Factors influencing farmers' buying behaviour regarding agricultural tractors in the North West Province

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ABSTRACT

The agricultural tractor market in South Africa and more particular the North West province are fiercely competitive with all the main manufacturers of tractors competing in this province. Given this competitive environment, the main objective of this study is to determine the factors that influence the buying behaviour of farmer' in the North West province when they decide to purchase agricultural tractor. By identifying these factors, the researcher will assist the manufacturers and dealers selling agricultural tractors to compile a marketing strategy that is focussed on the target group.

The first phase of the study was the literature study that consisted of defining buying behaviour. The Engel, Blackwell and Miniard consumer behavioural model was identified as the most suited for this study. The internal and external factors that influence the buying behaviour was identified and discussed. The literature study was concluded with the decision-making process. The literature study was done to set a strong foundation from where the researcher could build phase two. Phase two of the study consisted of the empirical research. A quantitative research design formed the basis of the empirical research, more specifically a descriptive research with a structured eight-part questionnaires were distributed to the study population at farmer' associations and study groups.

The results from the empirical study showed that 62.20% of the farmer' are between the age of 35 to 54 years, 90.80% are male that speaks Afrikaans as their home language. The farmer' indicated that they only buy agricultural tractors in a "good" farming year. The twelve important factors that was identified as important by the farmer' was *Dealer competency and design quality, Pre-purchase considerations, Deal enhancers, Potential future savings, Perceived value, Dealership concerns, Financial implications, Mutual benefits, After sales competency of the dealer, Potential trouble, Availability of spare parts and post purchase peace of mind.*

Finally, the study concludes with recommendations to the manufacturers and dealers.

Key terms: Agricultural tractors; Buying behaviour; Farmer; Mechanisation; Implements and Farming activities

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CHAPTER 1

NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

South Africa is diverse in agricultural activities and produces a variety of crops and mixed farming produce. The South African agricultural sector consists of field crops, livestock farming and horticulture. South Africa has three rainfall patterns: winter, summer and year-round rainfall.

The winter rainfall region includes the Western Cape and produces the following field crops: wheat (508 365 hectares), canola (68 075 hectares) and also engages in horticulture. The rest of the country is a summer rainfall area and produce mainly field crops in the form of grains and oilseeds. Here maize (white and yellow) is the main contributor with (2 628 600hectares) being planted, followed by sunflower (635 750 hectares), soya beans (573 950 hectares), groundnuts (56 000 hectares) and sorghum (42 350 hectares). The total hectares under cultivation in South Africa in the summer rainfall area were 3 936 650 hectares in 2017 (Crop Estimates Committee, 2017:2).

Focussing on the North West province, the Department of Agriculture, Forestry and Fisheries reports that it has the second largest total field crop hectares at 1 573 497 which are used for agricultural commodities like maize, sunflower, wheat, soya, dry beans and sorghum. In comparison to the whole country during the 2016 season, the North West farmers planted 793 000 hectares of summer rainfall crops. These hectares consisted of maize (white and yellow) (480 000 hectares), sunflower (233 000 hectares), soya beans (36 000 hectares), groundnuts (28 000 hectares), sorghum (8000 hectares) and dry beans (8000 hectares) (DAFF, 2017).

Agriculture has always been a steady contributor to the South African Gross Domestic Product and in 2016 this contribution increased by almost half a present (0.4%) (Greyling, 2015). In 2017 the increase was 0.2% on 2016 GDP figure. The agricultural contribution to the GDP for the last nine years is shown in Table 1.1.

Table: 1.1: Agricultures contribution towards the Gross Domestic Product of South Africa (2009 to 2017)

Year	Total value added R million	**Contribution** of agriculture to value added R million	Contribution of agriculture as percentage of total value added %
2009	2 277 146	56 055	2,5
2010	2 494 860	52 001	2,1
2011	2 724 400	55 478	2,0
2012	2 932 879	59 934	2,0
2013	3 183 618	63 321	2,0
2014	3 414 943	70 605	2,1
2015	3 625 714	72 240	2,0
2016	3 880 824	81 554	2,4
2017	4 171 729	106 421	2,6

Source: SA (2017:7)

The agricultural business environment in South Africa has changed. Farmers are working more hectares with bigger kilowatt tractors because off the economy of scale and the constant pressure to supply more commodities to feed the growing population(Greenburg, 2015).

Agriculture in South Africa is highly mechanised, and the infrastructure of the mechanised agriculture industry is well developed in the rural areas. Agricultural tractors, spare parts and services are freely available even in the remotest parts of the country because a need exists for agricultural tractors and accompanying services by the farmers to cultivate their fields. Extensive farming and the hectares to cultivate, require a mechanised approach; hence a market for agricultural tractors and accompanying equipment exists in these parts of the country.

