is supposed to measure (Leedy & Ormrod, 2010:28; Pietersen & Maree, 2010:216; Singh, 2007:77). For this study, validity thus included how successfully the questionnaire was able to measure functionally low-literate consumer's use of food labels in a rural area.

Construct validity measured how valid the instrument was in testing different constructs (Pietersen & Maree, 2010:217). Exploratory factor analysis was performed on the literacy assessment (Annexure 5), question C9; question C10; and question C13, to determine construct validity, to determine if the variables shared any common underlying dimensions (Bordens & Abbott, 2011:467), and to determine if the variables being investigated were interrelated or not (Christensen *et al.,* 2011:146). The Kaiser–Meyer–Olkin measure of sampling adequacy was used to determine the relevance of factor analysis, and ranged from 0.69 to 0.81, where values between 0.5 and 0.7 were considered medium, between 0.7 and 0.8 were considered good, and between 0.8 and 0.9, exemplary (Hutcheson & Sofroniou, 1999, 224-225). Principal axis factoring was performed and an Oblimin oblique rotation was used, with the delta set at 0, suggesting less correlated factors (Field, 2009:644) were derived from the data. The extracted factors all explained over 50% of the total variance in each scale, and the

communalities ranged from 0.30 to 0.80, suggesting factors represented different proportions of common variance (Field, 2009:637). Ideal communalities exceeded 0.3 (Hair *et al.,* 1998), and all communalities, except one, were considered ideal. This communality (.16), suggests minimal variance was explained by the factors for this item (Field, 2009:637), which was consequently removed.

Face validity refers to the degree to which the instrument looked valid (Christensen *et al.,* 2011:146; Pietersen & Maree, 2010:217). In order to ensure face validity, cognitive interviewing was completed as part of the pilot study. Cognitive interviewing involved asking potential respondents about the questions in the questionnaire (not answers to the questions), (Boeije & Willis, 2013:87), to determine if respondents' were able to understand each of the questions in the questionnaire. All questions were understood. As the questionnaire was reviewed by a panel of experts in consumer science and literacy, as well as experts from the NWU Statistical Consultation Services, it was considered face valid.

Content validity describes how valid research is with regard to the construct covering the content it is set out to measure (Bordens & Abbott, 2011:133; Pietersen & Maree, 2010:217). In this study, the construct used was a combination of questionnaires, which were successfully used in previous studies. Again, cognitive interviewing was used to determine if respondents understood the questions in the questionnaire or not, thus adding to content validity. Furthermore, because the questionnaire was reviewed by experts, its content can be considered valid.

The questionnaires used to compile the questionnaire for this study were successfully used in previous studies, which contributes to the reliability of the instrument. Cronbach's alpha was used to measure internal reliability of the questionnaire, and ensure the questions in the questionnaire measured the same construct (Christensen *et al.,* 2011:144), through inter-item correlation (Pietersen & Maree, 2010:216). Values ≥ 0.7 were accepted, to indicate acceptable internal reliability, and in cases where psychological constructs, such as literacy, were being measured, values ≤ 0.7 were also accepted, as indicated by Kline (1999). Since the questionnaire was administered to respondents by field workers, the reliability of this study will also depend on how consistent or dependable the field worker was, and how honestly the questions were answered by the respondents. Care was thus taken in the proper training of field workers, to ensure field worker reliability.

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Annexure 3: Ethical approval for study

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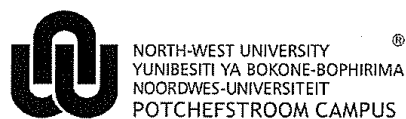
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To whom it may concern

9 September 2013

Dear Prof. van der Merwe

Additional Request - Ethics Application: NWU-00040-13-A1 "Sustainable livelihood, health and well-being in rural communities in South Africa - a transdisciplinary multi-level approach (WIN Project)"

Thank you for the feedback on the application after the previous meeting. Your request to include the sub-study, entitled "Functionally low literate consumers' use of food labels in a rural area" under the above mentioned umbrella project has been approved.

Yours sincerely

Prof. Minrie Greeff
Ethics Sub-committee Vice Chairperson

1

Annexure 4: Consent form

September 2013

THE PURPOSE OF THIS STUDY IS TO EXPLORE AND DESCRIBE FUNCTIONALLY LOW-LITERATE CONSUMERS' USE OF FOOD LABELS.

To all respondents

Miss Fay Irvine is doing a study about adults' use of food labels. The adults that she needs to help her are those who only finished between grades 5 and 8 at school.

If you would like to be a part of this study and complete the questionnaire, it will be out of your own free will, and if at any time you want to stop answering the questions you may do so. The field worker will fill your answers in on the paper. You will not have to give your name and the questions you answer won't be shown to anyone else.

The information from your answers will be used to help you make good food choices in the future. Please, it is important to answer all the questions that are asked.

