Analysing fertilizer buying behaviour of emerging farmers in the Free State province

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ABSTRACT

Fertilizer plays a major role in the profitability of the farmer's business, his/her future success as well as the sustainability of his business. Fertilizer is also one of the most expensive farm inputs, and therefore, has the ability to make or break the farmer. The emerging farmer market segment is expanding and holds a great deal of potential for fertilizer companies to supply the growing need of fertilizer in this market. Almost all fertilizer marketing strategies of South African companies have been designed to cater for the commercial farming sector; however, if fertilizer suppliers want to focus on the emerging farmer market segment, they need to understand buying behaviour of emerging farmers as well as their needs when developing strategies to utilize opportunities in this developing market. This study aims to do just that by identifying factors playing an important role in the buying behaviour of emerging farmers in the Free State when purchasing fertilizer.

This study was conducted in two phases. During phase one, a literature review was conducted; phase two consisted of an empirical study. Questionnaires were used as a measuring instrument and were filled out by 32 participants to determine emerging farmer buying behaviour. Data was analysed by means of descriptive statistics and correlation analyses. The Coefficient of Cronbach's Alpha was employed to verify the validity of the data. The results show that four (4) factors; (i) Service, (ii). Brand, (iii) Product and (iv). Learning/Psychological factors highly influence emerging farmers' fertilizer purchase decision.

The study also finally draws recommendations and conclusions for managerial perusal.

Key terms: Fertilizer, Free State, emerging farmers, purchase decision.

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CHAPTER 1

NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

The grain industry is one of the largest industries of South African agriculture producing 25% to 33% of the total gross value of agricultural production (SA, 2012).

"Grain industry" refers to all grains (barley, maize, oats, wheat and sorghum) and all oilseeds (sunflower, canola, soya bean and groundnuts). Table 1.1 indicates the gross value of each crop, area planted and total tons produced in South Africa during the 2009/2010 season. Field crops occupy 92% of the total area planted of which 51% is used for maize production (FAO, 2005:13).

TABLE 1.1: Area planted, production and gross value of production

Crop	Year	Area (1000 Ha)	Tons (1000 Tons)	Gross Value (R1000)
Maize	**2009/2010**	**2 859**	**10 924**	**16 670 061**
Wheat	**2009/2010**	**558**	**1 852**	**4 339 850**
Grain Sorghum	**2009/2010**	**87**	**226**	**312 637**
Ground nuts	**2009/2010**	**100**	**463,990**	**4659,65**
Sunflower	**2009/2010**	**398**	**509**	**1504 652**
Soya bean	**2009/2010**	**311**	**566.0**	**1 430 826**
Canola	**2010**	**35**	**37**	**117 417**
Barley	**2010**	**83**	**194**	**365 317**
Oats	**2010**	**-**	**34**	**73 783**

Source: SA (2011)

The area of farmland planted with maize during the 2009/2010 season in South Africa was 2,859 million hectares with a total output of 10,924 million tons of which 37% (4,052 million tons) was produced in the Free State province followed by the North-West province with a contribution of 21% (2,332 million tons). The Free State province is also the second largest producer of wheat, producing about 378 million tons in 2009/2010. During the 2009/2010 season Western Cape produced the largest output of wheat amounting to 530 million tons although only being the least producer of maize at only about 14 million tons the same season. Oats is the least produced, only making a contribution of 73,783 million Rand on gross value of production with a total ton output of 34,000 tons during the 2009/2010 season.

According to the Food and Agricultural Organisation (FAO, 2005:20) South Africa's most recent domestic fertilizer demands is around 760,000 tons plant nutrients, Nitrogen, Phosphorus and Potassium ($N + P_2O_5 + K_2O$) maize and wheat are the largest consumer of these fertilizer demands; however, the mass manufacture of basic fertilizer blends (NPK) recently exceeded 2.2 million tons per year (SA, 2008:136).

Figure 1.1: The three main farm inputs in South Africa

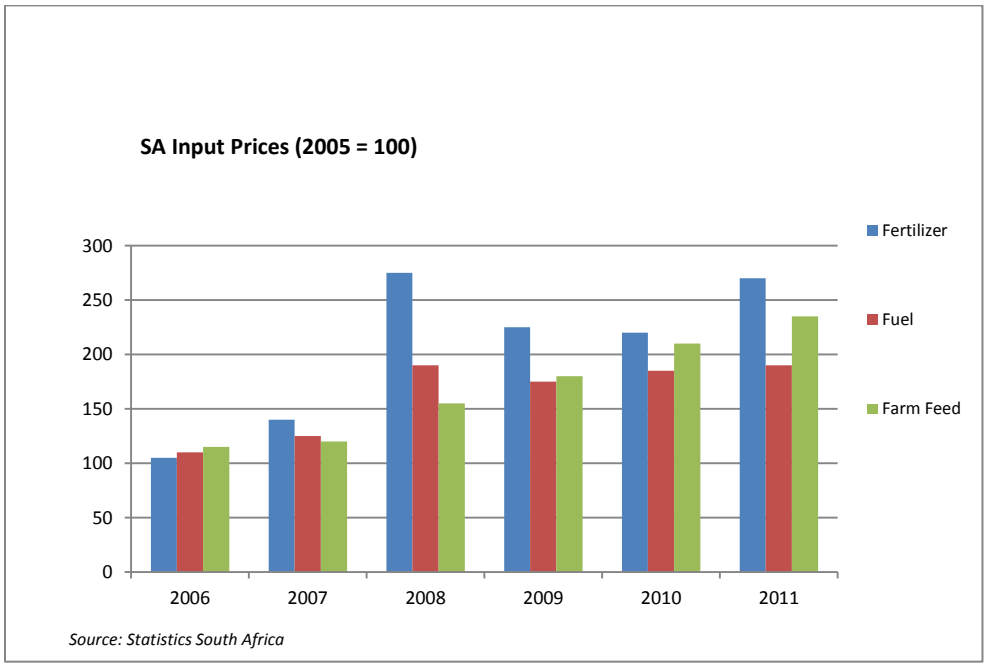


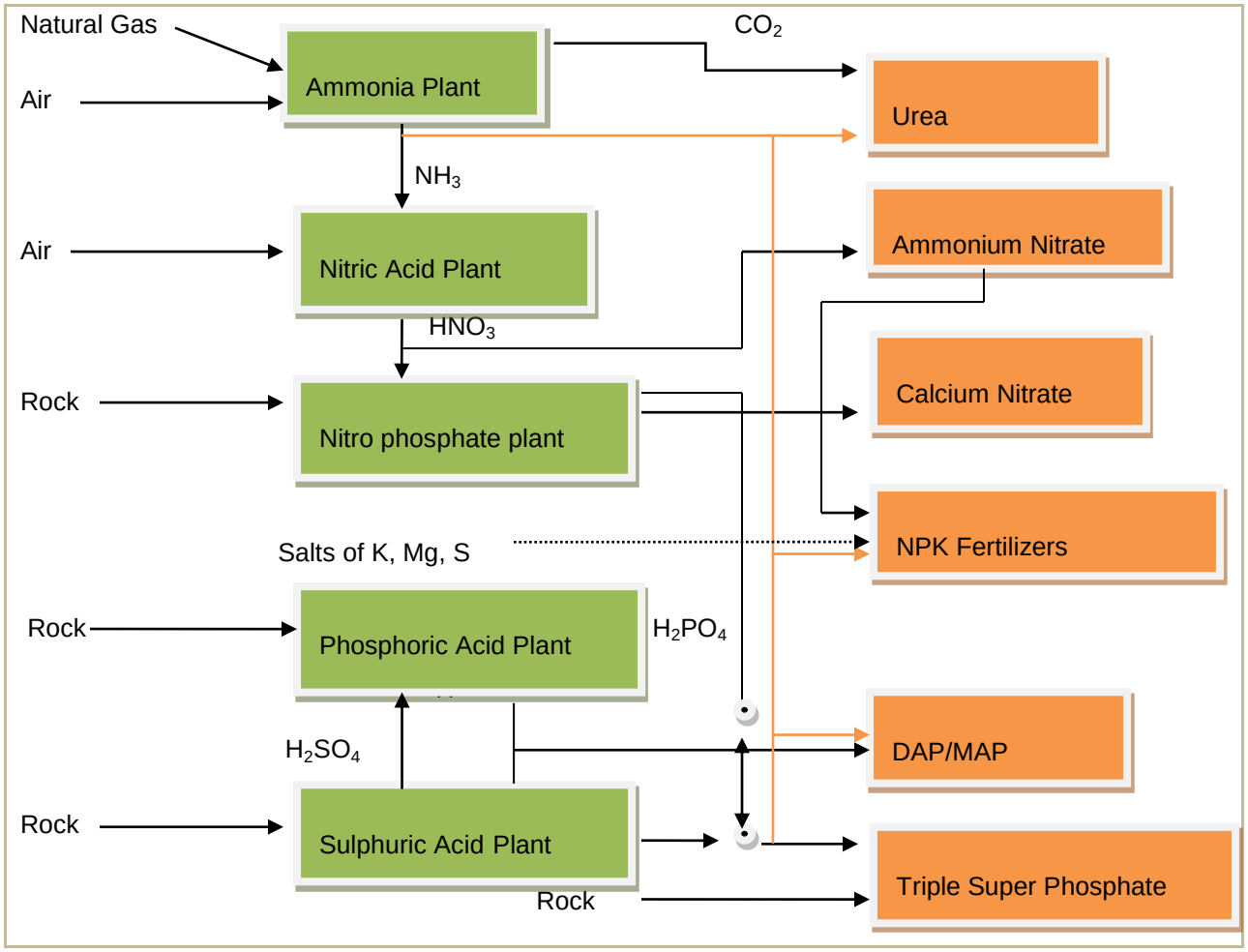
Figure 1.1 indicates that fertilizer is one of the most expensive farm inputs, followed by farm feeds and fuel. South African Agriculture is dualistic in nature and consists of both emerging and commercially developed farmers. Commercial farmers in South Africa are estimated to be in the region of 46 000 and produce almost 95% of the total marketed agricultural output (Ntsebeza & Hall, 2007:143). Commercial farmers may have decreased to almost about 37 000. The remaining 5% is produced by between 1.3 to 3 million emerging farmers located mostly in communal areas and former homelands (Machete *et al*., 2004). The authors, however, further mention that there are a number of farmers who have "emerged" to a higher level of production than being subsistence farmers and are making a much broader contribution.

Increased yields and therefore increased production of food can be closely linked to fertilizer usage and application rates. South Africa is a country with high unemployment rates and high levels of poverty. Most of the country's high poverty rates occur in rural communities. According to FAO (2005:32), it would seem logical to assume that improving the productivity of the subsistence agriculture market, two purposes could be

served: (1) alleviating food deficiency at household level of the rural population and (2) increasing demand for fertilizer as well as other intermediate inputs. The same viewpoint is shared by Department of Agriculture (SA, 2011:608) by mentioning that in many rural communities, produce from subsistence agriculture ensure that the rural community have adequate food supply.

Industrial fertilizer production involves several chemical processes and South African fertilizer companies are most geared with the necessary infrastructure and resources to produce fertilizers economically.

Figure 1.2: Fertilizer production routes



Source: YARA (2012)

Figure 1.2 illustrates processes involved in the manufacturing of fertilizers. Under high temperature, pressure and presence of catalysts of the nitrogen in the air is combined with hydrogen in natural gas to produce ammonia which forms the basis for producing nitrogen fertilizers through a process called the 'Haber-Bosch' process. Phosphate rock is digested with strong acids to produce phosphorus; phosphorus is then combined with ammonia to form Di-ammonium phosphate (DAP) or Mono-ammonium phosphate (MAP) through a process called ammonization. Potassium is mined from salts deposits, with large potash deposits being found in Canada and Russia. South Africa potassium requirements are all imported.

In the South African grain industry there are significant differences between large commercial farmers and emerging farmers; for the purposes of the study the grain farmers will be limited to those farmers producing crops only mentioned in table 1.1. The author identified some of the important differences between South African commercial and emerging grain farmers in table 1.2. The differences provide a clearer view that because of the different needs of these two types of South African farmers, requirements as well as their buying behaviour may differ significantly.

Table 1.2: Differences between commercial and emerging farmers in the grain industry

Activity	Average emerging farmer	Average commercial farmer
Finance	Difficult to access finance	Easy to access finance
Government support	High government support	Low government support
Hectares planted	About 90 HA	About 350 HA
Agricultural technology,	Low to none, use mostly	Use advanced technology, GPS

including machinery and implements	old and second-hand machinery and implements.	supported implements and machinery, including precision agriculture
General fertilizer application rates, Planting mixtures of NPK (Mostly maize) especially planted in the Free State.	< 200 Kg / Ha	>200 Kg /Ha
Micro nutrients and speciality products application	Barely	Frequently
Purchasing power	Limited	Extensive
Infrastructure	Mostly under-developed	Mostly developed
Management	Low level	High level

1.2 PROBLEM STATEMENT

The majority of South African farmers engage in low level subsistence agriculture and are saddled with constraints in limited purchasing power. Most of these subsistence or emerging farmers, however, have and are already receiving government support, as well as commercial producer organisations and the private sector support including the fertilizer industry with the aim of increasing productivity of smallholder agriculture. The largest target market of fertilizer companies are commercial farmers therefore their

marketing strategies are designed for commercial farmers and then applied to small-sale farmers. The South African Comprehensive Agricultural Support Programme (CASP), Farmer Recapitalization Programmes (RECAP), Micro-agricultural Financial Institutions of South Africa (MAFISA) and many other developmental programmes are all aimed at assisting emerging farmers. The South Africa National Development Plan (NDP) also holds the support and development of emerging farmers in high esteem. The South African agricultural environment is slowly but surely changing; therefore, there is a need for fertilizer companies to better understand the fertilizer buying behaviour of small-scale farmers and to incorporate these purchase behaviour into their marketing strategies.

1.3 OBJECTIVES OF THE STUDY

1.3.1 Primary objective

The primary objective of the study is to identify factors playing an important role in the buying behaviour of emerging farmers in the Free State when purchasing fertilizer.

1.3.2 Secondary objective

The primary objective will be realised in meeting the following secondary objectives:

- Gaining valuable insight into buying behaviour and factors that influence buying behaviour of consumers.
- To identify key factors that emerging farmers in the grain industry believe play a role in the success of their businesses.
- To determine loyalty of Free State emerging farmers in the grain industry towards a single fertilizer supplier/brand.

- Identify key factors that influence fertilizer buying behaviour of emerging farmers in the Free State. The factors can be used in building a fertilizer marketing strategy for emerging farmers in the grain industry.