The regulatory agricultural business environment in South Africa has changed dramatically since the onset of democracy in 1994 white farmers have not been

subsidised by government and farmers have been a lot more price-sensitive, and rising farm expenditure have played into decision making on capital intensive buying behaviour of farmers. Furthermore, after the major announcement of President Cyril Ramaphosa in December 2017 at the ruling party's conference that Land Expropriation without Compensation was going to be phased in after the Election in 2019, farmers have slowed down in capital expenditure (Senwes, 2018),tractor buying in South Africa is one such decision as with the ailing Rand[1]against Dollar, Euro and Pound major purchases such as tractors and irrigation systems are being held back by many farmers. The uncertain safety situation on farms and high volume of farm attacks (108) and murders (57.4%) (for the period March 2017 to March 2018) also have a negatively influence farm investments (Head, 2018). South African tractors also shift towards fewer but larger agricultural tractors and machinerynumbersdecrease while Kw increases per unit Rankin (2018:1), here high labour costs as per mandatory minimum sectoral wages (SA, 2018) and employee-orientated labour laws have led to a situation where fewer tractor operators are employed; in many cases, the farmer or family members now fulfil this role. Ergonomics, convenience and comfort are now more important than ever when the farmer contemplate to buy a new tractor.

1.2 BACKGROUND TO THE STUDY (MOTIVATION)

The mechanisation industry in South Africa has three different sectors. They are:

- sales of agricultural wholegoods such as tractors, harvesters, balers and other farming implements and precision equipment;
- sales of spare parts; and
- Workshops/ field service that service and repair whole goods.

The tractor sales since 2010 in South Africa are shown in Table 1.2 below.

[1]The ZAR traded at 14,13 to the US$ (17 October 2018)

Table 1.2: Sales of agricultural tractors in South Africa and the North West province (2010 to 2017)

Year	Total Sales(units)	North West Province(units)	Percentage North West sales of total sales
2010	5155	445	9%
2011	7379	904	12%
2012	7899	885	11%
2013	7515	561	7%
2014	7466	567	8%
2015	6602	383	6%
2016	5854	296	5%
2017	6362	379	6%
Average Mean	**6779**	**553**	**8.20%**
Total	**54232**	**4420**	***

Source: SAAMA (2018)

The table shows that a total of 4420 tractors were sold in the North West since 2010; this represents a mean of 553 tractors sold annually. More recently, Groenewalt (2018) reported that 2 331 tractors were sold nationally for the year-to-date April 2018. This is 12,8% more than the 2 066 units sold during the first four months of 2017.However, the North West province are cultivating 20.10%[2]of the total hectares cultivated in South Africa while, on average, table 1.2 shows that these farmers only bought 8.2%of the agricultural tractors. This means that North West farmers buy fewer tractors than the farmers in other parts of the country, and pro rata cultivate more hectares with their tractors. Given this figure, the assumption can be made that the North West farmers are keeping their tractors in service much longer and that their tractor fleets are aging faster than their counterparts in the rest of the country. A report published by (de Jager, 2016) illustrates that during2014/2015, South Africa experienced one of the worst droughts ever with only 403 mm of rain. In reality, a

[2](793 000 hectares cultivated in North West / 3 936 650 total hectares cultivated*100)

poor crop yield as a result of the drought resulted in the farmers (as potential tractor buyers) faced with carry over debt (compounding debt from the one year to the next). This means that, in reality, farmers are cash strapped and do not engage in upgrading agricultural equipment in their struggle against the high debt leverage ratio. This is worrisome as older tractors have higher maintenance cost and higher break-down frequencies; this negatively influences these farmers' cost of production.

In addition, it is noteworthy that the traditional geographic boundaries of the former cooperatives no longer exist and that they compete strongly with similar product offerings with one another; tractors are one such product offering. The once competitive advantage of the cooperatives (of which most now operate in a company structure), with regards to production credit, also faded because farmers can now obtain production credit and other financing (such as lease or hire-purchase agreements to buy a tractor) from institutions like banks (Nedbank, Agri Business website). The market is now an open and highly competitive market.

Competition in the mechanisation sector, and in particular the tractor market, has become very competitive and all the manufacturers of tractors John Deere, New Holland, Case, Landini, Agrico and Massey Ferguson are competing for the same buyers. This study focuses on the whole goods sector in the selected area of the North West Province of South Africa (see Figure 1.1). More particularly the focus is on the buying behaviour of farmers when they embark on the journey to buy agricultural tractors.

1.3 PROBLEM STATEMENT

The drought and the fact that the farmers have limited fundsavailableto buy tractors resulted in fiercecompetition amongdealers in the mechanisation sector, and in particular the tractor market. Manufacturers of tractors John Deere, New Holland, Case, Landini, Agrico and Massey Ferguson are competing for the same buyers.
Thisnecessitates that local agricultural business selling tractors; therefore, understand the factors that influence the buying behaviour of farmers when they buy agricultural tractors in the North West province. By understanding these factors agricultural and private dealers can incorporate this behaviour into their marketing strategies and ensure their continued existence (Solomon et al., 2013: 5).