Thank you for your help

Miss Fay Irvine

Supervisor: Prof M. van der Merwe

Co-supervisor: Prof M. Bosman

Co-supervisor: Dr H. Van Staden

CONTACT DETAILS

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Annexure 5: Additional results tables

DESCRIPTIVE ANALYSIS FOR ALL QUESTIONS IN THE QUESTIONNAIRE PRESENTED IN TABLES 1-13

Table 1: Descriptive analysis of literacy assessment

Question number	Question	Incorrect (%)	Correct (%)
A1.1	What is peanut butter made from?	4.6	95.4
A1.2	What is peanut butter used for?	5.4	94.6
A1.3	What vitamins are found in peanut butter?	16.8	83.2
A1.4.1	Select the most suitable answer to describe the word below.	47.2	52.8
A1.4.2	Select the most suitable answer to describe the word below.	29.6	70.4
A2.1	What country receives the most bananas from South Africa?	13.8	86.2
A2.2	What country receives the least bananas from South Africa?	18.7	81.3
A3.1	How many cokes are in one box?	10.0	90.0
A3.2	How many cokes are there in two boxes?	18.0	82.0
A4.1	What was the most popular brand of milk?	10.0	90.0
A4.2	What was the total number of votes for all 3 milks?	37.4	62.6
A5.1	Which coffee tin will provide the best value for money?	36.9	63.1

Table 2: Food label use (reading)

Question number	Question	Yes (%)	No (%)
C1	Have you ever noticed the food label information on food products?	65.6	34.4

Table 3: Frequency of food label use

Question number	Question	Often (%)	Sometimes (%)	Never (%)	Mean	SD
C2	How often do you make use of food labels?	19.1	66.9	14	1.95	0.57

SD = standard deviation
Often=1; Sometimes=2; Never=3

Table 4: Frequency of food shopping

Question number	How often do you shop for food?	Yes (%)	Mean	SD
C3a	Once a month	70.0		
C3b	Once in two weeks	16.8	1.54	0.93
C3c	Once a week	4.3		
C3d	Two or more times a week	8.9		

SD = standard deviation

Table 5: Different resources used to read food labels

Question no	Who do you ask to help you read food labels?	Often (%)	Sometimes (%)	Never (%)	Mean	SD	#Rank order
C4a	I read myself	72.3	18.1	9.2	1.38	0.67	1
C4b	A friend	13.3	49.5	37.2	2.24	0.67	5
C4c	A family member	37.4	48.0	14.6	1.77	0.69	3
C4d	My child	54.6	25.0	20.4	1.66	0.80	2
C4e	The store assistant	25.4	34.8	39.8	2.14	0.80	4

SD = standard deviation
Often=1; Sometimes=2; Never=3
#Rank order according to frequency of consulting the source to read labels 'often'

Table 6: Reasons for not reading food labels

Question no	Problems with food labels	Often (%)	Sometimes (%)	Never (%)	Mean	SD	#Rank order
C5a	Too much time to read	39.6	43.7	16.8	1.77	0.72	3
C5b	Too many words on label	43.5	42.3	14.2	1.71	0.70	2
C5c	Don't understand words	29.3	44.0	26.6	1.97	0.75	6
C5d	Words too small to read	48.9	34.7	16.4	1.68	0.74	1
C5e	Do not trust labels	31.4	40.9	27.7	1.96	0.77	5
C5f	Labels are not important	33.2	33.6	33.2	2.00	0.82	4
C5g	Can't find information	18.4	43.1	38.5	2.20	0.73	8
C5h	Do not read food labels	26.1	39.4	34.4	2.08	0.78	7

SD = standard deviation
Often=1; Sometimes=2; Never=3
#Rank order according to frequency of consulting the source to read labels 'often'

Table 7: Product related calculation techniques displayed by functionally low-literate respondents

Question no	Calculation technique	Often (%)	Sometimes (%)	Never (%)	Mean	SD	Rank order
C6a	Use cell phone to calculate total price	52.5	27.1	20.4	1.70	0.79	2
C6b	Ask someone to help calculate total price	21.4	38.2	40.4	2.19	0.76	5
C6c	Calculate cost in head	34.7	38.0	27.4	1.93	0.79	4
C6d	Pay for food products one at a time	42.6	31.8	25.6	1.83	0.81	3
C6e	Check for enough money in purse	75.7	15.9	8.3	1.33	0.62	1

SD = standard deviation
Often=1; Sometimes=2; Never=3
#Rank order according to frequency of consulting the source to read labels 'often'

Table 8: Application of food label information, pre- and post-purchase

Question number	When information on the label is used	Often (%)	Sometimes (%)	Never (%)	Mean	SD
C7a	In the shop	46.1	38.6	15.4	1.70	0.72
C7b	At home	42.2	40.1	17.7	1.76	0.74

SD = standard deviation
Often=1; Sometimes=2; Never=3

Table 9: Food label quality indicators

Question number	Do the following tell you something about the quality of the food?	Yes (%)	No (%)
C8a	Best before date	95.4	4.6
C8b	Appearance of product	90.0	33.5
C8c	Price	88.0	6.5
C8d	Brand name	77.9	22.1
C8e	The store where you buy (Shoprite, Choppies etc)	83.0	17.0

Table 10: Understanding of different aspects of the food label

Question number	Question	Correct (%)	Incorrect (%)
C9	Please tell me the following on the food label (Show card 1)		
C9a	What vitamin is in the maize	63.8	36.2
C9b	What is the best before date	81.0	19.0
C9c	What is the brand of the maize	59.0	20.3
C9d	What is the weight of the product	86.6	13.4
C9e	How many kilojoules are in 100g of this food?	10.8	89.2
C9f	How much fat is in 100g of this food?	12.5	87.5
C9g	How much dietary fibre is in 100g of this food?	14.5	85.5

Table 11: Understanding of food label symbols

Question number	Question	Correct (%)	Incorrect (%)
C10	Please tell me the meaning of the symbol to you		
C10a	Recycle	26.6	73.4
C10b	Vegetarian	4.2	95.8
C10c	Heart Foundation	5.3	94.7
C10d	Halaal	9.9	90.1