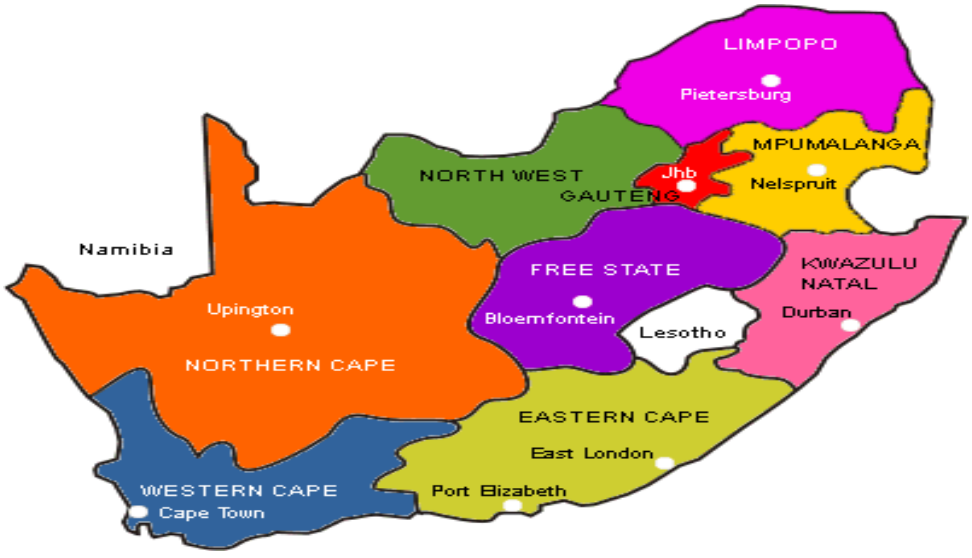
1.4 The South African Agricultural industry

1.4.1 Industry demarcation

The study is limited to emerging farmers in the Free State province in South Africa who are involved in the grain industry. For the purpose of the study the grain industry include both grains and oilseeds as indicated in table 1.1. It can also be assumed that emerging farmers, small-holder farmers, developing farmers and subsistence farmers for the purpose of the study means black farmers.

1.3.2 Geographical demarcation

Figure 1.3: Provinces of South Africa



The study took place in the Free State province of South Africa as indicated in Figure 1.3.

1.5 RESEARCH METHODOLOGY

The study consists of two stages, namely; the literature study and empirical study.

1.5.1 Literature study

The literature study broadly focuses on buying behaviour and emphasis is not necessarily placed on buying behaviour of farmers or specifically buying behaviour of emerging farmers due to limited literature with regards to farmer purchase behaviour. This view is further supported by Britz (2011:5).

The literature review specifically focuses on the following aspects of buying behaviour:

- Discussing internal and external business factors influencing buying behaviour;
- Extent of consumer involvement in the decision-making processes; and
- In conclusion of the literature study the purchase decision-making processes is discussed.

1.5.2 Empirical study

The empirical research consists of the research instrument, research design, data collection methods and data analysis procedures.

1.5.2.1 Research instrument

Using information that was obtained from the literature study, a 30 statement semi-structured questionnaire was constructed. The statements employed a 5-point Likert

scale and responses were evaluated as: *strongly agree (1), agree (2), disagree (3), neither agree or disagree, (4) and strongly disagree (5).*

1.5.2.2 Research design

A quantitative research study was conducted using distributed questionnaires. Descriptive research was conducted by means of a sample survey that makes use of questionnaires as research measuring instruments to gather the required quantitative data.

1.4.5.3 Collection of data

Data was collected through farmers' associations, farmer gatherings and information days. Farmer study groups were also visited to collect the required data.

1.4.5.4 Data analysis

The data collected were statistically analysed.

1.6 LIMITATIONS OF THE STUDY

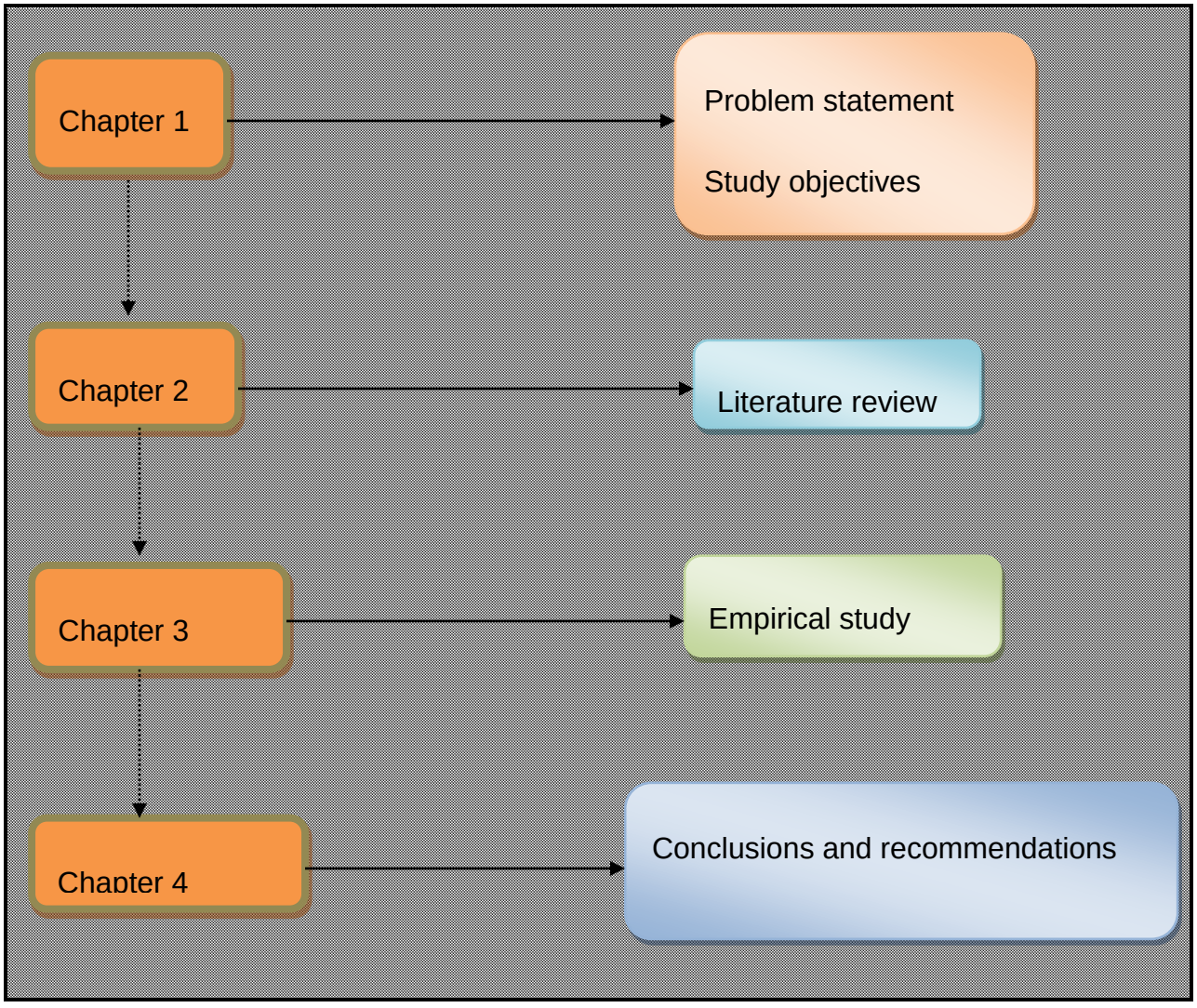
- Emerging farmers are scattered all over the Free State province; vast amounts of travelling may have to be undertaken with printed questionnaires that farmers need to complete.

- Due to the low literacy levels of emerging farmers an immense amount of time may be spent explaining the purpose of answering questionnaires, it is not fully known whether the farmers will be willing to supply the correct information.

1.7 LAYOUT OF THE STUDY

The study consists of four chapters as shown in figure 1.4.

Figure 1.4: Schematic layout of the study



Chapter 1: Provides an overview of the study that serves to orientate the reader on the perspective of the study. The chapter also includes the problem statement, study objectives, research methodology and possible limitations to the study.

Chapter 2: A literature review on buying behaviour and factors that can possibly influence buying behaviour are discussed in this chapter. The stimulus response model of buying behaviour is also investigated in chapter 2.

Chapter 3: Results of the empirical study are discussed in this chapter. Analysis and interpretation of feedback from the questionnaires will also receive attention.

Chapter 4: Conclusions on results obtained in chapter 3 will be discussed and recommendations made.

1.8 SUMMARY

In this chapter, the problem statement and research objectives are formulated. The chapter also serves as an introduction to the research discussing the research methodology used and identifying possible limitations of the research.

The next chapter deals with the literature review.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Consumers (farmers) are faced with different complex choices today and they can be referred to as being at a cross-roads, it is therefore of the utmost importance for the fertilizer company to understand the buying behaviour of the targeted customer and what influence his/her buying decision has. Customers are attracted by different attributes to buy a product or service. Some customers are primarily only interested in the cost of the product while others are more interested in service that come with the purchase of the product.

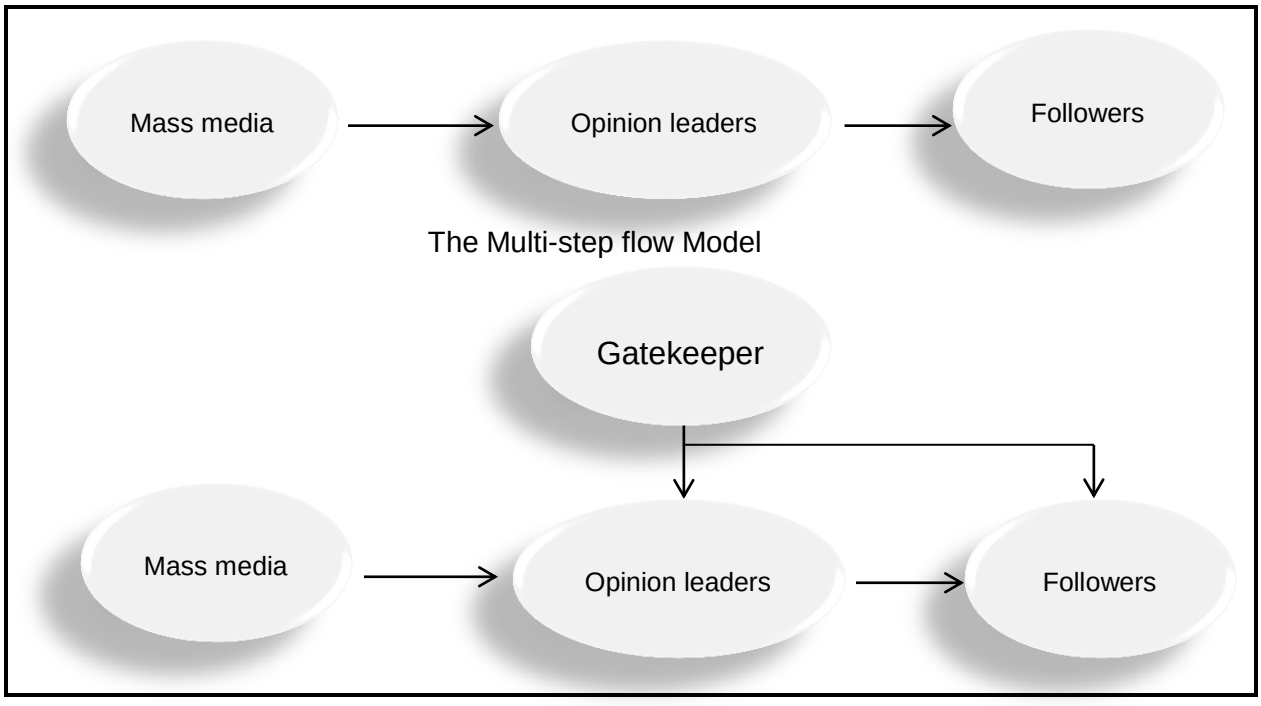
A consumer purchase decision may be influenced by a reference group. “A reference group is any group with which an individual identifies in such a way that he or she tends to use it as a standard for self-evaluation and as a source of personal values and goals (Du Plessis *et al*., 2007:67). The authors further explain that a reference group serves as a reference for an individual in the formation of beliefs, attitudes and behaviour and that such reference groups provide consumers with means of comparing and evaluating their own brand attitudes and purchasing behaviour.

Agricultural organisations promoting grain production and farmer associations can thus act as reference groups and opinion leaders and could influence the fertilizer purchase behaviour of the emerging grain producer. Chisnall (1995:162) defines opinion leaders as certain people who are most concerned about certain issues and who are articulate about these issues.

The notion of opinion leaders is also supported by Du Plessis *et al.* (2007:81) who define opinion leaders as people whom others look up to for advice and information. Kotler and Armstrong (2012:163), describe opinion leaders as people within a reference group who, because of special skills, knowledge, personality, or other characteristics, exert social influence on others. It can therefore be viewed as common sense that opinion leaders are more likely to be exposed to mass media than those whom they influence.

Due to low literacy levels of emerging grain producers and the inability to correctly interpret current available information it can be assumed that emerging grain producers could be relying more on word-of-mouth by opinion leaders and reference groups to make purchasing decisions. Figure 2.1 illustrates the word-of-mouth communication process.