Knowledge of farmer buying behaviour in such a competitive market is imperative, and marketers of agricultural tractors should understand the factors that influence the buying behaviour of farmers when they buy agricultural tractors in the North West province. This study will strive to answer the following core research question to address the problem -“What are the key factors influencing the buying behaviour of farmers in the North West province when they decide to buy an agricultural tractor?”

1.4 OBJECTIVES OF THE STUDY

1.4.1 Primary Objective

The main objective of the study is to determine the factors that influence the buying behaviour of farmers when they buy a tractor for agricultural use in the North West province of South Africa.

1.4.2 Secondary Objectives

The following secondary objectives were addressedto accomplish the primary objective:

- Define buying behaviour and how it fits into the behaviour of ’farmers when they buy agricultural tractors;
- Compile a demographic profile of the farmer-market in the North West province;
- Identify the differences that exist between emerging farmers and commercial farmers;
- Identify, from a literature study, the factors that influence the buying behaviour of farmers of agricultural tractors;
- Identify factors that the farmers of the North West province deem important in their buying decision- making of agricultural tractors;
- Determine the relative importance of each of the elements of the marketing mix in the agricultural tractor market.

1.5 SCOPE OF THE STUDY

In this section, the field of study, industry demarcation and geographical demarcation will be discussed.

1.5.1 Field of study

The discipline of this study is in the field of marketing; more specifically market research in agricultural capital product buying behaviour.

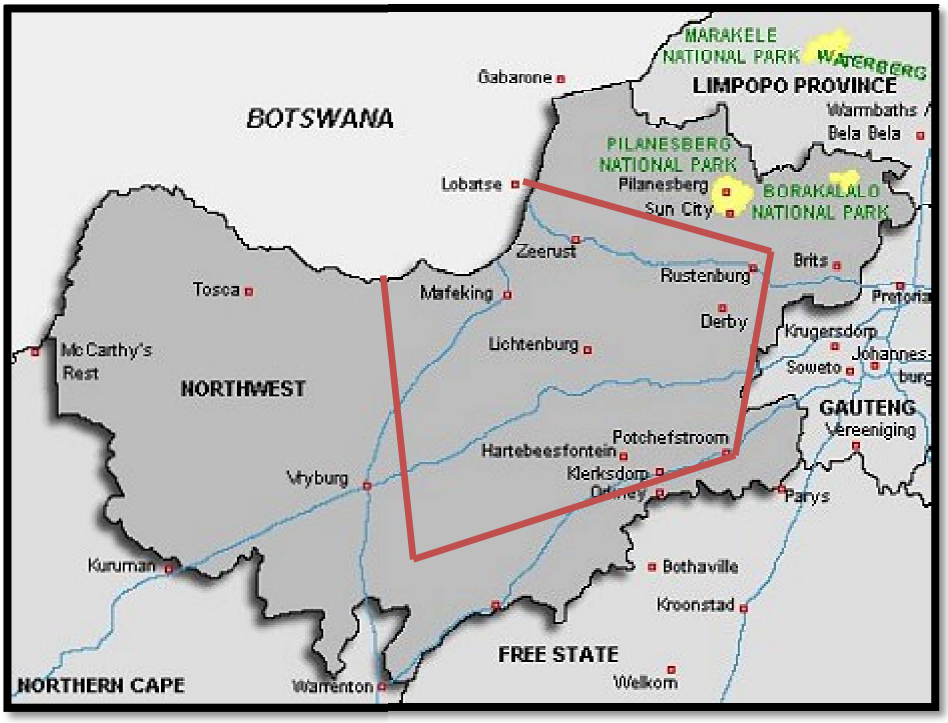
1.5.2 Industry demarcation

The study is limited to farmers using tractors for specifically agricultural production within the North West province of South Africa.

1.5.3 Geographical demarcation

A specific area in the North West province is targeted. This area is shown in the figure 1.1 below with the red line.

Figure 1.1: Geographical area of the farmers that participated in the study



The focus of this study is in the North West province of South Africa and stretches from Zeerust in the north, Rustenburg in the east, to just south of Christiana and to the Botswana border west of Mafikeng.

1.6 RESEARCH METHODOLOGY

The study was done in two phases. Firstly, the literature study (Chapter two), and secondly, the empirical study (Chapter three).In this chapter a brief discussion of the

empirical research process is provided while a detailed explanation of research methodology follows in Chapter three.

1.6.1 Literature study

Buying behaviour, in general, is the focus point of the literature review. Although limited applied buying behavioural studies on South African farmers exist, these were incorporated to provide a unique farmer-buyer perspective. However, studies about the buying behaviour of farmers and in particular when buying agricultural tractors are limited. Britz (2011:5) also mentioned the lack of farmer-behavioural studies. Studies that were done by Du Plessis (2011), Kole (2013) and Craven (2014) on the buying and other commercial behaviour of farmers in the Eastern Free State and Free State, are, however, available. These studies examined farming inputs such as seeds or fertiliser and also examined the relationships farmers have with their suppliers. These products are less expensive and repeat-purchase products and, as such; do differ in nature from an agricultural tractor.