Table 12: Food product related calculations

Question number	Question	Correct (%)	Incorrect (%)
C11	Please work out the following (Show card 2)		
C11a	How much is the total price of a Ricoffy and a tea. One is R35 the other R20?	95.1	4.9
C11b	The price of the noodles is R5.00 and the label says 50% off. What does it cost now?	33.7	66.3
C11c	The four drumsticks cost R20. What does one cost?	88.9	11.1

Table 13: Identification of store logos

Question number	Question	Correct (%)	Incorrect (%)
C12	Can you identify (tell the names of) the following shops (Show card 3)		
C12a	Pick n Pay	85.0	15.0
C12b	Checkers	88.2	11.8
C12c	Spar	61.7	38.3
C12d	Choppies	79.1	20.9
C12e	Shoprite	81.1	18.9
C12f	OK	79.5	20.5

FACTOR ANALYSIS OF RESPONDENTS UNDERSTANDING OF THE LITERACY ASSESSMENT AND VARIOUS ASPECTS OF THE FOOD LABEL (TABLES 14-16)

Table 14: Summary of exploratory factor analysis of the literacy assessment Test (N =292)

Item	Factor loading			
	1 – Comparison literacy	2 – Comprehension literacy	3 – Numerical addition literacy	4 – Higher order thinking / application literacy
Comprehension question – peanut butter	.	**0.792**		
Comprehension question – peanut butter		**0.568**		-0.241
Comprehension question – peanut butter	0.337	**0.409**		
Multiple choice – meaning of	**0.698**			-0.332
Multiple choice – meaning of allergy	**0.632**			-0.325
Comparison numeracy question – banana percentages	0.490		**0.550**	
Comparison numeracy question - banana percentages	0.327		**0.753**	
Numeracy question – counting cokes			0.393	**-0.620**
Numeracy question – multiplication cokes	-0.291	0.295	0.**649**	
Comparison numeracy question – comparing	**0.617**			
Comparison numeracy question- counting milk	**0.576**			
Comparison numeracy question – value for money coffee				0.**627**
Range of communalities	0.38 -0.56	0.34-0.64	0.57-0.75	0.42-0.64
Chronbach alpha coefficient	0.23	0.42	0.60	-0.4
Total variance explained by extracted sub-factors (%)	52.02			
KMO	0.69			

Factor loadings indicated in **bold** are grouped together

Table 15: Summary of exploratory factor analysis of respondents understanding of food labels (N = 292)

Item	Factor loading	
	1 – Simple, obvious information	2 – Complex nutrition related information
What vitamin is in the maize?		0.39
What is the best before date?	0.77	
What is the brand of the maize?	0.68	
What is the weight of the product	0.82	
How many kilojoules are in 100g of this		0.85
How much fat is in 100g of this food?		0.90
How much dietary fibre is in 100g of this food?		0.89
Range of communalities	0.42-0.67	0.16-0.80
Chronbach alpha coefficient	0.62	0.72
Mean factor score ± SD	81.85 ±29.01	25.0 ±27.34
Total variance explained by extracted sub-factors (%)	59.61	
KMO	0.716	

SD =standard deviation

Table 16: Summary of exploratory factor analysis of respondents' understanding of food related symbols (N = 292)

Item	Factor loading
	1 – ability to correctly identify food symbols
Recycle	0.91
Vegetarian	0.90
Heart foundation	0.82
Halaal	0.79
Total variance explained by extracted sub-factors (%)	56.34
Range of communalities	0.70-0.79
KMO	0.740
Chronbach alpha coefficient	0.70
Mean ± SD (SD)	11.21 ± 21.95

SD = standard deviation

Table 17: Summary of exploratory factor analysis of respondents ability to recognise store logos (N = 292)

Item	Factor loading
	1 – Ability to correctly identify store logo
Pick n Pay	0.734
Checkers	0.760
Spar	0.599
Choppies	0.859
Shoprite	0.856
OK grocers	0.788
Total variance explained by extracted sub-factors (%)	59.42
Range of communalities	0.30-0.74
KMO	0.81
Chronbach alpha coefficient	0.85
Mean factor score ± SD	79.07± 29.88

SD = standard deviation

CORRELATIONS BETWEEN DEMOGRAPHICIAL VARIABLES, LITERACY AND FOOD LABELS (TABLES 18-20)

Table 18: Correlation matrix between demographical characteristics and literacy using Spearman's rank order correlation (r)

	Complex nutrition related information	Children assist reading labels	Use a cell-phone to calculate the price of 2 or more products
Age	-0.167	-0.301*	0.254*
Income	0.251*	0.087	0.079

*Medium effect size

**Large effect size

Table 19: Correlations between literacy and food label use, using Spearman's rank order correlation (r)

	Literacy
Complex nutrition related information	0.428*
Food label symbols	0.266*
Store logos	0.291*
Calculation – R20 + R35	0.255*
Calculation - 50% off product	0.285*
Noticed food labels	0.277*

*Medium effect size

**Large effect size

Table 20: Correlation matrix between food related symbols, complex nutrition related information and food product calculations, using Spearman's rank order correlation (r)

	Ability to correctly identify food related symbols	50% off	Complex nutrition related information
Ability to correctly identify food related symbols	1.00	0.46**	0.53**
50% off	0.46**	1.00	0.30*
Complex nutrition related information	0.53**	0.30*	1.00

*Medium effect size

**Large effect size

Annexure 6: Author guidelines

INTERNATIONAL JOURNAL OF EMERGING MARKETS

Manuscript requirements

Please prepare your manuscript before submission, using the following guidelines:

Format	All files should be submitted as a Word document
Article Length	Articles should be a maximum of 6000 words in length. This includes all text including references and appendices. Please allow 280 words for each figure or table.
Article Title	A title of not more than eight words should be provided.
Article Title Page	An **Article Title Page** should be submitted alongside each individual article using the template provided. This should include: • Article Title • Author Details (see below) • Acknowledgements • Author Biographies • Structured Abstract (see below) • Keywords (see below) • Article Classification (see below)
Author Details	Details should be supplied on the **Article Title Page** including: • Full name of each author • Affiliation of each author, at time research was completed • Where more than one author has contributed to the article, details of who should be contacted for correspondence • E-mail address of the corresponding author • Brief professional biography of each author.
Structured Abstract	Authors must supply a structured abstract on the **Article Title Page**, set out under 4-7 sub-headings (see our "How to... write an abstract"

guide for practical help and guidance):

- Purpose (mandatory)
- Design/methodology/approach (mandatory)
- Findings (mandatory)
- Research limitations/implications (if applicable)
- Practical implications (if applicable)
- Social implications (if applicable)
- Originality/value (mandatory)

Maximum is 250 words in total (including keywords and article classification, see below).

Keywords	Please provide up to 10 keywords on the **Article Title Page**, which encapsulate the principal topics of the paper (see our "How to... ensure your article is highly downloaded" guide for practical help and guidance on choosing search-engine friendly keywords). Whilst we will endeavour to use submitted keywords in the published version, all keywords are subject to approval by Emerald's in house editorial team and may be replaced by a matching term to ensure consistency.
Article Classification	Categorize your paper on the **Article Title Page**, under one of these classifications: • Research paper • Viewpoint • Technical paper • Conceptual paper • Case study • Literature review • General review.
Headings	Headings must be concise, with a clear indication of the distinction between the hierarchy of headings.

	The preferred format is for first level headings to be presented in bold format and subsequent sub-headings to be presented in medium italics.
Notes/Endnotes	Notes or Endnotes should be used only if absolutely necessary and must be identified in the text by consecutive numbers, enclosed in square brackets and listed at the end of the article.
Research Funding	Authors must declare all sources of external research funding in their article and a statement to this effect should appear in the Acknowledgements section. Authors should describe the role of the funder or financial sponsor in the entire research process, from study design to submission.
Figures	All Figures (charts, diagrams, line drawings, web pages/screenshots, and photographic images) should be submitted in electronic form.

All Figures should be of high quality, legible and numbered consecutively with arabic numerals. Graphics may be supplied in colour to facilitate their appearance on the online database.

- Figures created in MS Word, MS PowerPoint, MS Excel, Illustrator should be supplied in their native formats. Electronic figures created in other applications should be copied from the origination software and pasted into a blank MS Word document or saved and imported into an MS Word document or alternatively create a .pdf file from the origination software.
- Figures which cannot be supplied in as the above are acceptable in the standard image formats which are: .pdf, .ai, and .eps. If you are unable to supply graphics in these formats then please ensure they are .tif, .jpeg, or .bmp at a resolution of at least 300dpi and at least 10cm wide.
- To prepare web pages/screenshots simultaneously press the "Alt" and "Print screen" keys on the keyboard, open a blank Microsoft Word document and simultaneously press "Ctrl" and "V" to paste the image. (Capture all the contents/windows on the computer screen to paste into MS Word, by simultaneously

pressing "Ctrl" and "Print screen".)

- Photographic images should be submitted electronically and of high quality. They should be saved as .tif or .jpeg files at a resolution of at least 300dpi and at least 10cm wide. Digital camera settings should be set at the highest resolution/quality possible.

Tables	Tables should be typed and included in a separate file to the main body of the article. The position of each table should be clearly labelled in the body text of article with corresponding labels being clearly shown in the separate file. Ensure that any superscripts or asterisks are shown next to the relevant items and have corresponding explanations displayed as footnotes to the table, figure or plate.
References	References to other publications must be in **Harvard** style and carefully checked for completeness, accuracy and consistency. This is very important in an electronic environment because it enables your readers to exploit the Reference Linking facility on the database and link back to the works you have cited through CrossRef. You should cite publications in the text: (Adams, 2006) using the first named author's name or (Adams and Brown, 2006) citing both names of two, or (Adams *et al.*, 2006), when there are three or more authors. At the end of the paper a reference list in alphabetical order should be supplied:
For books	Surname, Initials (year), *Title of Book*, Publisher, Place of publication. e.g. Harrow, R. (2005), *No Place to Hide*, Simon & Schuster, New York, NY.
For book chapters	Surname, Initials (year), "Chapter title", Editor's Surname, Initials, *Title of Book*, Publisher, Place of publication, pages. e.g. Calabrese, F.A. (2005), "The early pathways: theory to practice –

a continuum", in Stankosky, M. (Ed.), *Creating the Discipline of Knowledge Management*, Elsevier, New York, NY, pp. 15-20.