Figure 2.1: Word-of-mouth communication process



Source: Du Plessis et al. (2007:83)

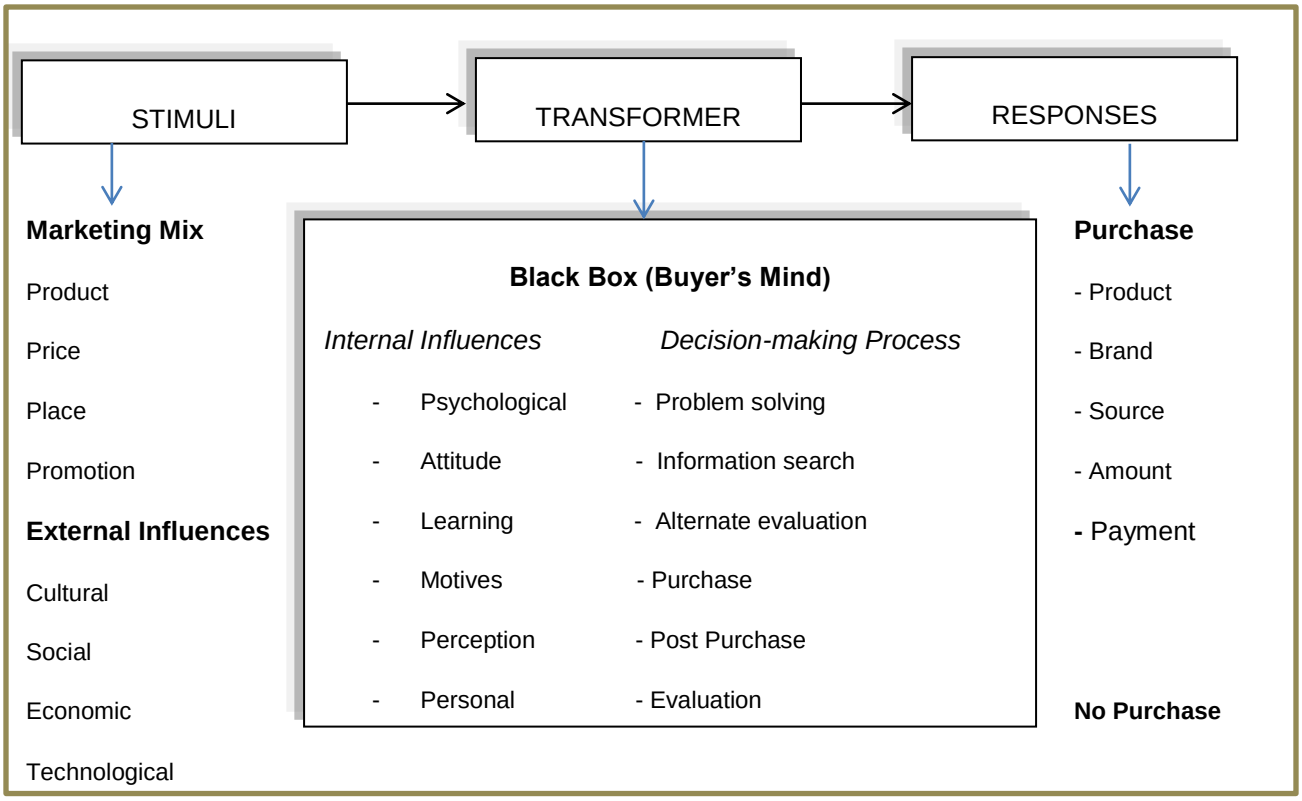
The process of word-of-mouth communication shown in figure 2.1 can best describe the position of the emerging grain producer as the opinion follower, with gatekeepers or those most sensitive to product information acting as intermediaries in the information flow. The gatekeeper serves an important role and act as a source of information for both the opinion leaders and opinion followers, but is more likely to provide information to opinion leaders. The word-of-mouth communication process relates to the information processing decision-making by consumers in a way that due to the inability of the emerging producer to interpret mass media information in the short-term, the producer may be more reliant on opinion leaders during the decision-making process.

2.2 THE STIMULUS MODEL OF BUYING BEHAVIOUR

The emerging grain producer may mostly rely on opinion leaders and other external influences. The stimulus-response model, Figure 2.2, is relevant and can best describe the emerging grain producer decision-making process given its focus on marketing and environmental stimuli's that produce the desired response.

The purpose of this model is to clarify relationships between inputs into the buying situation-stimuli arising; mixed motivations which affect purchase decisions and the resultant outcome which implies the purchase or rejection of a product or service (Chisnall, 1995:191).

Figure 2.2: The stimulus response model



Source: Kotler & Armstrong (2009:159)

The marketer's role is to create or provide the stimuli and anticipate that the stimuli positively influence the consumer buyer decision to purchase his product or brand, it is however not always the case as there are other factors that can play a role and create a desired or undesired response.

Figure 2.2 shows that marketing and other stimuli enters the buyer's black box and produce certain responses. The buyer's mind is termed as a black box because although the marketer is able to provide a stimuli he is uncertain of the buyer's response, the consumer continues to be an enigma – sometimes, responding the way the marketer wants and on other occasions refusing to buy the product from the same marketer (Saxena, 2009:143).

2.3 EXTERNAL FACTORS AFFECTING CONSUMER BEHAVIOUR

According to Kotler and Armstrong (2012:158), marketing stimuli consists of the four Ps: product, price place and promotion, whereas other external stimuli include major forces and events in the buyer's environment: economic, technological, social and cultural. The marketer can therefore create marketing strategies aimed at stimulating these external factors to create a positive purchase response; it is these inputs that enter the buyer's black box, where they are turned into a set of buyer responses.

2.3.1 Cultural factors

Cultural factors exert a broad and a deep influence on consumer behaviour (Kotler & Armstrong, 2012:159). Cultural factors include culture, subculture and social class.

2.3.1.1 Culture

Culture is a combination of learned beliefs, values and customs (Kumar, 2009:253). This explanation of culture is further supported by Sarangapani (2009:15), Kotler and Armstrong (2012:159) and Strydom *et al.* (2004:38) who mention that culture is the most basic cause of consumer's wants and behaviour and that it is largely learned.

The above authors further mention that every group or society has a culture and therefore cultural differences may vary greatly from country to country. South African farmers' values, beliefs and customs is of the utmost importance for the marketer to understand and familiarize himself with, understanding these values, customs and beliefs may serve as an entry point or advantage for the marketer.

2.3.1.2 Subcultures

The South African population represents a multicultural heterogeneous society and according to Cant *et al.* (2006:288) subcultures can be identified by age, geography and ethnic identity; ethnic subcultures in South Africa are based on language spoken, religion and race. Subcultures can also be defined as a smaller group of a larger culture

that share some cultural values with society overall and yet demonstrate unique cultural values and patterns of behaviour within the individual subgroup (Kardes *et al.,* 2011:261). It is likely that farmers attending same study groups or attending similar churches may eventually interact on a social level and influence each other with regards to products to buy. The farmers may end up purchasing similar products.

2.3.1.3 Social class

The way in which society is organised can have an influence in the purchasing decision of the emerging grain producer. According to Quester *et al.* (2004:202) almost every society has some social class structure which may be influenced by community participations, education, income, material possessions, where a person lives, social skills and other factors, including the family where the person is born. The authors further define social class as a group of people who have approximately equal social positions in the eyes of others in the society. In the farming industry the social structure may be influenced by factors such as, long-term average yields achieved, tractors, machinery and implements used and farms located in high potential areas.

According to Hoyer and Maccinis (2008:49), social class influences consumer behaviour in three major ways: (1) through conspicuous consumption, the acquisition and display of a status symbol offering to demonstrate social standing: (2) through compensatory consumption, trying to off-set some deficiency by engaging in greater than usual consumption; and (3) through the meaning of money. Farming like other businesses is not immune to these influences; acquiring a symbol may be buying a top of the range expensive tractor or technologically advanced equipment, in other instances greater than usual application of fertilizers, agrochemicals and other farming inputs may occur.

2.3.2 Social influences

Individual needs and attitudes play a critical role in the buying process; however, relationships with others are also equally detrimental. The influential relationship can

either be with a family member or with other farmers. Practically all buyer behaviour is influenced by other people who provide information and standard of behaviour against alternative buying behaviour (Kumar & Sharma, 1998:156). The principle is further supported by Kardes *et al.* (2009:301) who mentions that people look at the behaviour of others, observe and imitate them especially family members when they decide not to do or buy something.

Most of South Africa farming businesses are family owned therefore family influences with regards to where to purchase and how much to purchase for, could play a detrimental effect impact on the final purchase decision.

2.3.3 Economic influences

Limited income forces consumers to choose what to buy and what to forgo to fulfil wants therefore consumers operate within a budget constraint. According to Van Rensburg *et al.* (2011:7) consumers allocate their time, energy and money to maximize their satisfaction by weighing costs and benefits. Consumers can therefore be regarded as being rational in their purchase decision and would want their money to generate the highest returns it can. It would make sense therefore to assume that consumer purchase behaviour is guided by economic needs.

According to Quester *et al.* (2004:180), it is important for companies to appeal to economic needs of consumers, though offering value for money products, conducting promotions that inform consumers about their choices or explaining product benefits in terms of measurable factors, such as operating costs or length of the guarantee period. Farming inputs are expensive and it will be logical for farmers to weigh price and quality for the best value, although some farmers may be prepared to pay more for convenience while others only look for the lowest price when purchasing inputs such as fertilizers.

2.4. Product influences

Many attributes of a company's products, including brand, quality and packaging can affect consumer purchase behaviour (Peter & Donnelly, 2011b:43). The authors further mention that it is important for marketers to differentiate their products from those of competitors and create positive consumer perception that the product is worth purchasing. According to Quester *et al.* (2004:40), a "product" is not limited to "physical goods" but may involve providing service or a combination of offering a service with supplying physical goods.

Consumers may pursue to buy a product mainly on the brand associated with it and being loyal to a specific brand. A brand can be defined as an image anchored in the mind of the customer that distinguishes the products or services of one company from those of a competitor (Homburg *et al.,* 2009:139).

Brand loyalty in the agricultural sector appears to be one of the biggest influences on purchase behaviour and can move from generation to generation. Brand loyalty include overall satisfaction with the product or service, the likelihood that repurchase can occur and the likelihood to recommend the brand to others (McEwen, 2005:101). There is a likelihood that the emerging grain producer can be loyal to a fertilizer brand or company but could be difficult to maintain the brand loyalty marriage where fertilizer products are unavailable and the farmer is forced by such circumstances to purchase an un-preferred brand.

The fertilizer market environment is dynamic with high competition. In the fertilizer industry companies compete through product differentiation, price incentives and specialized individual agronomic advice. Fertilizer companies therefore need to continuously adapt their product offerings to changing customer needs and competitive situations (Homburg *et al.*, 2009:133). The authors further mention that product differentiation has potential of increasing sales due to product variants featuring different functions, for fertilizer products this could be different fertilizer mixtures or

offering tailormade products for specific situations. Investment in research & development, technology, support services, environment and safety, forms part of offering quality fertilizer products.

Quality of fertilizer forms one aspect of differentiation that fertilizer companies can offer as part of their marketing strategies or value proposition, fertilizer quality is of importance to the farmer as it does contribute to the yields that the farmer can achieve and eventually his profits. Yields achieved are closely linked to the quality of the fertilizer product, application rate and management style of the farmer.

The majority of emerging grain producers use granular fertilizer due to availability, easy transportation and easy access of granular fertilizer products. The quality of the fertilizer among others include size of the granules, shape and strength, less fertilizer caking problems, offering blended fertilizer products vs. chemically formulated fertilizers. Due to the technical nature of fertilizer formulation and manufacturing, it must be noted that fertilizer products are not the same and that these different types of fertilizer may lead to different results with regards to achieved yields. It must however be noted that products with better packaging may also be perceived to be of high quality.

With granular fertilizer, packaging can be a distinguishing factor of whether the fertilizer product is purchased or not purchased. Most granular fertilizer is packaged in 50kg tough plastic bags, nylon bags and other materials and in addition to carrying fertilizer farmers use these empty fertilizer bags for other purposes on the farm e.g. collection of maize cobs in the field after harvest and many other uses.

The package size, quality and simplicity of how the product contents are explained are an important product trait and could influence the emerging grain producer purchasing decision. Due to low literacy levels and limited farming expertise of the emerging grain farmer it is important for the fertilizer packaging to easily reflect its difference to other products in a more friendly way.

Packaging of most fertilizer brands looks the same and only differentiated by numbering indicating the product contents, e.g. 6.2.1 (31) + 0.5% Zn, for 100kg worth of bagged granular fertilizer; such numbering merely reflect that 20.67Kg (6 x 31 / 9) of the product is plant food available in Nitrogen form, 6.89 Kg (2 x 31 /9) plant food Phosphorus and 3.44 Kg (1 x 31 / 9) plant food Potassium, this implies that 31% of the product is available plant food whereas 69% will only act as the fertilizer carrier, not being able to compute and understand the meaning of such basic calculations by the emerging grain producer may be a limiting factor therefore it may be important for fertilizer companies to determine whether their packaging is of friendly use to emerging grain producers.

2.4.1 Price influences

According to Peter and Donnelly (2011b:43), price of products often influences whether consumers will purchase them at all, however, higher prices may not necessarily deter purchase because consumers may believe that the products or services are higher quality or are more prestigious. It makes sense that price plays a detrimental role in the purchase decision; however, its importance depends on the nature of the buyer and the buyer's perception about price. A high price may support an image of class or high quality while a moderate price may connote an everyman image whereas low price may be seen as suggesting low quality or inferiority (Lantos, 2011:330).

The majority of South African farmers acquire seasonal loans from commercial banks, agricultural banks and other institutions to finance their production inputs. Farmers may therefore purchase or decide not to purchase farming inputs based on the product list price, discounts offered, credit terms and payment period offered by the input supplier through weighing the overall value they receive from purchasing the farm product. The concept of customer perception and value is further supported by Kotler and Armstrong (2012:315) who mention that "customer perception on the product's value set the ceiling for prices and if customers perceive that the product's price is greater than its value, they will not buy the product".

2.4.2 Place influences

According to Blythe (2008:10), convenient locations for making purchases are essential and the easier the marketers make it for customers to find the product conveniently, the more likely the product is to be sold. Farming and for it to be successful is nature dependant, for farmers, when the opportunity to start planting arise they should initiate planting immediately as such an opportunity may be lost and never to be available again. Due to the nature of the farming business, convenience to acquire farming inputs is of the utmost importance, for the emerging farmer the urgency to acquire such products could even be higher as it will take longer to complete planting and other important farming operations because of lack of necessary machinery and implements.

Producing a product and making it available to buyers requires building relationships not only with the customers but also with key suppliers and resellers in the company supply chain (Kotler & Armstrong, 2012:365). The authors further mention that the building of the value delivery network may further increase value added to consumers due to efficient delivery and supply of services and products. Distribution and sales of the fertilizer products are mostly conducted by agricultural co-ops and agents, however other fertilizer companies does have direct delivery services for fertilizer products but only on larger quantities. Due to the logistical problems that many emerging farmers experience and small quantities of fertilizer that they purchase, it may be uneconomical for the fertilizer company to transport the product directly to the farm; however, consideration should be given to accessibility and distribution of fertilizer to even the remotest of places.

Place influence and distribution could be a very important stimulus that affects emerging farmer fertilizer purchase behaviour, should the required fertilizer product be unavailable in a nearby place the farmer may be prompted to use the readily available un-preferred products or decide to risk planting without fertilizer.

2.4.3 Promotion influences

Promotion includes advertising, public relations, sales promotion and personal selling; its purpose is to convince the target market that the goods and service offered provide a competitive advantage over the competition (Lamb *et al*, 2012:48). The authors further mention that few goods or service, no matter how well developed, priced or distributed can survive the marketplace without promotion that informs, persuades, and remind potential buyers of a product in order to influence their opinion or elicit a response.