The buying behaviour focuses of this literature review are:

- Defining buying behaviour and identify the factors internally and externally that influence the buying behaviour;
- Consumer behaviour models will be identified;
- Internal and external business factors that are involved in the decision-making processes will be identified; and
- Lastly, the decision-making process will be reviewed and discussed.

1.6.2 Empirical study

Empirical or “empiricism” research is the collection of primary data and using it to formulate a study (Bryman et al., 2014:8). The empirical study has five aspects (i) research design, (ii) study population and sample, (iii) research instrument, (iv) collection of data and (v) the analysing of these data according to procedures.

1.6.2.1 Research design

A quantitative research design was followed, more specifically a descriptive research with structured questionnaires were distributed.

1.6.2.2 Study population and sample

The study population consists of grain producing farmers' in the North West province of South Africa. Since the total population could not be targeted, a stratified convenience sample was used to gather the data. The sample was stratified according to the geographical regions of the province. This stratification of the sample is a realistic method to collect data, it is convenient, and it is also financially feasible. All the farmers who are members of their region's Farmer association received questionnaires at scheduled meetings of the associations. Additionally, meetings of smaller farmer study-groups were used to distribute questionnaires while all farmers attending formal farmer days were also requested to complete the questionnaire distributed to them. Farmers who are not members of the association or those who did not attend the farmer days or study-group meetings were not part of the study.

1.6.2.3 Research instruments

Information from the literature study and a questionnaire developed, tested and used in a similar study by Bisschoff (1992:XXII) was used as guideline to compile a 50-question questionnaire. The questions used a five-point Likert scale ranging from: Extremely unimportant (1), Very unimportant (2), Uncertain (3), Very important (4), and Extremely important (5). The questionnaire also captured demographic information about the respondents.

1.6.2.4 Collection of data

The data were collected at meetings and gatherings held by farmers associations, study groups and tractor demonstration days. Permission was obtained to do so, and data collection became an agenda point on each of these occasions.

1.6.2.5 Data analysis

Data were statistically analysed by using the Statistical Package for Social Science (IBM SPSS version 25) in assistance of the Statistical Consultation Services at the North-West University. They also captured the data. The analysis included reliability statistics using Cronbach alpha, sample adequacy with the Kaiser, Meyer and Olkin, sphericity analysis, exploratory factor analysis and also Pearson's correlations.

Also,inferential statistics such as mean, frequency distribution and standard deviation, were used.

This study is largely similar to a study by Bisschoff (1992). It would be interesting though to compare the results of this study with the earlier findings on agricultural tractor buying behaviour in the North West to see to what extent the farmers buying behaviour changed over the years when considering a highly expensive and technical product such as an agricultural tractor.

1.7 LIMITATIONS OF THE STUDY

- The study is limited to the geographical area of the North West province and do not necessarily present the views of farmers in the rest of the country. However, although future research can either prove or disprove the buying behaviour of other farmers, it is a fair assumption those farmers in similar condition than those in this study should show large similarities in tractor buying behaviour than their North West counterparts.
- Due to personal experiences (good or bad) with dealers, the farmers' replies on the questionnaires can be biased and not a true reflection of the situation. Personal experience is an acknowledge consumer buying behavioural influence and, perceptions are strong drivers of consumer behaviour; as such this observation is not regarded as limiting to the study.
- Although the differences between the emerging farmers and commercial farmers will be discussed the study is only focusing on the buying behaviour of commercial farmers.
- The study is limited to agricultural tractors. Tractors not used for agricultural purposes (some farmers may employ tractors for example, as excavators, dozers and other earth-moving purposes) are excluded from the study.

1.8 LAYOUT OF THE STUDY

The study consists of four chapters.

Chapter 1: Nature and scope of the study

This chapter provides a holistic view on the study and includes an introduction, problem statement, objectives and scope of the study, research methodology and limitations of the study.

Chapter 2: Literature review

The chapter sets the literature review table on buying behaviour, factors influencing this behaviour and the decision-making process.

Chapter 3: Research methodology and results

In this chapter, the research methodology is described,and the empirical results are presented. The chapter makes use of tables and figures to assist with easy interpretation and presentation of the statistical results.

Chapter 4: Conclusions and recommendations

In Chapter 4 the conclusions based on the statistical analysis is drawn, and matching recommendations are made. A discussion of the study follows. The chapter also reports on possible areas for future extension of this study and concludes with a short summery of the study.

1.9 SUMMARY

Chapter one presents the reader with an overview of the study. It started with the introduction, Background of the study, Problem statement, Primary and Secondary Objectives of the study, Scope of the study, Research Methodology to the study, Limitations of the study and a layout of the study.

The next chapter presents the literature study. Here the consumer buying behaviour is discussed form a theoretical basis for the empirical research in Chapter 3.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

The focus point of the literature review will be on secondary sources like books, published articles/documents, journal articles, unpublished dissertations, papers and electronic sources such as websites to describe buying behaviour. The literature review assisted the researcher three-fold: - to clearly understand the problem that is being investigated (refer section 1.2); in setting a suitable empirical research methodology (refer chapter 3), and structuring the basis of the data collection instrument –(questionnaire) (refer appendix A).