For journals	Surname, Initials (year), "Title of article", *Journal Name*, volume, number, pages. e.g. Capizzi, M.T. and Ferguson, R. (2005), "Loyalty trends for the twenty-first century", *Journal of Consumer Marketing*, Vol. 22 No. 2, pp. 72-80.
For published conference proceedings	Surname, Initials (year of publication), "Title of paper", in Surname, Initials (Ed.), *Title of published proceeding which may include place and date(s) held*, Publisher, Place of publication, Page numbers. e.g. Jakkilinki, R., Georgievski, M. and Sharda, N. (2007), "Connecting destinations with an ontology-based e-tourism planner", in *Information and communication technologies in tourism 2007 proceedings of the international conference in Ljubljana, Slovenia, 2007*, Springer-Verlag, Vienna, pp. 12-32.
For unpublished conference proceedings	Surname, Initials (year), "Title of paper", paper presented at Name of Conference, date of conference, place of conference, available at: URL if freely available on the internet (accessed date). e.g. Aumueller, D. (2005), "Semantic authoring and retrieval within a wiki", paper presented at the European Semantic Web Conference (ESWC), 29 May-1 June, Heraklion, Crete, available at: http://dbs.uni-leipzig.de/file/aumueller05wiksar.pdf (accessed 20 February 2007).
For working papers	Surname, Initials (year), "Title of article", working paper [number if available], Institution or organization, Place of organization, date. e.g. Moizer, P. (2003), "How published academic research can inform policy decisions: the case of mandatory rotation of audit appointments", working paper, Leeds University Business School, University of Leeds, Leeds, 28 March.
For encyclopedia	*Title of Encyclopedia* (year) "Title of entry", volume, edition, Title of

entries (with no author or editor)	Encyclopedia, Publisher, Place of publication, pages. e.g. *Encyclopaedia Britannica* (1926) "Psychology of culture contact", Vol. 1, 13th ed., Encyclopaedia Britannica, London and New York, NY, pp. 765-71. (For authored entries please refer to book chapter guidelines above)
For newspaper articles (authored)	Surname, Initials (year), "Article title", *Newspaper*, date, pages. e.g. Smith, A. (2008), "Money for old rope", *Daily News*, 21 January, pp. 1, 3-4.
For newspaper articles (non-authored)	*Newspaper* (year), "Article title", date, pages. e.g. *Daily News* (2008), "Small change", 2 February, p. 7.
For electronic sources	If available online, the full URL should be supplied at the end of the reference, as well as a date that the resource was accessed. e.g. Castle, B. (2005), "Introduction to web services for remote portlets", available at: http://www-128.ibm.com/developerworks/library/ws-wsrp/ (accessed 12 November 2007). Standalone URLs, i.e. without an author or date, should be included either within parentheses within the main text, or preferably set as a note (roman numeral within square brackets within text followed by the full URL address at the end of the paper).

Annexure 7: Proof of language editing of document

3 Tuscany Grove

298 South Ridge Road

Durban 4019

To whom it may concern:

Dr Phil Joffe is the holder of a B. Hons degree in English, University of Natal, 1964, M.A. degree in English, University of British Columbia, Canada, 1968, and the Ph D. degree, in English, from Westfield College, London University, 1978.

He has lectured English and Media Studies for more than 30 years and is qualified to edit M.A. and Ph. D. degrees in the English language.

I have read and edited Fay Irvine's M. A. Thesis, and she has made all changes, to my satisfaction.

Sincerely

(Dr) Phil Joffe

Annexure 8: Proof of submission to Turnitin

From: Turnitin No Reply <noreply@turnitin.com>   Thursday - March 20, 2014 7:36 PM

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Functionally low-literate consumers' use of food labels in the rural area of Valspan in the North West Province of South Africa.

Researcher: Fay Irvine

September 2013

Innovasie deur diversiteit ™

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOMKAMPUS

A. FUNCTIONAL LITERACY TEST /: TEKO YA BOKGONI JWA GO BALA LE GO KWALA

1. Peanut butter is a food paste made primarily from ground dry roasted peanuts. Peanut butter is used mainly as a sandwich spread but can also be used for baking and to make other snacks. Peanut butter (and peanuts) provides protein, vitamins B and E, magnesium and fibre. For people with a peanut allergy, peanut butter can cause reactions, including anaphylactic shock. Below is a peanut butter label. / Sereledi sa Matonkomane ke sereledi se bogolo se dirilweng ka matonkomane a a omileng a a besitsweng. Sereledi sa Matonkomane thata se dirisiwa go tshasa mo borothong mme se ka dirisiwa gape go baka le go dira dijo dingwe. Sereledi sa Matonkomane(le matonkomane) se re fa poroteine, dibitamini tsa B le E le magenesiamo le faebara. Mo bathong ba ba sa kgoneng go ja matonkomane Sereledi sa Matonkomane se tlisa ditsibogo jaaka letshogo le go roroma. Ka mo tlase go na le pampiri ya lebotlolo la Sereledi sa Matonkomane.

1.1 What is peanut butter made from? / Sereledi sa Matonkomane se dirilwe ka eng	
1.2 What is peanut butter used for? / Sereledi sa Matonkomane se dirisiwa eng?	
1.3 What vitamins are found in peanut butter? / Sereledi sa Matonkomane se na le dibitamini dife?	

1.4 Select the most suitable answer to describe the word below: (Choose one) / Batla karabo e e siameng go feta go ka tlhalosa lefoko mo tlase: (Tlhopha e le nngwe)

1.4.1 Manufactured / Bopilwe	
a) To make or produce something / Go dira kampo go uma sengwe	
b) To collect something / Go kgobokanya sengwe	
c) To cover the surface of something / Go tswala sengwe ka mo godimo	
1.4.2 Allergy / Aleji	
a) A tool used to make milkshakes / Sediriso sa go dira Senotsididi sa Mašwi	
b) Sensitivity to something that causes an unwanted reaction / Ditsibogo tse di tlisiwang ke go sa utlwane le sengwe ka mo mmeleng	
c) A bag used to freeze food / Kgetsana e e dirisiwang go tsidifatsa dijo	