The importance of promotion as part of the stimuli influencing purchasing behaviour is further supported by Gitman and McDaniel (2009:296) who mention that a good promotion strategy can positively influence purchase behaviour by creating a good image of the company and its products thereby directly increasing sales through trade shows, catalogues, premiums, coupons and special offers. Fertilizer companies could further achieve the use of the promotion stimuli through being more visible where emerging farmers operate and participating in agricultural shows that draw farmers' attention and attendance. Promotional activities mostly used by fertilizer companies range from offering special discounts for emerging grain farmers to carrying other costs like offering free or subsidised technical services that the farmer may have been required to pay for.

Advertising forms an integral part of the promotion function as it can act as a communication agent. Green (2008:166) defines advertising as a paid form of communication sent out by a business about a product or service. There are various forms of advertising which among others include, online advertising, television advertising, radio advertising, social networking sites advertising and outdoor advertising. Although some advertising methods like television advertising and online advertising are rarely used by fertilizer companies others like radio advertising are moderately used, whereas outdoor advertising which include the use of billboards and signs is the most common.

2.5. INTERNAL INFLUENCES ON PURCHASING BEHAVIOUR

According to Landsbaum (2004:146), the mind of the seller and the mind of the buyer come together from different perspectives to share a mutually beneficial common concept. The author further alludes that benefits exist entirely in the mind and since it is the buyers' mind that determines the benefit it is important to start there when marketing.

This orientation makes sense because the final decision to purchase lies in the perception of the buyer about the product, service or brand. The concept is supported by Quester *et al.* (2011:228) who mention that perception forms a critical part of the human brain's information processing system and involves a series of interlinked activities by which stimuli – objects, messages and events – are transformed into information and stored.

2.5.1 Psychological factors

The three basic psychological processes influencing consumer purchase behaviour are (1) information processing, (2) learning and (3) attitude.

2.5.1.1 Information processing

Favourable responses are a fundamental prerequisite for the formation of favourable product opinions; therefore, extensive processing is necessary before a stimulus can influence comprehension and opinion formation (Blackwell *et al.*, 2006:610). It therefore makes sense that at the initial exposure of the stimuli, consumers are likely to form-up an opinion about the product or service before information is processed and a decision reached. It is important, however, to realise that opinions may be formed by consumers about a product or service without necessarily thinking about relevant important information and according to Blackwell *et al.* (2006:617) such opinions follow a peripheral process. Due to a lack of information, knowledge and low literacy levels the emerging grain farmer may be exposed to this peripheral process.

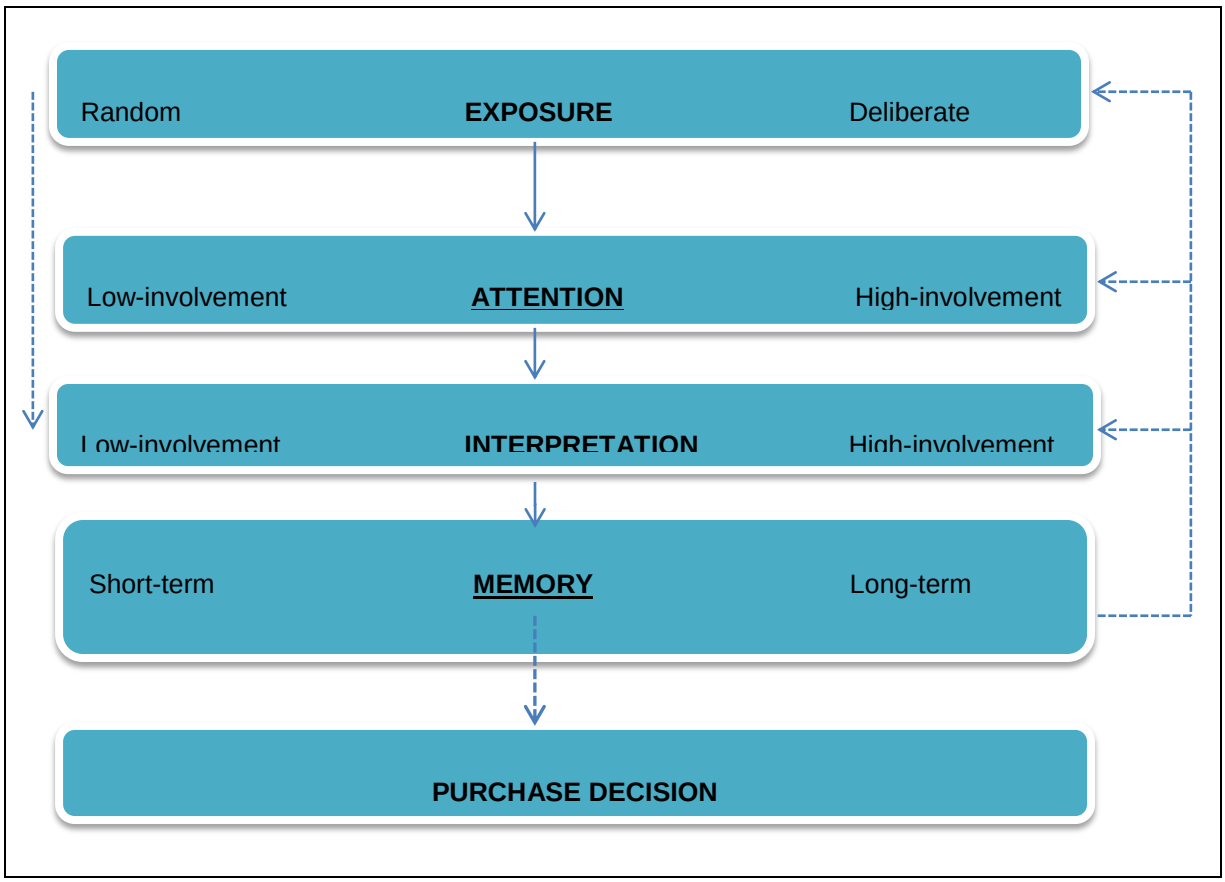
Figure 2.3 illustrates information processing model which views information processing as having four main stages:

i. Exposure
ii. Attention
iii. Interpretation
iv. Memory

For the farmer the first stage, “exposure”, can be associated with information gathered during farmers’ information days and other business and social networks or any other stimuli inflicted by the marketer. After gaining exposure, attention of the consumer is needed to absorb the available information. The available information is then interpreted by the consumer and then stored. The purchasing decision is made on stored experiences, values and rules.

Figure 2.3 follows on next page

Figure 2.3: Information processing for consumer decision-making



Source: Quester et al. (2011:229)

The internal influences are expressed as being in a black box because it is only the consumer who decides how he will react to the external stimuli; the outcome is beyond the marketer's power.

When an emerging farmer makes a purchasing decision the four information processing stages mentioned in Figure 2.3 can play a critical role. Most of the emerging grain farmers have low literacy levels, new to farming and do not have the necessary skill and ability to interpret certain important grain production aspects. South Africa's agribusinesses and fertilizer companies invite emerging grain producers to farmer information days but due to the inability to correctly interpret some of the important

available information, emerging grain producers may perceive the types of fertilizers products as being equal and having the same properties and nutrient element content.

The inability to correctly interpret currently available information may naively channel the emerging grain producer to mostly rely on stored experiences, values and rules rather than basing the decision to purchase on active problem solving and current challenges that faces modern farming. Fertilizer type, formulations, application amount and correct proper fertilizer recommendations by the agricultural expert may play a detrimental role in targeted achievable yields and in the end the profitability of the grain producer.

According to Blackwell et al. (2006:618), where an opinion is formed through a thoughtful consideration of relevant information by the consumer, the opinion formation process have followed a central process, it could then be more ideal for the fertilizer company if the emerging grain farmer follows a more centralised process.

2.5.1.2 Learning

Consumers gain experience in purchasing and consuming products and adjust their future behaviour based on past experiences (Assael, 1998:105). Arnould *et al.* (2004:342) defines consumer learning as a connection of categories to behaviours that have adaptive value in terms of consumer goals. This definition of consumer learning is supported by Lantos (2011:439) who describe learning as having three important indicators; (i). Behavioural tendencies or where positive purchase intentions arise from favourable attitudes as a result of exposure to marketing promotion, (ii).Learning through accumulated experience especially direct experience, which usually provides the best learning to consumers. (iii). Buying behaviour which is not learnt, but rather that which is innate or those consumer buying behaviour that is caused by temporary behavioural condition.

Due to low technical expertise and low product knowledge by emerging farmers, learning can thus play a critical role in influencing purchasing behaviour of farmers; organisations therefore need to understand how, where and when farmers learn best to integrate this information into their marketing strategies. Teaching farmers about company products, services and brand may positively stimulate learning and as a result of exposure to marketing promotion. It makes sense that a consumer who has previously learned about a specific product or service is likely to behave differently or appear to take a more sound decision compared to a consumer who did not have the same learning opportunity.

2.5.1.3 Attitude

Attitude refers to a person's consistently favourable or unfavourable evaluations, feelings and tendencies towards an object or idea (Trehan, 2007:197). The author further mentions that if a consumer's attitude towards a product or service is favourable then it will have a positive effect on consumer behaviour. Attitude can be psychologically influenced through marketing stimuli to encourage a more positive purchase outcome and eventually positive behavioural attitude by the consumer.

According to Blythe (2013:173), people attitudes guide their decisions-making, create their motivations, and both create and are created by their consumption experience. Attitude is a starting point of all behaviour, it is a belief that the consumer has about product or service, and it could make sense to conclude that before anything else, consumers have already formed an attitude about a product or service. However, according to Blythe (2013:169), consumer attitude can be changed through adding a new salient belief, changing the strength of the salient belief, changing the evaluation of the salient belief and making an existing belief more salient.

Learning and understanding consumer attitude by organisations and marketers could provide an idea of how the target customers are likely to react to certain products or services. There are three attitudinal components; (a). Cognitive (think), which includes

bits of knowledge, ideas and perceptions acquired through information acquisition (b). Affective (feel), this component relates to the consumer's mood, feeling and emotions as well as (c). Conative (behave), which demonstrates the behavioural attitude of how likely consumers are to act upon their knowledge or feelings (Lantos, 2011:501).

2.5.2 Personal factors

Personal factors such as age, income, occupation, personality and self-concept can influence consumer purchase behaviour. According to Kumar (2010:223), all internal traits and behaviours that make a person unique, either inherited or based on personal experience influence consumer buying behaviour as consumers buy products that are consistent with their self-concept. Personal traits among others include competitiveness, aggressiveness, self-confidence and ambitiousness.

When consumer income increases, the level of consumption also increases and this results in a direct impact on consumer buying behaviour, consumer spending habits and consumer status symbols (Jain, 2010:121). Increase of purchases due to increase in income makes sense as the more money an individual has the more likely he is to spend in acquiring goods and services. In the farming industry during bumper harvests and favourable grain prices purchase of machinery, implements and inputs are usually on a higher than normal trend demonstrating the higher purchasing power farmers possess during such times.

Farming traditionally has been associated with an older uneducated generation; however, the trend is slowly changing with young and sometimes highly educated individuals effectively taking part in the industry as farmers, it is important therefore for the marketer to understand age as one of the factors that can affect consumer purchase behaviour.

According to Lamb *et al.* (2009:162), age and family life-cycle stage of a consumer can have a significant impact on consumer behaviour, as consumer tastes in food, clothing,

cars and brand loyalty are often age related. The influence of age and life-cycle on purchase behaviour is further supported by Hoyer and Maccinis (2008:301) who mention that consumers can be segmented by their age groups because people of the same age are going through similar life experiences and therefore share many common needs, experiences, symbols and memories which in turn may lead to similar consumption patterns.

The discussed internal and external factors play a detrimental role in influencing decision-making processes and eventually affect the purchase behaviour of consumers. It is therefore important for marketing organisations to understand these factors and integrate them in their marketing strategies to correctly stimulate buying behaviour which could result in a more positive outcome.

The remainder of this chapter focuses on purchase decision-making and post-purchase behaviour of consumers.

2.6 THE CONSUMER DECISION-MAKING PROCESS

Decisions become more difficult as the amount of information increases, time pressure increases, conflicts among attributes increases, missing information increases and the information display format becomes less organised or more complex (Bettman *et al.,* 2008:595). Consumers' level of involvement with a particular purchase decision depend on the needs to be satisfied and the resources available, however, a high involvement product for one buyer may be a low-involvement product for another (Mullins & Walker, 2010:101).

According to Peter and Donnelly (2011a:47), product knowledge and product involvement are two of the most important psychological factors that have an impact on the consumer decision-making process. However, according to Kotler and Armstrong (2012:174), more complex decisions usually involve more buying participants and more

buyer deliberations. Figure 2.4, shows the types of consumer buying behaviour based on the degree of buyer involvement and the degree of differences among brands.

Figure 2.4: Types of consumer decision-making

EXTENT OF INVOLVEMENT		
Extent of analysis	**High**	**Low**
Extended information search, significant differences between brands.	Complex decision- making	Limited decisions, including variety seeking buying behaviour
Habit/ routine (little or no information search; focus on one brand	Dissonance-reducing buying behaviour	Habitual buying behaviour

Source : Mullins and Walker (2010:101)

According to Wankel (2009:370), purchase involvement in habitual buying behaviour or routinised buying behaviour is low and the consumer perceives a few significant differences among available brands. Due to the low level of involvement by consumers organisations can take advantage of the niche and focus their marketing strategies on product awareness and product focused training of the emerging grain producer. It is thus important that a purchase decision made by the consumer is the most sound decision and able to address the consumer's current and future challenges. Acting on habit can have dire consequences for the emerging grain producer and eventually on his/her profitability.

The routinised buying behaviour is characterised by limited problem solving where a customer perceives a low risk in buying the product or brand, the customer is used to

buying the particular product or brand therefore it seems a safer option to continue buying the product or brand (Saxena, 2009:149). According to Chaudhuri (2012:125), brands with greater market share demonstrate greater levels of repeat purchasing behaviour among buyers. This could imply that fertilizer companies may need to have a greater market share and a consistent visible brand to capture the emerging farmer fertilizer market.

2.7 ALTERNATIVE EVALUATION AND CHOICE

There are three pieces of information necessary to conduct pre-purchase and on-going search; (1) the number of available brands, (2) the determinant attributes for the product category, and (3) how an individual reacts to a brand after it is purchased (Kardes *et al*, 2011:199). The authors further mention that given enough search effort, consumers could, potentially, acquire all the information necessary to make a rational purchase decision, however, the cost of acquiring information often could exceed the benefit of making the best purchase decision.

According to Kardes *et al.* (2011:201), because it is prohibitively costly to gather complete and accurate information about all existing brands, the final consumer decision may be based on perceived brand universe which involve only those brands that the consumer acknowledges whether real or not. However, Hawkins *et al.* (2010:626) argue that consumers have limited capacity to process all the available information and their decisions do not only involve the comparison of brands or product features rather instead mostly involves emotional attachments to the brand or the overall impression they have about the brand.