Although limited applied buying behavioural studies on South African farmers exist Britz (2011) mentioned the lack of farmer-behavioural studies. The author incorporates recent studies from Du Plessis (2011), Kole (2013), Craven (2014) and Bisschoff et al. (2017:456-467) who studied buying and other commercial behaviour of farmers in the Eastern Free State and Free State, to provide a unique farmer-buyer perspective. These studies examined farming inputs such as seeds or fertiliser and also examined the relationships farmers have with their suppliers. These products are less expensive and repeat-purchase products and, as such; do differ in nature from an agricultural tractor.

However, studies about the buying behaviour of farmers and in particular when buying agricultural tractors are available. Studies from Bisschoff (1992) “Factor identification in the agricultural tractor industry”. This study from Bisschoff was done in 1992. The agricultural landscape and challenges facing farmer’ in South Africa and in particular the North West province from 1992 to 2018 has changed drastically. Factors like economy of scale, technology and numerous labour and political challenges has change the when, why and how farmer’ are buying tractors.

Farmers in the North West province can be divided into two sectors when it comes to the buying of tractors, emerging and commercial farmers. The differences between these two sectors are illustrated by Table 2.1 below.

Table 2.1: The differences that exist between emerging and commercial farmers

Differentiating Factor	Average Emerging Farmer	Average Commercial Farmer
Size of Farm	About 50 Hectares	About 350 Hectares
Access to Finance	Difficult because of the lack of ownership of land	Easier because they have the security of land ownership
Government subsidies and support	High. To give them access to the industry	Low.
Need for technology on tractors	Mostly use older low specification tractors. No GPS receivers	Use high specification tractors. GPS equipped for precision farming
Ownership of land	Government	Farmers own the land
Return on investment	Farmers don't have the responsibility to see to it that the investment (tractor) is utilised in such a manner that it produces a return.	The farmers/ owners take the risk of the investment because all the risk lies with them.
Buying power	Limited	Extensive

Source: Adapted from the Farmers Weekly (2016)

Although emerging farmers are not part of this study, it was necessary to highlight the fact that the buying behaviour of the two types of farmers in the North West province will differ. Table 2.1 clearly indicate that the needs from the emerging and commercial farmers are different. This study will focus on the commercial farmers, and for that reason, private and agricultural dealers selling agricultural tractors to the commercial farmers in the North West province, must understand two crucial questions:

- Why farmers make the purchases decisions on tractors that they do?

- What are the factors influencing the farmers 'purchases? (Gbadamosi et al., 2013:75) and supported by Kushwaha et al. (2018:8630).

By understanding these questions mentioned above, the dealers will have a clearer picture of the farmers needs and align their dealerships to satisfy these needs more effectively. The literature review focuses on the following aspects:

- Defining buying behaviour and identify the factors internally and externally that influence the buying behaviour;
- Consumer behaviour models will be identified;
- Internal and external business factors that are involved in the decision-making processes will be identified; and
- Lastly, the decision-making process will be reviewed and discussed.

2.2 DEFINING BUYING BEHAVIOUR

Buying behaviour can be defined as the process where the farmers make purchase decisions (Lamb et al., 2015:82). This means that farmers, like every other buyer of expensive equipment, have to make conscious buying decisions (Hornes & Swarbrook, 2016:5)on when, how and where to buy a new or used tractor when the need to do so arises (Fahy& Jobber, 2015:62).

In another definition Lamb et al. (2015:83) mention buying behaviour is influenced by internal and external factors. These influences are also supported by Hornes and Swarbrook, (2016: 3) and Stoll-Kleemann and Schimdt (2017:1261). Although many studies have been done on factors that influence buying decisions, few actually address farming equipment, and even less analysed buying behaviour of agricultural tractors.

In the definitions of buying behaviour a few points are highlighted:

- Buying behaviour is a process.
- Behaviour occurs when a buyer (farmer), realises a need and decides to decide to buy a product (tractor).
- During the buying behavioural process, these buyers are influenced by factors, internal and external.

- According to these influences, a decision to buy or not to buy is taken by the farmer.

As mentioned, buying behaviour is a process, thus meaning there are steps where the farmers go through to come to a decision. Paine (2017)defined these steps as models; more specifically as consumer behaviour models.