2. SOUTH AFRICA'S EXPORTING OF BANANAS OVERSEAS / GO ISA KWA MOSEJA GA MAWATLE GA DIPANANA TSA AFORIKABORWA

South Africa's finest fresh bananas are being exported to overseas countries. The picture below shows the percentage of bananas being exported to different countries. / Dipanana tse di siameng go feta tsa Aforikaborwa di isiwa kwa mafatsheng a kwa moseja. Ditshwantsho tse di mo tlase di bontsha diphesente tsa dipanana tse di isiwang kwa mafatsheng a a farologaneng.
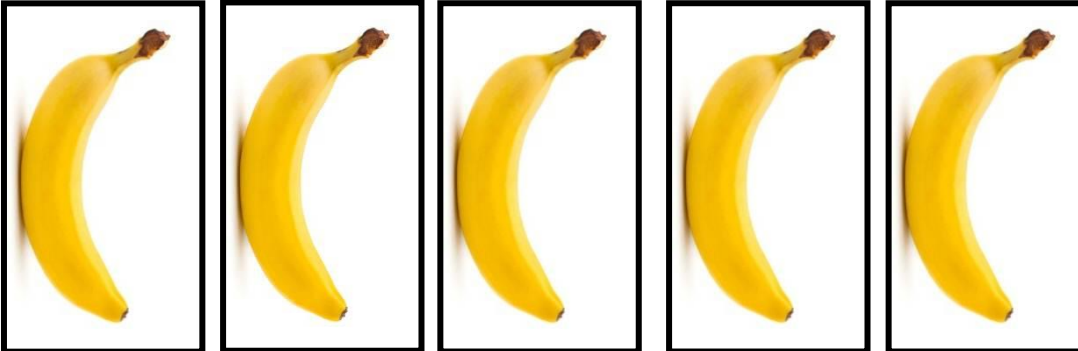
a) Brazil 37% /Brazil 37%	b) China 16% / Tšhaena 16%	c) Italy 7% / Itali 7%	d) Holland 26% / Holane 26%	e) France 24% / Fora 24%

2.1 Which country receives the most bananas from South Africa? / Ke lefatshe lefe le le amogelang dipanana tse dintsi go feta go tswa mo Aforikaborwa?	
2.2 Which country receives the least bananas from South Africa? / Ke lefatshe lefe le le amogelang dipanana tse dinnye go tswa mo Aforikaborwa ?	

3. Vusi runs a tuckshop at the high school in his street. He wants to buy enough Coke for the upcoming sports day, but is unsure how many packs of Coke he must buy. Help Vusi by calculating how many Cokes there are by looking at the pictures. / Vusi o na le Tuck Shop mo sekolong se se mo seterateng sa gagwe. O batla go reka Coke e e lekaneng go rekisa ka letsatsi la metshameko le le tlang mme ene ga a itse gore a reke di le kae. Thusa Vusi ka go bala gore go na le Di-Coke tse kae ka go bala mo setshwantshong.

3.1 How many cokes are in one box / Go na le Di-Coke tse kae ka mo lebokosong le le nngwe ?	
3.2 How many cokes are there in two boxes? / Go na le Di-Coke tse kae mo mabokosong a mabedi?	

4. Mrs Ntemba wants to determine the best type of milk she should buy for her children. She cannot decide herself so she asks everyone in the neighbourhood to vote for their favourite brand of milk. The pictures below show the number of votes that the three different brand of milk received: /
Moh Ntemba a ka rata go tlhomamisa gore ke mofuta ofe wa mašwi o o siameng wa go rekela bana ba gagwe. Ga a kgone go akanya ka bo-ene mme o kopa botlhe ba mo tikologong ya gagwe go vouta gore ke mofuta ofe wa mašwi o ba o ratang go feta. Ditshwantsho tse di mo tlase di bontsha palo jaaka batho ba voutetse mefuta e meraro ya mašwi.

MILK A – 15 votes / MAŠWI A - Divoutu di le 15	MILK B – 73 votes / MAŠWI B - Divoutu di le 73	MILK C – 28 votes / MAŠWI C - Divoutu di le 28

4.1. What was the most popular brand of milk? / Ke mofuta ofe wa mašwi o o ratiwang go feta?	
4.2. What was the total number of votes for all 3 milks? / Fa go tlhakantshiwa divoutu tsotlhe go ne go voutile batho ba bakae?	

5.	Michael wants to buy coffee. However, he is uncertain as to which tin will provide him the best value of money. Help Michael by selecting the best value for money coffee tin: / Michael o batla go reka kofi. Mathata fela ke gore ga a itse gore ke motemo ofe o o ka mo tswelang mosola le go mo boloka madi go feta. Thusa Michael go tlhopha gore ke motemo ofe o o ka mo tswelang mosola go feta.	
A	500g = R60	
B	100g = R20	