Consumers have clear-cut preferences for certain goods and services that are available in the market and they try to use their money income to derive the greatest amount of satisfaction (rational behaviour), however, at any point in time consumers have limited amount of income and cannot buy everything they aspire to have, so they must compromise and choose the most satisfying mix of goods and services (Van Rensburg

et al., 2011:102). It can therefore be logical to assume that the emerging grain farmer will want to gain the maximum utility or satisfaction out of his or her limited budget in acquiring goods such as fertilizer products and other services that are beneficial to the success of his farming business when deciding which fertilizer product or brand to purchase. In some instance the emerging grain farmer may be regarded as being price sensitive due to the budget constraint.

When the actual purchase transaction is made, the emerging farmer's decision may have been influenced by the payment methods and terms of payment such as using a 30 day account at the co-op or direct payment of the fertilizer by the financier, need recognition and outcomes from the information search and when alternatives were evaluated. Aspects such as brand loyalty, product price and availability also play a fundamental role in the final purchase decision; therefore organisations can increase the probability of their brand selection, through more brand exposure, competitive pricing, effective communication and good product distribution.

2.8 POST-PURCHASE BEHAVIOUR

The post-purchase behaviour of consumers determines (ultimately) whether they will buy the product again, whether they will come back and complain or (in the worst case) whether they will tell their friends, family and even consumer protection organisations about their bad experiences with the products or services (Blythe, 2013:327). For most marketers the deal is closed once the sale is made, it is important, however, to realise that for the consumer the product or service experience is only beginning and he may regret purchasing the product or may be satisfied with the purchase decision. It is important therefore for the marketing organisation to reduce any lingering doubts that the consumer may have about the purchase decision so as to improve the chances of repeat buying.

According to Lancaster and Massingham (2011:53), satisfaction occurs when expectations about the product are either being met or exceeded, whereas where

expectation have not been met the customer may experience some post-purchase dissonance or doubt after making a difficult, relatively permanent decision. The authors further mention that consumers may try to reduce post-purchase dissonance through seeking information that support their product choice, or avoiding information that will not confirm their purchase, however, if the dissonance is strong, the consumer may take direct action against the company such as asking for a refund or indirectly telling those close to him about problems experienced with the product or service.

Fertilizer is one of the most expensive farm inputs and when the emerging grain farmer makes the purchasing decision it is quite important that the fertilizer is the correct product for his farming operations. To reduce or at least effectively maintain purchase dissonance by consumers, fertilizers companies may enquire whether customers are satisfied with their purchase decision by contacting them directly after purchase or using tracking studies to assess levels of customer satisfaction or dissatisfaction over time.

2.9 SUMMARY

The focus of Chapter 2 was on the decision-making process of emerging grain farmers when they purchase fertilizer products and possible internal and external factors that may have an influence on the purchase decision of these farmers. The chapter started with how consumer decisions can be influenced by reference groups and opinion leaders through a word of mouth process. The remainder of the chapter focused on the stimulus model of buying behaviour which ended with consumer post-purchase behaviour.

Decision-making is a process and is something that does not happen in an instant or in isolation of other influential factors. Emerging grain farmers in the Free State are exposed to reference groups and opinion leaders who play a role in influencing their final fertilizer purchase decision. Once emerging grain farmers are exposed to the information either by reference groups or opinion leaders the next step will be to give this information attention, some farmers may be highly involved in giving the information

attention whereas others may give the information low attention. During this involvement process farmers are at liberty to search for information, compare and analyse available alternatives before making a final decision to purchase. Organisations are then during this period presented with an opportunity to take advantage of the niche and focus their marketing strategies on product awareness, distribution, information sharing and increasing availability.

The fourth step by the emerging grain farmers will be to interpret the available information using stored experiences and then store this information as memory before making the final decision. If companies know the attributes that farmers seek in products and where farmers source information they can well-position themselves to offer relevant mass media to gatekeepers, opinion leaders and farmer's reference group so that correct information can eventually reach farmers with less contaminations as possible.

The four Ps' of the marketing mix; product, price, promotion and place are at the marketer's disposal to try and influence the consumer's buying decision. The organisation can use the four P's of the marketing mix to further examine whether they are positioned well enough, priced competitively, have quality products and have the capability of distributing products to required destinations.

The stimulus response model seeks to showcase both external and internal factors that have an influence on consumer buying behaviour. External factors include aspects such as culture, social influences, technological and economical influences which can have an impact on the final decision of the farmer. Economic factors such as the weaker rand or grain prices does have an effect on the purchasing power of the farmer therefore influencing the farmer to be price sensitive or behave in a certain way towards making purchasing decisions. Understanding these external factors can assist companies to predict possible farmer behaviour; therefore, positioning themselves well to initiate counter-strategies. Internal factors influencing farmer behaviour includes; psychological

influences, perceptions, attitudes and personal influences like age, income and personality.

Consumer behaviour, however, does not end with the purchase decision and delivering the product. After product purchase consumers may further have doubts about whether the purchase decision made was sound and beneficial to them, and the fertilizer company's role will be to position itself to reassure, reaffirm and build long-term satisfaction by generating trust which could eventually result in consumer loyalty.

Chapter 2 served as a literature review and theoretical background to the study. The next chapter will explain the research methodology used in the study.

CHAPTER 3

RESEARCH METHODOLOGY AND RESULTS

3.1 INTRODUCTION

South Africa's traditional farming landscape is rapidly changing, through public and private partnerships more black emerging farmers are assisted to enter into farming. However, contrary to common belief, it is evident that although there is a high number of those who fail to farm successfully, most are becoming successful commercial farmers; according to Grain SA its 36 capacitated emerging farmer members produce more than 250 tons of maize, 18 produce more than 500 tons, 10 produce over 1000 tons of maize and one member produces over 1500 tons of maize. As a result, the subsequent growth of the emerging farmer market segment may compel fertilizer companies to become more in touch with the buying behaviour of emerging farmers in order to successfully enter this market segment and to prosper in the future.

In order to have a sustainable competitive advantage in the fertilizer industry, management of fertilizer companies have to be flexible, adapt and encourage change and innovation while responding to the new farming environment and have an understanding of what it is that influences buying behaviour of emerging farmers. Empirical research should provide insight and benefit fertilizer manufacturers.

This chapter identifies the methodology used to determine factors that influence the fertilizer buying behaviour of emerging farmers in the Free State. Methods used for data collection and the questionnaire are discussed, demographic framework, sampling method and size are also discussed.

3.2 RESEARCH METHODOLOGY

The research methodology employed a quantitative research design. Data was collected by means of a structured questionnaire from emerging farmers, where-after the data was captured, analysed and presented.

3.2.1 Study population

The study population consisted of 32 emerging farmers in the Free State province of South Africa. With the assistance of farmer study groups in various areas, it was possible to reach all of the farmers in the population. Because the population is small, no sample was drawn, and the total population was targeted to collect the data. Completion of the questionnaires was done during farmer information days hosted by a fertilizer provider. These farmer days were held in various parts of the Free State province and covered the targeted population sufficiently. The researcher personally distributed and collected the completed questionnaires during a session on the farmer days. The researcher also explained the purpose and questions asked to the farmers where needed, the whole of the questionnaire was also presented in both English and the mother tongue Sesotho, to ensure that the respondents understood what were required from them.

3.2.2 Questionnaire used in this study

The questionnaire consists of 30 statements, with measuring based on a five point Likert scale.

Bad	**1**	**2**	**3**	**4**	**5**	*Good*

✓ Indicate neutral behaviour/*Maikuto a hao a mahareng!*

The questionnaire consists of five parts namely:

Part 1: From whom emerging farmers purchase their fertilizers and at what quantities.

Part 2: How emerging farmers perceive the fertilizer industry in general, whether they understand the industry and the perceived role the industry plays in their farming success consists of five statements.

Part 3: How the emerging farmer perceives the fertilizer company from which he buys, the agents and distributors consist of 14 statements.

Part 4: Who influences emerging farmer fertilizer buying decisions consists of seven statements.

Part 5: How do emerging farmers feel about different fertilizer brands consists of four statements.

3.2.3 Data processing

Data collected was statistically analysed by means of inferential statistics and correlations whilst also determining the reliability of the data across the different categories.

3.3 RESULTS

3.3.1 Demographic Profile

The demographic profile of the respondents include gender, age category, farming experience, area operated (hectares), average fertilizer application rate per hectare and from whom emerging farmers purchase their fertilizer. Table 3.1 depicts the gender category.

Table 3.1: Frequency table for Gender

Gender	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Male	29	90.6	90.6	90.6
Female	3	9.4	9.4	100.0
Total	**32**	**100**	**100**	

After completing the study it was found that 90.6% of the population were male and 9.4% female. The analysis shows clearly that the majority of emerging farmers are male and thus the results make sense given the physically demanding nature of farming.

Table 3.2: Frequency table for Age

Age category	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1(26-35)	5	15.6	15.6	15.6
2(36-45)	11	34.4	34.4	50.0
3(46-55)	7	21.9	21.9	71.9
4(56-60)	7	21.9	21.9	93.8
5(>60)	2	6.3	6.3	100.0
Total	**32**	**100**	**100**	

After the completion of the study it can be reported that the highest percentage (34.4%) of the respondents are aged between 36-45. Interesting is the fact that 93% of the respondents are under 60 years of age, whilst 15.6% of the respondents are young respondents (aged 26-35).

Table 3.3: Frequency table for Farming Experience

Experience category (in years)	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1 (0-3)	5	15.6	15.6	15.6
2 (4-10)	12	37.5	37.5	53.1
3 (11-15)	7	21.9	21.9	75.0
4 (16-20)	7	21.9	21.9	96.9
5 >20	1	3.1	3.1	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found that 37.5% of the population have farming experience of between 4-10 years. It is interesting to note that 96% of the respondents have farming experience less than 20 years, whilst 15.6% of the respondents have less than 3 years of farming experience.

Table 3.4: Frequency table for area operated in hectares

Area operated (Area in Ha)	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1 (5-50)	0	0	0	0
2 (60-150)	13	40.6	40.6	40.6
3(160-250)	9	28.1	28.1	68.8
4 (260-500)	5	15.6	15.6	84.4
5 (>500)	5	15.6	15.6	100.0
Total	**32**	**100**	**100**	

On completion of the study it was found that 68.8% of the respondents are farming on less than 250 hectares and 15.6% of the respondents farming more on a larger scale (>500). The results also interestingly reflect that the majority of emerging farmers (40.6%) farm on between 60-150 hectares.

Table 3.5: Frequency table for fertilizer application rate per hectare in kilograms

Fertilizer application rate (KG)	Frequency	Percentage	Valid Percentage	Cumulative Percentage
2 (51-100)	6	18.8	18.8	18.8
3 (110-150)	10	31.3	31.3	50.0
4 (160-250)	7	21.9	21.9	71.9
5 (>250)	9	28.1	28.1	100.0
Total	**32**	**100**	**100**	

On completion of the study the analysis for fertilizer application rate per hectare indicate clearly that 71.9% of the respondents apply less than 250 kg of fertilizer per hectare and 28.1% of the respondents apply more than 250 kg of fertilizer per hectare.

Table 3.6: Frequency table for, from whom emerging farmers purchase their fertilizer

Outlet	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1(Co-op)	5	15.6	16.1	16.1
2(Agent)	12	37.5	38.7	54.8
3(Fertilizer Rep)	14	43.8	45.2	100.0
Missing value	1	3.1	100.0	
Total	**32**	**100.0**		

Further analyses have shown that the majority of respondents (45.2%) purchase their fertilizer products from representatives of fertilizer companies, while 38.7% of the respondents purchase fertilizer products from agents. The least number of respondents (16.1%) purchase their fertilizer products from agricultural co-ops.

3.3.2 How emerging farmers perceive the fertilizer industry in general

- Purpose of the question

The question was posed to get emerging farmers' opinion about the fertilizer industry in general and whether industry plays an important role in their farming businesses.

Question 1: *Whether the fertilizer industry understands emerging farmers' farming needs.*

Table 3.7: Frequency table for QUESTION 1

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	3	9.4	9.4	9.4
2	4	12.5	12.5	21.9
3	3	9.4	9.4	31.3
4	1	3.1	3.1	34.4
5	21	65.6	65.6	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found that 68.7% do believe that the fertilizer industry has an understanding of their farming needs. Interestingly 21.9% of the respondents feel that the fertilizer industry does not understand their farming needs, whilst 9.4% of the respondents projected a neutral feeling.

Question 2: *The fertilizer industry plays an important role in the farmers' businesses.*

Table 3.8: Frequency table for QUESTION 2

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	3	9.4	9.4	9.4
2	4	12.5	12.5	21.9
3	3	9.4	9.4	31.3
4	1	3.1	3.1	34.4
5	21	65.6	65.6	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study, a higher number of respondents (68.7%) believe that the fertilizer industry plays an important role in their farming businesses, whilst 21.9% feel the fertilizer industry does not play an important role in their farming business. A lower percentage, 9.4% of the respondents, displayed a neutral feeling.

Question 3: *The fertilizer industry is progressive and always improving*

Table 3.9: Frequency table for QUESTION 3

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	3	9.4	9.4	9.4
2	4	12.5	12.5	21.9
3	4	12.5	12.5	34.4
4	1	3.1	3.1	37.5
5	20	62.5	62.5	100.0
Total	**32**	**100.0**	**100.0**	

The analysis of whether the fertilizer industry is progressive has shown that a higher number of respondents (65.6%), believe that the fertilizer industry is progressive and always improving.

Question 4: *The fertilizer industry has a direct impact in farming profitability*

Table 3.10: Frequency table for QUESTION 4

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	3	9.4	9.4	9.4
2	4	12.5	12.5	21.9
3	5	15.6	15.6	37.5
4	1	3.1	3.1	40.6
5	19	59.4	59.6	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found that 62.5% of the respondents believe that the fertilizer industry has a direct impact in their farming profitability.

Question 5: *Emerging farmers understands how the fertilizer industry works*

Table 3.11: Frequency table for QUESTION 5

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	1	3.1	3.1	3.1
2	4	12.5	12.5	15.6
3	2	6.3	6.3	21.9
4	3	9.4	9.4	31.3
5	22	68.8	68.8	100.0
Total	**32**	**100.0**	**100.0**	

Interestingly, after the completion of the study the results indicate that 15.6% of the respondents do not understand how the fertilizer industry works whilst a higher number of respondents (78.2%) do understand how the fertilizer industry works.

3.3.3 How the emerging farmer perceive the fertilizer from which he buys as well as his perception about the agents and fertilizer distributors

- Purpose of the question

The purpose of the question is to get an impression of emerging farmers about products and services that fertilizer companies provide.