2.3 CONSUMER BEHAVIOUR MODELS

To determine the right consumer behavioural model for the study the researcher first needs to determine what type of buying behaviour does the farmers wanting to buy agricultural tractors associates with. Buying behaviour according to Dadhe (2016a:94) can be dispersed into four types:

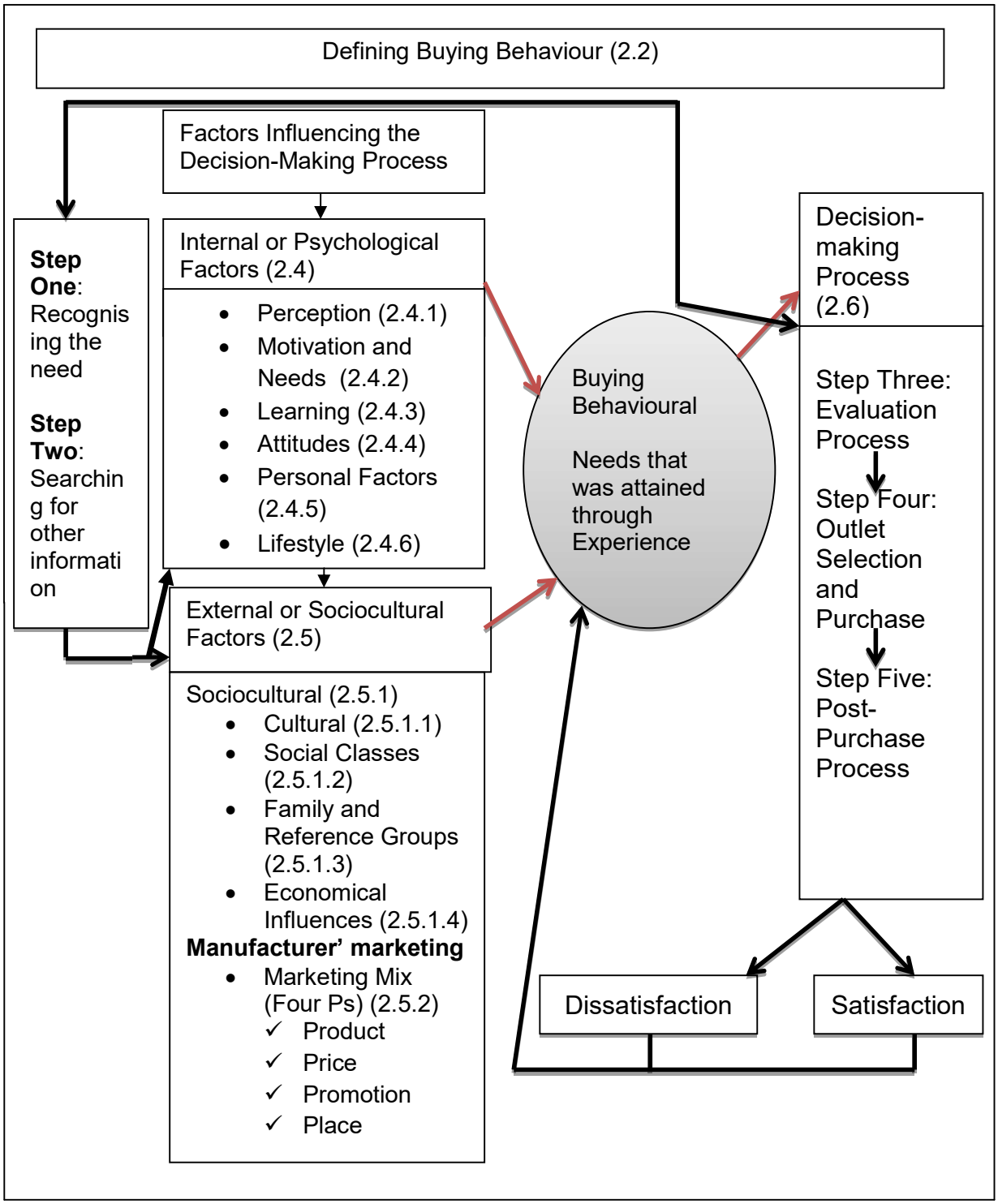
- *Routine response/ Automatic behaviour* – This is low involvement products that has a low value and risk. Therefore, limited information and decision-making time are needed. For example, where the tractor needs a service. The only information that is needed is the rate per hour that the dealer will charge the farmer. If happy the farmer books the service with the local dealer and the service is done.
- *Limited decision-making behaviour* – This is where products are bought occasionally. The product group is familiar with the buyer, but information is needed on an unfamiliar brand in the group, for example, the farmer needs new tyres on the tractor, he/she saw an advert in the local newspaper on Skywalk tyres. He/she gathers information on the unfamiliar tyre and takes a decision to buy or not according to the information gathered.
- *Extensive decision-making behaviour* – Products are bought infrequently, involve considerable involvement from the buyer, and the decision-making process is long that usually involve numerous facets and inputs. This product has a high value and therefore has a high risk if the right decision is not made by the buyer, and for that reason as many steps possible within the decision-making process is needed. This is where the farmer recognizes the need for a tractor, and the process of gathering information begins, and according to internal and external factors, a decision is made on the tractor.
- *Impulse buying behaviour* – Products are bought with no thought on planning involvement from the buyer. From there the name impulse buying. The buyer is passionate about something, the value is normally low, and the risk can be

low for example the farmer needs a pair of shoes, and at NAMPO he sees branded shoes from the different tractor suppliers and decides to buy the shoes immediately.