5.1 Which coffee tin will provide the best value for money? / Ke moteme ofe o o ka tswelang ene mosola go feta?	

B. DEMOGRAPHIC INFORMATION/ POLELO KA GA DI PALOPALO TSA MORAFE	
1. What is your gender? / Bong hwa gago ke eng?	
a) Male / Banna	
b) Female / Basadi	
2. What is your age? / O na le dingwaga di le kae?	
c) a) 18-29 years / Dingwaga tse 18-29	
d) 30-39	
e) 40-49	
f) 50-59	
g) 60 years and older / Dingwaga tse 60 le go feta	
3. What is the highest level that you passed in school? (Formal education) / Ke mophato ofe o o kwa godimo o o o fetileng mo sekolong? (Thuto ya Tshwanelo)	
a) Grade 5 / Standard 3 / Kereiti ya 5 kampo Mophato wa 3 wa kgale	
b) Grade 6 / Standard 4 / Kereiti ya 6 kampo Mophato wa 4 wa kgale	
c) Grade 7 / Standard 5 / Kereiti ya 7 kampo Mophato wa 5 wa kgale	
d) Grade 8 / Standard 6 / Kereiti ya 8 kampo Mophato wa 6 wa pele	
4. Main language of household: / Puo ya kwa gae ya lelapa:	
a) Afrikaans / Seaforikanse	
b) English / Seesimane	
c) Setswana	
d) IsiXhosa	
e) IsiZulu	
f) Sesotho	
g) IsiNdebele	
h) Sepedi	
i) Tshivenda	
j) Siswati	
k) Xisonga	
l) Other: / Tse dingwe:	
5. What is your job? / Tiro ya gago ke eng?	
a) Unemployed / Ga ke bereke	
b) Cleaner / Mophephafatsi	
c) Domestic worker / Modiri wa legae	
d) Salesperson / Morekisi	
e) Farm worker / Modiri wa polase	
f) Pensioner / Mophenshene	
g) Teacher / Morutabana	
h) Other, please specify / Tse dingwe, tlhalosa:	
6. What is your monthly household income? (approximately) / Lotseno la gago ka palogare ke bokae ka kgwedi?	
a) Less than R500 / Tlase ga R500	
b) R501-R1000	
c) R1001- R2000	
d) R2001- R3000	
e) R3001- R4000	
f) R4001- R5000	
g) Other, please specify / Tse dingwe, tlhalosa	

7.	What is your marital status? / A o nyetse/nyetswe ga jaana?	
	a) Never married / Ga ke a nyala/nyalwa	
	b) Married / Ke nyetse/nyetswe	
	c) Cohabitation / Living together / Re dula mmogo	
	d) Divorced / Separated / Re tlhalane / Kgaogane le molekane	
	e) Widow / er / Ke motlholagadi/ moswagadi	
8.	How many children under the age of 18 live with you? / Go na le bana ba bakae ba ba dingwaga tse di tlase ga 18 ba ba dulang le wena?	
	a) 1	
	b) 2	
	c) 3	
	d) 4	
	e) 5	
	f) 5+	

C. FOOD LABELING KNOWLEDGE / KITSO KA GA DITSHWAO MO DIJONG

The following section concerns about your knowledge on food labelling: / Kgaolo e e latelang e amana le kitso ya gago ka ditshwao mo dijong

1. Have you ever noticed the food label information on food products? / A o kile wa ela tlhoko tshedimosetso e e mo dileiboleng tsa dijo?	Yes / Go ntse jalo		No / Nnyaya gope

2. How often do you make use of food labels? / O dirisa gakae dileibole le dikitsiso mo dijong?	Often / Gantsi	Sometimes / Gangwe le gape	Never / Gope

3. How often do you shop for food? (Choose 1) / O reka dijo gakae? (Tlhopha e le nngwe)

a. Once a month/ O reka dijo gakae mo kweding	
b. Once in two weeks/ O reka dijo gakae mo	
c. Once a week / O reka dijo gakae mo bekeng	
d. Two or more times a week/ Gabedi kgotsa go	

4. Who do you ask to help you to read food labels? Setsuana - O kopa mang go go thuso go buisa ditshwao tsa dijo?	Often / Gantsi	Sometimes / Gangwe le gape	Never / Gope
a) I read it myself / Ke a di ipalela			
b) A friend / Tsala ya me			
c) A family member / Mongwe wa molosika			
d) My child / Ngwana wa me			
e) The store assistant / Modiri wa mo lebenkeleng			

5. What problems do you experience with the food labels? / O na le mathata afe ka ditshwao tsa mo dijong?	Often / Gantsi	Sometimes / Gangwe le gape	Never / Gope
a) Takes too much time to read / Di tsaya nako e			
b) Too many words on label / Setshwao se na le			
c) I don't understand the words on label / Ga ke			
d) Words too small to read / Mafoko a kwadile ka			
e) Do not trust labels / Ga ke tshepe ditshwao			
f) Labels are not important / Ditshwao ga di			
g) Can't find information / Ga ke bone			
h) Do not read food labels / Ga ke buise ditshwao			
6. Do you do the following things when you buy food? / A o dira ditiro tse di latelang fa o reka dijo?	Often / Gantsi	Sometimes / Gangwe le gape	Never / Gope
a) Do you use the calculator on the cell phone to add up the price of two or more food products? / A o dirisa sebaledi sa mo mogaleng wa letheka go tlhakanya ditlhotlhwa tsa dijewa tse pedi le go feta?			
b) Do you ask somebody to help you to calculate the total cost of two or more food products? / A o kopa mongwe a go thuse ka go balela tlhotlhwa yotlhe ya dijewa di le pedi le go feta?			
c) Do you calculate the total cost of two or more food products in your head? / A o balela tlhotlhwa yotlhe ya dijewa di le pedi le go feta ka mo tlhogong?			
d) Do you pay the food products one at a time if you buy many food items? / A o reka dijewa tse di farologaneng ka bongwe ka bongwe fa o reka dilo di le dintsi tsa dijewa?			
e) Do you check if the money in your purse is enough for all the food products you want to buy? / A o netefatsa gore madi a o a tshwereng a lekanela dijewa tsotlhe tse o batlang go di reka?			

7. Please tell me when do you use the information on a label? / Ka kopo, mpolelele gore o dirisa leng tshedimosetso e e ka mo setshwaong?	Often / Gantsi	Sometimes / Gangwe le gape	Never / Gope
a) In the shop? / Mo lebenkeleng?			
b) At home? / Kwa gae?			