Question 6: *Fertilizer Company, agents and distributors provide slow or fast service*

Table 3.12: Frequency table for QUESTION 6

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	1	3.1	3.1	3.1
3	2	6.3	6.3	9.4
4	7	21.9	21.9	31.3
5	22	68.8	68.8	100.0
Total	**32**	**100.0**	**100.0**	

Analysis have interestingly shown that a high number of respondents (90.7%) believe the fertilizer company from which they purchase their fertilizer products as-well as the agents and distributors provide them with fast service, only a few number of respondents (3.1%) believe the fertilizer company, agents and distributors provide them with slow service.

Question 7: *The Fertilizer Company, agents and distributors provide services specific to farmers' needs, do not provide services specific to farme's' needs.*

Table 3.13: Frequency table for QUESTION 7

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
2	1	3.1	3.1	3.1
3	4	12.5	12.5	15.6
4	2	6.3	6.3	21.9
5	25	78.1	78.1	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found out that 84.4% of the respondents believe that the fertilizer company, agents and distributors provide services specific to their farming needs, while 3.1% of the respondents do not believe that the fertilizer company, agents and distributors provide services specific to their farming needs.

Question 8: *Fertilizer company sell or do not sell different products to other companies*

Table 3.14: Frequency table for QUESTION 8

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
2	4	12.5	12.5	12.5
3	4	12.5	12.5	25.0
4	4	12.5	12.5	37.5

5	20	62.5	62.5	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found that 75% of the respondents believe fertilizer companies differentiate their products, whilst 12.5% of the respondents believe that fertilizer companies do not differentiate their fertilizer products. 25% of the respondents neither agreed nor disagreed that the fertilizer companies differentiate or do not differentiate their fertilizer products.

Question 9: *Fertilizer Company provide technical/agronomic services or fertilizer companies do not provide technical/agronomic services*

Table 3.15: Frequency table for QUESTION 9

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	1	3.1	3.1	3.1
2	2	6.3	6.3	9.4
4	5	15.6	15.6	25.0
5	24	75.0	75.0	100.0
Total	**32**	**100.0**	**100.0**	

The analysis clearly indicates that a high percentage (90.6%) of the respondents agree that the fertilizer company from which they buy their fertilizer products provide them with technical/agronomic services, whilst a low number of respondents (9.4%) indicate that the fertilizer company from which they buy their fertilizer products do not provide them with technical/agronomic services.

Question 10: *The fertilizer company is unpleasant to do business with or the fertilizer company is unpleasant to do business with.*

Table 3.16: Frequency table for QUESTION 10

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
2	2	6.3	6.5	6.5
3	2	6.3	6.5	12.9
4	6	18.8	19.4	32.3
5	21	65.6	67.7	100.0
Missing value	1	3.1	100	
Total	**32**	**100.0**		

On completion of the study it was found that 87.1% of the respondents are pleased to conduct business with their fertilizer supplier, whilst 6.5% of the respondents feel it is unpleasant to conduct business with their fertilizer supplier.

Question 11: *The fertilizer buying procedure is complicated or not complicated.*

Table 3.17: Frequency table for QUESTION 11

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
2	1	3.1	3.1	3.1
3	4	12.5	12.5	15.6
4	7	21.9	21.9	37.5
5	20	62.5	62.5	100
Total	**32**	**100.0**	**100**	

The highest number of respondents (84.4%) feels the fertilizer buying procedure of the company from which they purchase their fertilizer is easy and uncomplicated, only 3% of the respondents feel their company fertilizer buying procedures are complicated.

Question 12: *Certain that they will buy fertilizer again from the same company or not certain that they will buy fertilizer again from the same company.*

Table 3.18: Frequency table for QUESTION 12

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
2	1	3.1	3.1	3.1
3	5	15.6	15.6	18.8
4	5	15.6	15.6	34.4
5	21	65.6	65.6	100.0
Total	**32**	**100.0**	**100**	

On completion of the study, the analysis clearly indicates that a high number of respondents (81.2%) are certain that they will buy fertilizer again from the same fertilizer supplier, whilst 15.6% of the respondents are unsure whether they will purchase or not purchase fertilizer products from the same fertilizer supplier again. The analysis also indicates that a lower number of respondents (3.1%) will not purchase fertilizer again from the same fertilizer company.

Question 13: *Fertilizer Company provides good information about their products or do not provide good information about their products.*

Table 3.19: Frequency table for QUESTION 13

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
3	4	12.5	12.5	12.5
4	6	18.8	18.8	31.3
5	22	68.8	68.8	100.0
Total	**32**	**100.0**	**100.0**	

The highest number of respondents (87.6%) indicated that the fertilizer company provides them with good information about their products; however, interesting is the fact that no respondents indicated that they are not provided with good information

about fertilizer products by the fertilizer suppliers, whilst 12.5% of the respondents were unsure whether the fertilizer companies provide or does not provide them with good information about their products.

Question 14: *Fertilizer company representative visit farms or do not visit farms*

Table 3.20: Frequency table for QUESTION 14

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
2	2	6.3	6.3	6.3
3	3	9.4	9.4	15.6
4	5	15.6	15.6	31.3
5	22	68.8	68.8	100.0
Total	**32**	**100.0**	**100.0**	

The analysis clearly indicates that 84.4% of the respondents agree that fertilizer company representatives conduct farm visits as a service offering, whilst 6.3% of the respondents totally disagree that fertilizer company representative visit their farms.

Question 15: *Fertilizer company provides after sales services or do not provide after sales services.*

Table 3.21: Frequency table for Question 15

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	1	3.1	3.1	3.1
2	3	9.4	9.4	12.5
3	4	12.5	12.5	25.0
4	4	12.5	12.5	37.5
5	20	62.5	62.5	100.0
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found that 75% of the respondents agree that the fertilizer company provides after sales services. A lower number of the respondents (3.1%) disagree that the fertilizer company provides after sales services, whilst 12.5% of the respondents neither agree nor disagree.

Question 16: *Fertilizer company is rigid to do business with or flexible to do business with.*

Table 3.22: Frequency table for QUESTION 16

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
3	4	12.5	12.5	12.5
4	7	21.9	21.9	34.4
5	21	65.6	65.6	100.0
Total	**32**	**100.0**	**100.0**	

The analysis clearly indicate that a high number of respondents (87.5%) agree that the fertilizer company is flexible to do business with, whilst 12.5% of the respondents are unsure. Interestingly no respondents feel the fertilizer company is rigid to do business with.

Question 17: *Supply low quality products at a competitive price or supply high quality products at a competitive price*

Table 3.23: Frequency table for QUESTION 17

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
2	1	3.1	3.1	3.1
3	3	9.4	9.4	12.5
4	6	18.8	18.8	31.3
5	22	68.8	68.8	100
Total	**32**	**100.0**	**100.0**	

On completion of the study it was found out that 87.6% of the population believes the fertilizer company supply them with high quality products at competitive prices. A lower number of respondents (3.1%) believe fertilizer companies are supplying low quality products at competitive prices.

Question 18: *Fertilizer company adds value to the farmer or does not add value add value to the farmer.*

Table 3.24: Frequency table for QUESTION 18

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
3	4	12.5	12.9	12.9
4	8	25.0	25.8	38.7
5	19	59.4	61.3	100.0
Missing value	1	3.1	100.0	
Total	**32**	**100.0**	**1**	

Interesting is the fact that on completion of the study no respondents felt that fertilizer companies do not add value to their farming businesses. A high number of respondents (87.1%) believe fertilizer companies add value to their farming businesses, whilst 12.9% of the respondents neither agree nor disagree whether or not fertilizer companies add value to their farming businesses.

Question 19: *Fertilizer company offers transportation services or do not offer transportation services.*

Table 3.25: Frequency for QUESTION 19

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	1	3.1	3.2	3.2
3	2	6.3	6.5	9.7
4	8	25.0	25.8	35.5
5	20	62.5	64.5	100.0
Missing value	1	3.1	100	
Total	**32**	**100.0**		

The highest number of respondents (90.3%) agrees that the fertilizer supplier from which they purchase their fertilizer products does deliver their products, whilst only 3.2% of the respondents indicate that they are not receiving transportation services from their fertilizer suppliers.

3.3.4 Who influences fertilizer purchase decision by the emerging farmer

- Purpose of the question

The purpose of the question is to identify who plays a role in the farmer fertilizer buying decision and the farmer level of involvement in the fertilizer purchase decision.

Question 20: *Family plays a role in the fertilizer purchase decision or does not play a role in the fertilizer purchase decision*

Table 3.26: Frequency table for QUESTION 20

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	11	34.4	34.4	34.4
2	3	9.4	9.4	43.8
3	5	15.6	15.6	59.4
4	6	18.8	18.8	78.1
5	7	21.9	21.9	100
Total	**32**	**100.0**	**100**	

The analysis interestingly reveal that only 40.7% of the respondents feel family plays a role in their fertilizer purchase decision, whilst 43.8% of the respondents feel family does not play a role in their fertilizer purchase decision. 15.6% of the respondents are unsure whether family plays or does not play a role in their fertilizer purchase decision.

Question 21: *The Agricultural organisation of which I am a member of does not play or play a role in my fertilizer purchase decision.*

Table 3.27: Frequency table for QUESTION 21

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	18	56.3	60.0	60.0
2	4	12.5	13.3	73.3
3	5	15.6	16.7	90.0
4	1	3.1	3.3	93.3
5	2	6.3	6.7	100
Missing value	2	6.3	100	
Total	**32**	**100.0**		

On completion of the study it was found out that 73.3% of the respondents believe agricultural organisations of which they are members of plays a role in their fertilizer purchase decisions. Only 10% of the respondents believe agricultural organisations of which their members of do not influence their purchase decision.

Question 22: *Type of fertilizer purchased is as per neighbouring farmers or not as per my neighbouring farmers*.

Table 3.28: Frequency table for QUESTION 22

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	6	18.8	20.0	23.3
2	11	34.4	36.7	26.7
3	5	15.6	16.7	43.3
4	1	3.1	3.3	80.0
5	7	21.9	23.3	100.0
Missing value	2	6.3	100	
Total	**32**	**100.0**		

On completion of the study it was found that 56.7% of the population purchase the same fertilizer type as their neighbouring farmers, whilst 26.6% of the population do not purchase the same fertilizer type as their neighbouring farms.

Question 23: *Advertisements do not influences or influence farmer purchase decisions*

Table 3.29: Frequency table for QUESTION 23

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	10	31.3	34.5	34.5
2	9	28.1	31.0	65.5
3	7	21.9	24.1	89.6
4	2	6.3	6.9	96.5
5	1	3.1	3.4	100
Missing value	3	9.4	100	
Total	**32**	**100.0**		

On completion of the study the analysis showed that 65.5% of the respondents believe advertisements influences their purchase decisions, whilst 10.3% of the respondents believe advertisements do not influence their purchase decisions, interestingly 24.1% of

the respondents neither agree nor disagree whether advertisements influence their fertilizer purchase decisions.

Question 24: *Do not necessarily purchase the cheapest fertilizer products or purchase the cheapest fertilizer products.*

Table 3.30: Frequency table for QUESTION 24

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	14	43.8	48.3	48.3
2	6	18.8	20.7	69.0
3	4	12.5	13.8	82.8
4	1	3.1	3.4	86.2
5	4	12.5	13.8	100.0
Missing value	3	9.4	100.0	
Total	**32**	**100.0**		

The analysis of whether or not emerging farmers necessarily purchase the cheapest fertilizer product interestingly show that 69% of the respondents do not necessarily purchase the cheapest fertilizer products; however, 17.2% of the respondents indicate that they purchase the cheapest fertilizer products, whilst 13.8% of the respondents are unsure of whether or not they purchase the cheapest fertilizer products.

Question 25: *Emerging farmers are highly involved or not high involved in the fertilizer purchase decision.*

Table 3.31: Frequency table for QUESTION 25

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	1	3.1	3.4	3.4
2	2	6.3	6.9	10.3
3	1	3.1	3.4	13.8

4	4	12.5	13.8	27.6
5	21	65.6	72.4	100.0
Missing value	3	9.4	100	
Total	**32**	**100.0**		

On completion of the study it was found out that the highest number of respondents (86.3%) is highly involved in the fertilizer purchase decision. 3.4% of the respondents are unsure, whilst an interesting fact is 10.3% of the respondents who indicate that they are not highly involved in the fertilizer purchase decision.

Question 26: *The purchase decision is not influenced by the support and service received from the fertilizer company or it is influenced by the support and services received from the fertilizer company.*

Table 3.32: Frequency table for QUESTION 26

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	2	6.3	6.7	6.7
3	3	9.4	10.0	16.7
4	5	15.6	16.7	33.3
5	20	62.5	66.7	100.0
Missing value	2	6.3	100.0	
Total	**32**	**100.0**		

The highest number of respondents (83.4%) believes that support and services received from the fertilizer company influence their fertilizer purchase decision. Only 6.7% of the respondents believe service offered by fertilizer companies do not influence their fertilizer purchase decision, whilst 10% of the respondents are unsure whether or not service offered by fertilizer companies influence their fertilizer purchase decision.

3.3.5 Emerging farmers' perception about different fertilizer brands.

- Purpose

The purpose of the question was to determine brand loyalty of emerging farmers regarding different fertilizer brands.

Question 27: *I take time before I buy different fertilizer brands when my preferred fertilizer brand is not available or I quickly decide on buying different fertilizer brands when my preferred brand is not available.*

Table 3.33: Frequency table for QUESTION 27

Value	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	2	6.3	6.7	6.7
2	2	6.3	6.7	13.3
3	4	12.5	13.3	26.7
4	6	18.8	20.0	46.7
5	16	50.0	53.3	100.0
Missing value	**2**	**6.3**	**100**	
Total	**32**	**100.0**		

On completion of the study it was found that 73.3% of the respondents indicate brand loyalty as they take time before buying different fertilizer brands when their preferred fertilizer brand is not available. 13.4% of the respondents would quickly purchase another brand when their preferred fertilizer brand is unavailable, whilst 13.3% of the respondents neither agree nor disagree that they will quickly buy a different brand when their preferred brand is unavailable.

Question 28: *Farmers always buy the same brand of fertilizer or do not always buy the same brand of fertilizer*

Table 3.34: Frequency table for QUESTION 28

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	1	3.1	3.3	3.3
3	5	15.6	16.7	20.0
4	9	28.1	30.0	50.0
5	15	46.9	50.0	100.0
Missing value	**2**	**6.3**	**100**	
Total	**32**	**100.0**		

The highest number of respondents (80%) shows that they buy the same brand of fertilizer, whilst 16.7% of the respondents are unsure. Only 3.3% of the respondents do not always buy the same brand of fertilizer.