Given the types of buying behaviour listed above, it is safe to say that when farmers decide to buy agricultural tractors,they will be highly involved in the buying process because of the high risk involved in making the wrong decision. For reasons stated the farmers can be associated with extensive decision-making behaviour.

For this reason, the researcher chose the Engel, Blackwell and Miniard consumer behavioural model (see Figure 2.1 below). This model indicates the influences from internal and external factors on the farmers' buying behaviour, and more specifically on the decision-making process. This model consists of three parts: firstly, the farmers realises that a need exist (steps one and two in green), secondly, the farmers uses internal and external factors to take a decision (refer points 2.4 and 2.5 in the figure) and lastly the decision-making process will follow (refer point 2.6 in figure 2.4).

Figure 2.1: Engel, Blackwell and Miniard's consumer behaviour model



Source: Adapted from Du Plessis (2011:14)

Internal factors influencing the farmers' decision-making process will be discussed in section 2.4.

2.4 INTERNAL OR PSYCHOLOGICAL FACTORS INFLUENCING THE BUYING BEHAVIOUR

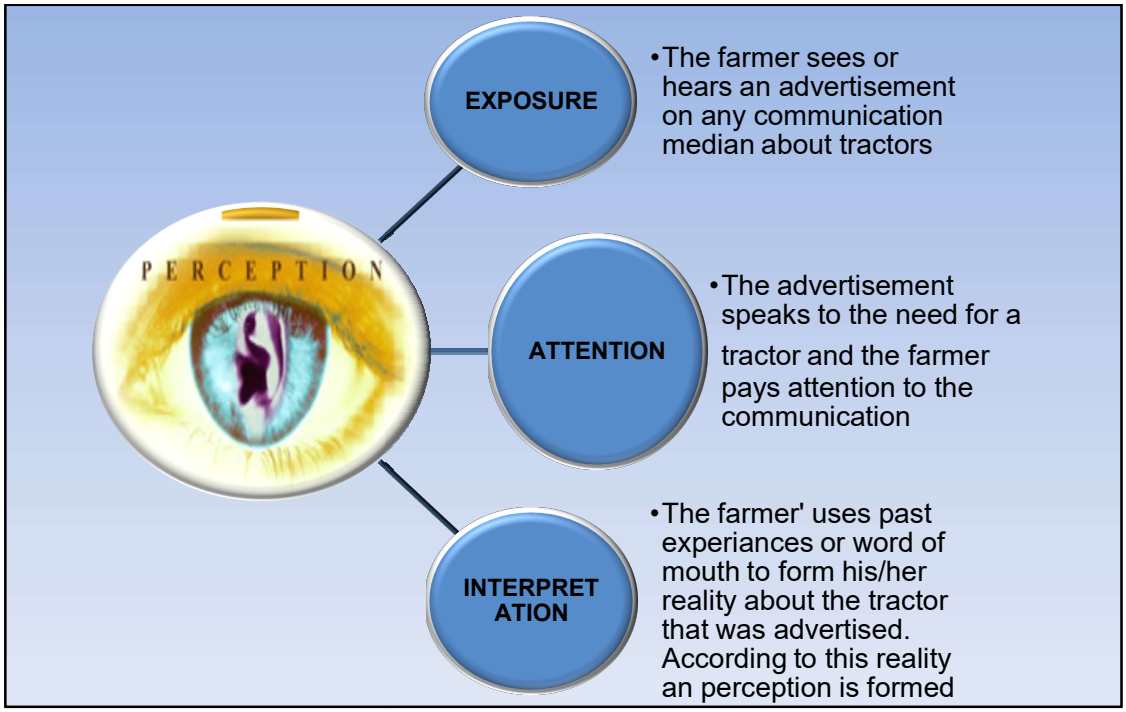
The minds from two individuals (farmers and dealers), from different backgrounds and perspectives, must meet in a situation where both parties feel that it is beneficial (Landsbaum, 2004:146). It is also noticed by the same author that the farmers mind is the one that determine the benefit. The farmers mind is influenced by internal and external factors (Lamb et al., 2015: 95). These factors are also supported by Rubadevi and Palanisamy (2018).The internal factors will be discussed in the following section 2.4.1 – 2.4.6, and the external factors will follow in (section 2.5.1 – 2.5.3).

2.4.1 Perception

According to the Cambridge Dictionary (2018), perception can be defined as the way in which someone thinks and feels about a company, product or service. This perception or belief has been embedded and experienced by the buyer as reality, because of what the buyer observed, heard and experienced about the company, product or service.

Perception, according to Lamb et al. (2015:95), can be defined as the process where the buyer selects, organises and interprets stimulus into a meaningful picture. The main focus of the definition is that perception is a process consisting of the following steps: exposure, attention and interpretation. The steps can be seen in Figure 2.2 below.

Figure 2.2: Illustration of the steps in the perception process



It is important that the dealers in the North West province determine the signals that influence the farmers' perception on tractors, because by doing that they will be able to focus their marketing campaign on the aspects that the farmers relate to.