8. Do the following tell you something about the quality of the food? / A dintlha tse di latelang di go bolelela sengwe ka ga boleng jwa dijo?	Yes / Go ntse jalo	No / Nnyaya gope
a) Best before date / Botoka pele ga letlha le		
b) Appearance of the product / Tebego ya sejewa		
c) Price / Tlhotlhwa		
d) Brand name / Leina la Letshwao		
e) The store where you buy (Shoprite, Choppies ect) / Lebenkele kwa o rekang teng (Shoprite, Choppies jj.)		

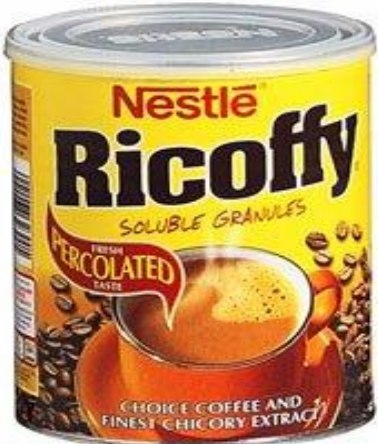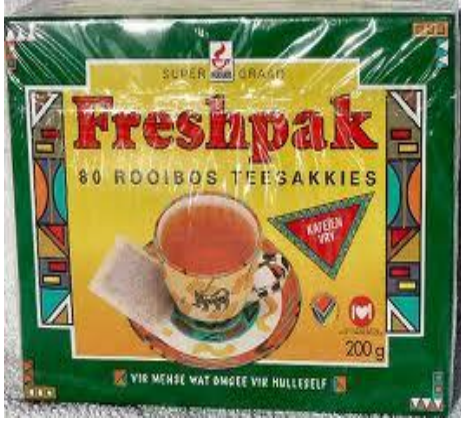| 9. Please tell me the following on the food label (Show card 1) / Mpolelele tshedimosetso e e latelang go tswa mo Setshwaong(Bontsha karata ya 1)	Answer: / Karabo:
a) What vitamin is in the maize / Go na le dibitamini dife mo mmiding?	
b) What is the best before date / Letlha la "Botoka pele ga letlha" ke eng?	
c) What is the brand of the maize / Leina la Letshwao la mmidi ke eng?	
d) What is the weight of the product / Boima jwa sejewa ke bokae?	
e) How many kilojoules are in 100g of this food? / Go a le dikilojulu tse kae mo 100g mo dijong tse?	
f) How much fat is in 100g of this food? / Go na le mafura a kana kang mo 100g ya dijo tse?	
g) How much dietary fibre is in 100g of this food?Go na le faebara ya dijo e e kana kang mo 100g ya dijo tse?	

10. Please tell the meaning of the symbol to you? / Tlhalosa gore sekai se se go raya eng?	Answer / Karabo
	a)
	b)
	c)
	d)

11. Please work out the following (Show card 2) / Ka kopo, dira ditiro tse di latelang(Bontsha karata ya 2)	Answer / Karabo
a. How much is the total price of a Ricoffy and a tea. One is R35 the other R20? / Tlhwatlhwa yotlhe ya Ricoffy le teye ke bokae? E nngwe ke R35 mme e nngwe ke R20?	
b. The price of the noodles is R5.00 and the label says 50% off. What does it cost now? / Tlhotlhwa ya "Noodles" ke R5.00 mme setshwao sa re phokoletso ke 50%. Ke bokae jaanong?	
c. The four drumsticks cost R20. What does one cost? / Dirope di le 4 tsa koko ke R20. E le nngwe ke bokae?	

12. Can you identify (tell the names) of the following shops (Show card 3) / A o kgona go bitsa maina a mabenkele a a latelang?(Bontsha karata ya 3)	
	Answer / Karabo
a)	
b)	
c)	
d)	
e)	
f)	

CARD 1 (Question C9)

Nutrition Information
(AVERAGE)

servings per package - 16
average serving size - 45g (³/₄ metric cup†)

	quantity per serving	% daily intake ▲ per serving	per serve with ¹/₂ cup skim milk	quantity per 100g
ENERGY	710 kJ	8%	900 kJ	1570 kJ
PROTEIN	4.0 g	8%	8.7 g	9.0 g
FAT, TOTAL	0.6 g	0.9%	0.8 g	1.4 g
- SATURATED	0.1 g	0.6%	0.3 g	0.3 g
CARBOHYDRATE	34.6 g	11%	41.1 g	77.0 g
- SUGARS	8.1 g	9%	14.5 g	17.9 g
DIETARY FIBRE	3.0 g	10%	3.0 g	6.7 g
SODIUM #	36 mg	2%	92 mg	80 mg
		%RDI*		
THIAMIN (VIT B1)	0.28 mg	25%	0.33 mg	0.61 mg
RIBOFLAVIN (VIT B2)	0.42 mg	25%	0.68 mg	0.94 mg
NIACIN	2.5 mg	25%	2.6 mg	5.6 mg
FOLATE	50 µg	25%	56 µg	111 µg
IRON	3.0 mg	25%	3.1 mg	6.7 mg

CARD 2 (Question C11)

a		+		=
		+		=
	R35	+	R20	=

b		=
	The noodles cost R5	What is the price of 50% off R5?

c		
	4 pieces chicken = R20	1 piece chicken = ?

CARD 3 (Question C12)

a	PnP
b	Check
c	
d	CHOPPIES VALUE FOR YOUR MONEY! SUPERSTORES
e	SHOPRITE
f	OK