Question 29: *Farmers like to test or do not test new fertilizer brands*

Table 3.35: Frequency table for QUESTION 29

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	2	6.3	6.7	6.7
2	1	3.1	3.3	10.0
3	5	15.6	16.7	26.7
4	7	21.9	23.3	50.0
5	15	46.9	50.0	100.0
Missing value	**2**	**6.3**	**100.0**	
Total	**32**	**100.0**		

On the completion of the study it was found that 73.3% of the respondents only purchase reputable fertilizer brands. 6.7% of the respondents like to test new fertilizer, whilst 26.7% of the respondents neither test new fertilizer brands nor show brand loyalty.

Question 30: *Buy only stable or sometimes buy unstable fertilizer brands*

Table 3.36: Frequency table for QUESTION 30

Value	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1	1	3.1	3.6	3.6
3	2	6.3	7.1	10.7
4	7	21.9	25.0	35.7
5	18	56.3	64.3	100.0
Missing value	**4**	**12.5**	**100.0**	
Total	**32**	**100.0**		

Further analyses interestingly show that the highest number of respondents (89.3%) only buys stable fertilizer brands. Only 3.6% of the respondents purchase unstable brands, whilst 7.1% of the respondents are unsure whether they buy stable or unstable fertilizer brands.

3.4 SUMMARY STATISTICS

3.4.1 Mean values of categories

According to Welman *et al*. (2005:231), descriptive statistics are concerned with the description and/or summary of the data obtained for a group of individual units of analysis. The mean values of all factors are shown in table 3.37 – 3.40 and also presented in percentage format after the responses on the 5-point Likert scale have been converted to percentages.

As a general rule, mean values of more than 3.5 can be regarded as those factors that are regarded as important by the farmer and thus have a large influence of the farmer fertilizer purchase behaviour. This is further supported by research conducted by Bisschoff and Hough (1995:11) which use the following guidelines to interpret the mean value percentages:

- Under 60% - Unacceptable/Unimportant;
- Between 60% and 75% - Acceptable/Important
- 75% and higher - Very important

Table 3.37: Category 1- The fertilizer industry in general

	N	Mean	Std. Deviation
Q1	32	1.97	1.470
Q2	32	1.97	1.470
Q3	32	2.03	1.470
Q4	32	2.09	1.467
Q5	32	1.72	1.224
Valid N (listwise)	32		

Table 3.38: Category 2 – Perception of farmers about the fertilizer company, agents and distributors from which they buy

	N	Mean	Std. Deviation
Q6	32	4.53	.879
Q7	32	4.59	.837
Q8	32	4.25	1.107
Q9	32	4.53	1.016
Q10	31	4.48	.890
Q11	32	4.44	.840
Q12	32	4.44	.878
Q13	32	4.56	.716
Q14	32	4.47	.915
Q15	32	4.22	1.184
Q16	32	4.53	.718
Q17	32	4.53	.803
Q18	31	4.48	.724
Q19	31	4.48	.890
Valid N (listwise)	29		

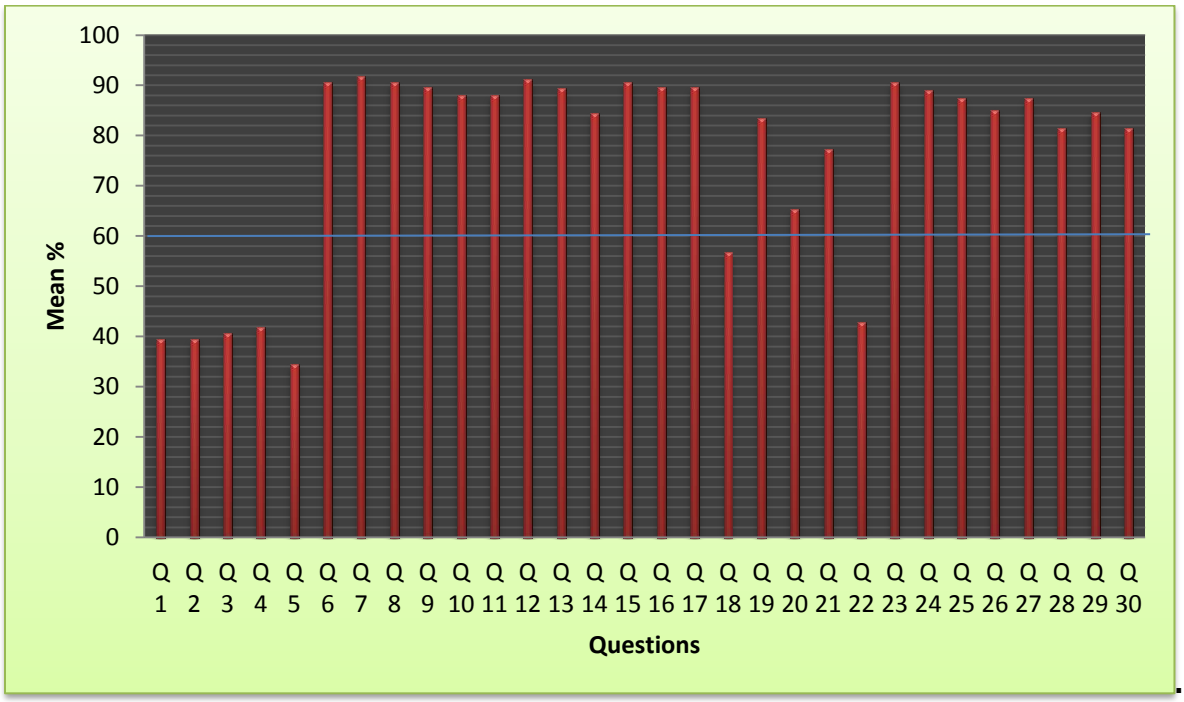
Table 3.39: Category 3 – Influences on farmer purchase decisions

	N	Mean	Std. Deviation
Q20	32	2.84	1.609
Q21	30	4.17	1.234
Q22	30	3.27	1.461
Q23	29	3.86	1.093
Q24	29	2.14	1.432
Q25	29	4.45	1.088
Q26	30	4.37	1.129
Valid N (listwise)	27		

Table 3.40: Category 4 – Perceptions of farmers about different fertilizer brands

	N	Mean	Std. Deviation
Q27	30	4.07	1.258
Q28	30	4.23	.971
Q29	30	4.07	1.202
Q30	28	4.46	.922
Valid N (listwise)	28		

Figure 3.1: Mean values of all categories



The analysis further showed that Q1 - Q 5 (*I understand how the fertilizer industry works*) displayed the least mean percentage values, whilst Q 7 (*Providing specific services to farmers' needs*) and Q 12 (*Providing good information about company fertilizer product*) displayed the highest mean percentage values. Both these highest values fall under the service category. This interesting revelation by the analysis makes complete sense given the fact that learning/psychological factors and information about fertilizer products have been identified as those factors that are also very important to emerging farmers when purchasing fertilizer products.

Also to note is the blue line which indicates factors above the line as important and those factors below as not important to emerging farmers when they purchase fertilizer products.

The mean values are visually presented in figure 3.1, which clearly reveal that family (*Q 18*) and influence of price on fertilizer purchase decision (*Q 22*) are the least important

factors influencing emerging farmer fertilizer purchasing decisions as they clearly fall below the blue line.

Figures 3.1 also clearly shows that *service*, *brand*, *product* and *psychological factors* contribute highly to those factors that influence fertilizer purchase behaviour by emerging farmers whist mean values such as those of *price*, *social factors* and *general knowledge about the fertilizer industry* depicts a general dissatisfaction as the criteria portray mean values under the unacceptable level of 60%.

3.5 RELIABILITY

The reliability of the data was statistically determined by employing the Coefficient of Cronbach's Alpha. According to Burns and Burns (2008:417), Cronbach's Alpha is very useful in developing attitude scales and questionnaires as the alpha level (or reliability) indicates if the items are measuring the same construct. The author further mentions that an alpha of 0.8 or above is regarded as highly acceptable for assuming homogeneity of items, while 0.7 is the limit of acceptability, although 0.7 is as a rule of thumb regarded as the limit of acceptable reliability, levels as low as 0.6 have been regarded to have an acceptable reliability.

The validity of the data measures appear in table 3.41 and measured four (4) categories of questions.

Table 3.41: Reliability of the data

Nr.	Category	Cronbach's Alpha	No of items
1.	Fertilizer industry in general	.961	5
2.	Perception of farmers about the company, agents and distributors from which they buy fertilizer	.967	14
3.	Influences on farmer fertilizer purchase decision	.365	7
4.	Perceptions of farmers about different fertilizer brands	.639	4

The Cronbach's Alpha value in Category: 3, (.365) appear to be unsatisfactory; however, according to Burn and Burn (2008:417), items that are not measuring what the rest are can be identified and deleted. Question 22: *I do not necessarily purchase the cheapest fertilizer product*, was identified and deleted, this improves the alpha value to .564. This low value can be alluded to the fact that emerging farmers do not necessarily purchase the cheapest fertilizer products; however sensitive to high fertilizer prices.

3.6 CORRELATION ANALYSIS

Correlation analysis indicates whether there is a statistical significant relationship between two variables. Statistical significance means that there is a relationship observed in the variables of the population from which the sample was selected.

According to Salkind (2010:1406), Spearman's correlation coefficient describes the strength of the association between two ordinal variables, but it does not show whether that relationship is statistically significantly different from zero. The author further mentions that because the sample correlation coefficient (r_s) estimates the population correlation coefficient (p_s), a test statistic is needed to determine the degree of confidence that the relationship found from random sampled pairs is truly representative of the entire population; however, the *t* scores obtained from significance testing can be converted to *p*-values.

The guideline values for effect sizes to be used are as follows:

- 0.1 small effect
- 0.3 medium effect
- 0.5 large effect

The analysis interestingly reveal that *Area planted* and *Fertilizer usage* has a correlation coefficient of 0.727, therefore there is a practically significant effect between *Area* and *Fertilizer usage*, whilst effect size of *age* and *fertilizer usage* is 0.0074 indicating no relationship between *age* and how much *fertilizer* farmers use on their farming operations.

Correlation can also be tested using the *p*-value approach. The *p*-value is the probability of getting a test statistic equal to or more extreme than the sample result, given that the null hypothesis, $H_{0,}$ is true (Levine *et al*., 2010:333). The *p*-value is also known as the observed level of significance. A *p*-value smaller than 0.05 indicates a significant, statistical relationship between two variables.

Table 3.42: Correlation analysis

			AGE	FARMING	AREA	FERTILIZER USE
Spearman's rho	**AGE**	Correlation Coefficient	1.000	.386*	.114	.074
		Sig. (2-tailed)		.029	.534	.687
		N	32	32	32	32
	FARMING	Correlation Coefficient	.386*	1.000	.503**	.451**
		Sig. (2-tailed)	.029		.003	.010
		N	32	32	32	32
	AREA	Correlation Coefficient	.114	.503**	1.000	.727**
		Sig. (2-tailed)	.534	.003		.000
		N	32	32	32	32
	FERTILIZER USE	Correlation Coefficient	.074	.451**	.727**	1.000
		Sig. (2-tailed)	.687	.010	.000	
		N	32	32	32	32

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

3.7 SUMMARY

The chapter discussed methodologies used to determine factors that influence the fertilizer purchase decisions of emerging farmers in the Free State. Frequency tables were used to present the analysed data.

Demographic information included age and gender as well as basic important information such as farming experience, fertilizer application rate per hectare, size of area planted and information from whom emerging farmers purchase their fertilizer.

The survey data also sourced information with regard to who influences emerging farmer fertilizer purchase decisions and whether service offered by fertilizer companies have an influence on the fertilizer purchase decision.

Descriptive statistics was also used on the data and revealed factors that are regarded as important by the farmer and thus having a large influence on the farmer fertilizer purchase behaviour. These factors in summary are as follows:

Table 3.43: Mean averages of important factors influencing farmer fertilizer purchase behaviour

Factor	**Average Mean**	**% Average Mean**
Service	4.15	83%
Product	4.25	85%
Brand	4.18	83.6%
Psychological/learning	4.45	89%

The reliability of the data was statistically determined by employing the coefficient of Cronbach's alpha. The survey data is statistically reliable excluding category 3 with a value of .365, however, when the item that is not measuring what the rest are is identified and deleted, the value improves to .564.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

The focus of this study was on analysing fertilizer buying of emerging farmers in the Free State province. The concluding remarks based on the results in chapter 3 are discussed in this chapter and tangible recommendations are made.

4.2 CONCLUSIONS

The primary objective of the study was to identify factors playing an important role in the buying behaviour of emerging farmers in the Free State when purchasing fertilizer. The four (4) factors identified as very important to influencing emerging farmer fertilizer buying behaviour are (1) Service, (2) Brand, (3) Psychological factors and (4) Product. Although these factors have not been investigated and reported in the literature study as such, the do form part of factors discussed during Chapter 2 as factors that do affect consumer behaviour.

4.2.1 Biographical information

From the study 90.6% of the respondents are male and 9.4% female. 50% of the respondents are 45 years of age and 50% over the age of 45 years; these indicate a balanced age group in a male dominated industry.

Only 3.1% of the respondents have farming experience of over 20 years, 96.9% of the respondents have farming experience that vary between 0 to 20 years. The low levels of farming experience may be attributed to new farmers and the younger age group.

Only the four (4) significant factors identified as very important to influencing emerging farmer fertilizer buying behaviour are further discussed.

4.3 SIGNIFICANT FACTORS INFLUENCING FERTILIZER PURCHASE DECISION

4.3.1 Service

Most of the respondents believe that the fertilizer company from which they purchase their fertilizer provide fast services specific to their farming needs. The fertilizer companies provide technical/agronomic services and are regarded as pleasant to do business with. Most of the respondents agree that the fertilizer company, distributors and agents provide them with good information about their products, visit their farm regularly and provide them with after sales services. Between 15.6% and 81.2% of the respondents are certain that they will buy from the same fertilizer company, agent and distributor again. The study revealed that services offered by the fertilizer company, agents and distributors have a high influence on the fertilizer purchase decision by the emerging farmer.

4.3.2 Brand

Most of the respondents indicated that they only buy stable reputable fertilizer brands and when their preferred brand is unavailable they will take time before buying other brands. Most respondents also revealed that farmers buy the same fertilizer brands and do not like to test new fertilizer brands. The study showed that the emerging farmers are brand loyal and their fertilizer purchase decision thus influenced by brand loyalty.

4.3.3 Psychological factors

Most of the respondents are highly involved in the fertilizer purchase decision and most believe agricultural organisations of which they are members of does have an influence on their fertilizer purchase decision. (1) Information processing, (2) learning and (3) Attitude have been identified in Chapter 2 as basic internal processes influencing consumer purchase behaviour. The biographical information has adequately revealed

that most of the respondents have a low level of experience because of being new to farming and may not possess the necessary skill and ability to interpret certain important grain production aspects, due to this constraint emerging farmers may be relying more on an agricultural organisation for learning purposes thus eventually agricultural organisations having an influence on the fertilizer purchase decision.

4.3.4 Product influence

Most of the respondents believe that the fertilizer company, distributors and agents from whom they buy sell different products to other companies. The company, distributors and agents also supply high quality fertilizer products at competitive prices. Superior product characteristic does therefore have an influence on the emerging farmer fertilizer purchase decision.

4.5 RECOMMENDATIONS

The empirical research conducted in this study revealed significant aspects that fertilizer companies need to take into account when pursuing the emerging fertilizer market in the Free State province.

Due to being relatively new to farming emerging farmers need to be taught and practically be guided in the use of fertilizer and basic principles of fertilization. The emerging farmer market segment is crowded with opinion leaders and gatekeepers that influence emerging farmers buying behaviour. Fertilizer companies interested in the emerging farmer market need to identify the opinion leaders and gatekeepers in the market segment to form possible partnerships or alliances for possible trust foundation with emerging farmers.

Emerging farmers prefer purchasing fertilizer from companies that provide them with after sales services and visit their farm regularly; the fertilizer company must also make sure that their buying procedure is fairly easy and also that they offer transportation services. The fertilizer company should also advertise frequently; this could be done

through regular farmer information days to make sure farmers are aware of their fertilizer products or new product line-up.

The fertilizer company should also offer good quality products at competitive prices and differentiate their products. Being the cheapest fertilizer supplier is not a good marketing strategy as emerging farmers do not necessarily purchase the cheapest fertilizer products; a balance needs to be struck between service, product quality, training and offering a competitive price.

4.5 CRITICAL EVALUATION OF THE STUDY

In evaluating the study the primary and secondary objectives are re-visited.

4.5.1 Primary Objective re-visited

The primary objective was to identify factors playing an important role in the buying behaviour of emerging farmers in the Free State province when purchasing fertilizer. To address the primary objective, the secondary objectives were formulated.

4.5.2 Secondary Objectives re-visited

- Gaining valuable insight into buying behaviour and factors influences buying behaviour of consumers.
- Identifying key factors that emerging farmers in the grain industry believe play a role in the success of their businesses.
- Determining loyalty of Free State emerging farmers in the grain industry towards a single fertilizer supplier/brand

The first secondary objective was realised through the literature review conducted in Chapter 2.

The second secondary objective was dealt with through the empirical study in Chapter 3 and concluded in Chapter 4.

The third and last secondary objective was realised though the empirical study in Chapter 3 and concluded in Chapter 4.

Through achieving all the secondary objectives it can be concluded that the primary objective namely to identify factors playing an important role in the buying behaviour of emerging farmers in the Free State province when purchasing fertilizer has be successfully achieved.

4.6 LIMITATIONS TO THE STUDY/ AREAS FOR FUTURE RESEARCH

There is limited literature conducted on fertilizer purchase behaviour by farmers' especially purchasing behaviour by emerging farmers. Future research is therefore required in order to identify more factors that may play a role in fertilizer buying behaviour.

The population for research is quite large when factoring all emerging farmers that do purchase fertilizer; however, becomes smaller when only those farmers that produce on economical sizes of land are considered.

4.7 SUMMARY

Chapter 1 of the study provided an overview of the study that serves to orientate the reader on the perspective of the study. The chapter also includes the difference between emerging farmers and commercial farmers in the grain industry as well as basic fertilizer production routes. The problem statement, study objectives and the research methodology also received attention.

Chapter 2 discusses the literature review on buying behaviour and factors that can possibly influence buying behaviour are discussed in this chapter. The stimulus response model of buying behaviour is also investigated in Chapter 2. Results of the empirical study are discussed in Chapter 3. The final chapter, Chapter 4 discusses conclusions derived from Chapter 3, recommendations, limitation to the study and suggestions for future research were also looked at in Chapter 4.

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YARA 2012.

APPENDIX A

Behavioural questionnaire

Date completed: (D)..... (M).....2013

Please mark the description most appropriate to your decision with an X

Ka kopo beya letshwaho X tshweetsong ya hao

Gender/*Bong*

Male/Monna	
Female/Mosadi	

Your age category/ *Dilemong dife.*

26-35	36-45	46-55	56-60	>60

Farming experience in years/*Dilemo tsa tsebo ya temo*

0-3	4-10	11-15	16-20	>20

Area operated in hectares/ *Lefelo tshebediso ho ya ka diheketara*

5-50	60-150	160-250	260-500	>500

Average fertilizer application rate per hectare in Kg/*Tshebediso ya manyolo ho ya ka heketara selekanyetso sa dikelograma*

0-50	51-100	110-150	160-250	>250

From whom do you purchase fertilizer/O reka manyolo ho mang?

Co-op/*Ko-operasie*	Agent/*Agente*	Fertilizer company representative/ *Mosebeletsi wa company ya manyolo*	Others/*Ba bangwe*

Please describe the fertilizer industry, their products and services by placing X on the most appropriate number at each of the scales below for an Example: / *Ka kopo beya letshwaho X nomorong eo bontshang maikutlo a hao ka dithepa, ditirelo le indastiri ya manyolo ka kakaretso, Sekai:*

Bad	**1**	**2**	**3**	**4**	**5**	*Good*

✓ Indicate neutral behaviour/*Maikutlo a hao a mahareng!*

How I perceive the fertilizer industry in general							
1.	The fertilizer industry understands my farming needs. *Indastiri tsa manyolo di tseba ditlhokeho tsa polasi yame*	**1**	**2**	**3**	**4**	**5**	The fertilizer industry does not understand my farming needs. *Indastiri ya manyolo ha e tsebe dihlokeho tsa polasi yame*
2.	The fertilizer industry plays an important role in my business. *Indastiri ya manyolo e bapala karolo ya botlhokwa kgweebong yaka.*	**1**	**2**	**3**	**4**	**5**	Fertilizer companies do not play an important role in my business. *Indastiri ya manyolo ha e bapale karolo ya botlhokwa kgweebong yaka.*
3.	The fertilizer industry change with changing times. *Indastiri ya manyolo e fetoha le dinako*	**1**	**2**	**3**	**3**	**5**	The fertilizer industry does not change with changing times. *Indastiri ya manyolo ha e fetoha le dinako.*
4.	The fertilizer industry has a direct impact in the profitability of my business. *Letseno la kgweebo yame le itshekehile haholo indastiring ya manyolo.*	**1**	**2**	**3**	**4**	**5**	The fertilizer industry does not have a direct impact on the profitability of my farming business. *Letseno la kgweebo yame ha le a itshekeha haholo indastiring ya manyolo.*
5.	I understand how the fertilizer industry works. *Ke hlalohanya hore indastiri ya manyolo e sebetsa joang.*	**1**	**2**	**3**	**4**	**5**	I do not understand how the fertilizer industry works. *Ha ke hlalohanye hore indastiri ya manyolo e sebetsa joang.*

How I perceive the fertilizer company from which I buy, agents & distributors							
6.	Provide slow service. *Ditshebeletso di bo koa.*	**1**	**2**	**3**	**4**	**5**	Provide fast service. *Ditshebeletso di ka pelenyana.*
7.	Do not provide services specific to my needs. *Ditshebeletso ha se tse ke di hlokang.*	**1**	**2**	**3**	**4**	**5**	Provide services specific to my needs. *Ditshebeletso ke tse ke di hlokang.*
8.	Do not sell different products to other companies *Ha di rekise dithepa tse fapaneng le tsa dikhampani tse ding.*	**1**	**2**	**3**	**4**	**5**	Sell different products to other companies *Di rekisa thepa tse fapanang le dikhampani tse ding tsa manyolo.*
9.	Do not provide technical/agronomic services. *Ha di na ditshebeletso tsa setegeniki.*	**1**	**2**	**3**	**4**	**5**	Provide technical/agronomic services. *Di na le ditshebeletso tsa setegeniki.*
10.	Is unpleasant to do business with. *Ha ho monate ho sebetsa le bona.*	**1**	**2**	**3**	**4**	**5**	Is pleasant to do business with. *Ho monate ho sebetsa le bona.*
11.	Their buying procedure is complicated *Theko tsamaiso tsa bona di kopakopane.*	**1**	**2**	**3**	**4**	**5**	Their buying procedure is fairly easy. *Theko tsamaiso tsa bona di bonolo.*
12.	I am uncertain if I will buy from them again. *Ha ke tshepe ke tla reka ho bona hape.*	**1**	**2**	**3**	**4**	**5**	I am certain I will buy from them again *Ke tshepa hore ke tla reka ho bona hape.*

13.	Do not provide me with good information about their products. *Ha ba nnehe kitso e hantle ka thepa le tshebeletso tsa bona.*	**1**	**2**	**3**	**4**	**5**	Provide me with good information about their products *Ba nneha kitso e hantle ka thepa le tshebeletso tsa bona.*
14.	Do not visit my farm. *Ha ba chake polasing ya me.*	**1**	**2**	**3**	**4**	**5**	Visit my farm regularly. *Ba a chaka khafetsa polasing ya me.*
15.	Do not provide me with after sales services. *Ha ba ntlisetse ditirelo tsa mora theko.*	**1**	**2**	**3**	**4**	**5**	Provide me with after sales services. *Ba ntlisetsa ditirelo mora theko.*
16.	Is rigid to do business with. *E gahametse go dira kgweebo le bona.*	**1**	**2**	**3**	**4**	**5**	Is flexible to do business with *Ha e ya gahamala ho dira kgweebo le bona.*
17.	Supply low quality products at a competitive price. *Ditshebeletso tsa bona ke tsa khwalithi e fatshe ka theko tse hohelang.*	**1**	**2**	**3**	**4**	**5**	Supply high quality products at a competitive price. *Ditshebeletso tsa bona ke tsa khwalithi e hodimo ka theko tse hohelang.*
18.	Does not value me as client. *Ha di nkele hodimo jaaka moreki.*	**1**	**2**	**3**	**4**	**5**	Value me as a client. *Di nkela hodimo jaaka moreki.*
19.	Does not deliver my products. *Ha bana ditirelo tsa tsamaiso ya dithoto.*	**1**	**2**	**3**	**4**	**5**	Deliver my products. *Bana le ditirelo tsa tsamaiso ya dithoto.*

Who influences my buying decision							
20.	My family play a role in my fertilizer purchase decision. *Ba lelapa lame bana le tshusunyetso thekong yame ya manyolo.*	**1**	**2**	**3**	**4**	**5**	My family do not play a role in my fertilizer purchase decision. *Ba lelapa lame ha bana tshusunyetso thekong yame ya manyolo.*
21.	Agricultural organisations of which I am a member of do not play a role in my fertilizer purchase decision. *Ditheo tsa temo tseo ke leng leloko ho tsona ha dina tshusunyetso thekong yame ya manyolo.*	**1**	**2**	**3**	**4**	**5**	Agricultural organisations of which I am a member of play a role in my fertilizer purchase decision. *Ditheo tsa temo tseo ke leng leloko ho tsona dina le tshusunyetso thekong yame ya manyolo.*
22.	I do not use the same fertilizer as other farmers in my area. *Ke sebedisa manyolo a fapaneng le a dihwai tse ding kgaolong yame.*	**1**	**2**	**3**	**4**	**5**	I use the same fertilizer as other farmers in my area. *Ke sebedisa manyolo a tshwanang le dihwai tse ding kgaolong yame.*
23.	Advertisements do not influence my fertilizer purchase decision. *Dipapatso ha dina tshusunyetso thekong tsa ka tsa manyolo.*	**1**	**2**	**3**	**4**	**5**	Advertisements influence my fertilizer purchase decision. *Dipapatso dina le tshusunyetso thekong tsa ka tsa manyolo.*
24.	I do not necessarily purchase the cheapest fertilizer products. *Ha ke atise ho sheba theko e fatshe fela he ke reka manyolo*.	**1**	**2**	**3**	**4**	**5**	I purchase the cheapest fertilizer products. *Ke reka manyolo a theko e fatshe.*

25.	I am not highly involved in the fertilizer purchase decision. *Ha ke nke karolo e kgolo mo hunkiweng ha tshweetso ya theko ya manyolo.*	**1**	**2**	**3**	**4**	**5**	I am highly involved in the fertilizer purchase decision. *Ke nka karolo e kgolo mo tshweetsong ya theko ya manyolo.*
26.	My purchase decision is not influenced by the support & services I receive from the fertilizer company. *Tshweetso yame ya theko ya manyolo ha e tshusunyetswe ke ditirelo tse ke difumanang khampaning ya manyolo.*	**1**	**2**	**3**	**4**	**5**	My purchase decision is influenced by the support & services I receive from the fertilizer company. *Tshweetso ya me ya theko ya manyolo e tshusunyetswa ke ditirelo tse ke di fumanang khampaning ya manyolo.*
How do I feel about different fertilizer brands							
27.	When my preferred fertilizer brand is not available I will quickly buy other brands. *Ke nka tshweetso ka bonako ho reka manyolo a khampani e sele ha manyolo a ke a ratang a se hona.*	**1**	**2**	**3**	**4**	**5**	When my preferred fertilizer brands is not available I will take time before buying other brands *Ke nka nako pele ke reka manyolo a khampani e sele ha manyolo a ke a ratang a se hona.*
28.	I do not always buy the same brand of fertilizer. *Ha ke reke mohuta o le mong wa manyolo.*	**1**	**2**	**3**	**4**	**5**	I always buy the same brand of fertilizer. *Ke reka mohuta o tshwanang ka mehla wa manyolo khampaning e ke e ratang.*
29.	I like to test new fertilizer brands. *Ke rata ho leka mehuta e farolohaneng ya manyolo*	**1**	**2**	**3**	**4**	**5**	I only purchase reputable fertilizer brands. *Ke reka manyolo a khampani*

	khampaning tse farolohaneng.						*tse tsebahelang fela.*
30.	I sometimes buy unstable brands. *Nako dingwe ke reka manyolo a sa tsebahaleng.*	**1**	**2**	**3**	**4**	**5**	I only buy stable brands. *Ke reka fela manyolo a tsebahaleng.*

APPENDIX B: LETTER FROM LANGUAGE EDITOR

October 14, 2013

To whom it may concern

Re: Letter of confirmation of language editing

The MBA dissertation "**Analysing fertilizer buying behaviour of emerging farmers in the Free State province"** by A Kole (23026553) was language, technically and typographically edited. The sources and referencing technique applied was checked to comply with the NWU Harvard reference style. The dissertation is written in English (UK). Final corrections and printing layout remains the responsibility of the student.

Antoinette Bisschoff

Officially approved language editor of the NWU

Member of SA Translators Institute (SATI) Member no. 1001891