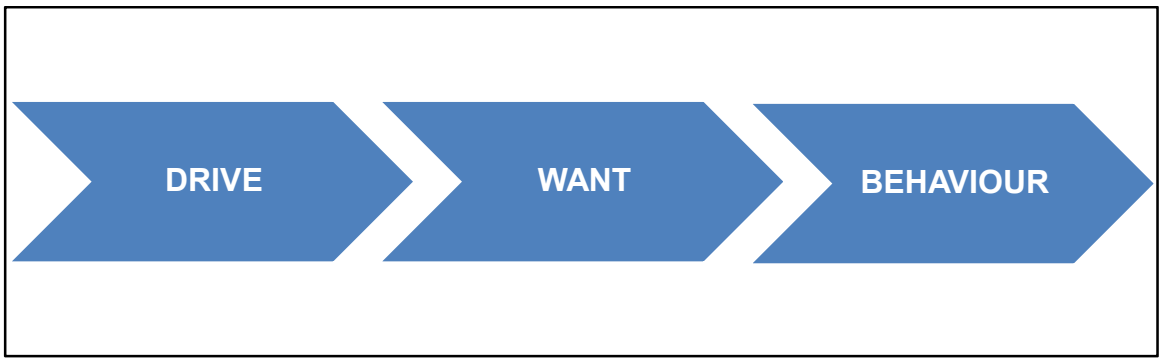
In this study, the questionnaire was designed into eight parts (refer Appendix B), to identify the attributes or signals that the farmers perceive as important in a tractor.

2.4.2 Motivation and Needs

Motivations are the driving forces, intrinsic or extrinsic behind the decision of customers to buy or not to buy (Locke and Schattke, 2018:1). When somebody talks about needs and motivation, Maslow's hierarchy comes to mind. Maslow's hierarchy of needs entails that a person must go through in a process manner; first you need to satisfy the physiological needs then you move up the "ladder" to the last need, self-fulfilment (Fahy and Jobber,2015:72). Maslow's theory was criticised by many theorists, Lawyer and Suttle (1972); Wahba and Bridwell (1976); Kenirick, (2010) (all cited by Osemeke & Adegwoyega, 2018). Other need theories that exist are Hertzberg two factor theory that was developed in the 1950s and McClelland's needs theory (Brandon, 2015).

Fowler (2014) instead points to three universal psychological needs: autonomy, relatedness, and competence rather than focusing on a pyramid of needs. Brandon, (2015) stated that buyers cannot be placed into one of the three need theories, rather buyers are motivated by all of these needs in different degrees. For this reason, the researcher will not use a single need theory, but rather focus on explaining motivation by way of the motivation process in figure 2.3 below.

Figure 2.3: Motivational process



Source: Adapted from Hawkins and Mothersbaugh, 2010.

The farmer sees an advertisement in the AgriSales of a “special” on agri-tractors. He/she has bought extra hectares of land or the implement that he/she bought requires a higher kilowatt tractor, so the need (driving force) for a bigger tractor forces him/her to phone the salesman to see the tractor. The farmer sees the tractor and asks the salesman for a demonstration on the farm; after the demonstration, the farmer sees every trait that he requires (specifications) in the tractor – he/she wants to buy the tractor. This want is stronger than the drive, so it forces the farmer into the sale-behaviour (Nugroho & Irena, 2017).

From theabove,it is clear that motivation is the process that leads to an action by the buyers. The agri-dealers, on the other hand, can use these driving forces to determine the “why” the farmers want to buy tractors (Hawkins and Mothersbaugh, 2010; Vainikka, 2015:16).

The agri-dealers within the North West province need to find out what is the farmer’s motive or reasons for buying a tractor; this will help them to formulate the right marketing mix strategy (Kotler & Armstrong, 2015).

2.4.3 Learning

Learning is the result of repeated experiences (Kerin et al.,2009:108). This is supported by Lantos (2011:439) by defining consumer learning according to three indicators:

- Behavioural tendencies – this is where a possible sale will arise because of favourable attitudes that were obtained through exposure to marketing promotion
- Accumulated experience – this is where learning takes place because of a direct experience. This is normally the best way of learning for consumers
- Behaviour that was not learned, but rather that consumer behaviour was the result of a temporary behavioural condition

Farmers are using tractors that they have first-hand experienced of and that they trust. Farmers have a saying “you don’t buy that you don’t know”. This experience makes them brand loyal consumers. The South African Agriculture Machinery Association (SAAMA) (2018) shows this loyalty through the sales of the top three tractor brands in the North West province over the past three years (2015 to 2017). In the first place John Deere, second Landini and third New Holland.

Tractor dealers in the North West province use demonstration daysto learn and stimulate the farmers about their tractors. Because of technology like smart phones and the internet, farmers are well informed about tractors and the dealers need to determine what is the most viable platform to use to include this platform into their marketing campaigns.

2.4.4 Attitudes

Attitudes can be defined as the person’s positive or negative attitude towards the product or service (Trehan, 2007:197). Fahy and Jobber (2015:73) supports this by saying “attitudes are favourable or unfavourable evaluations of a product”. A person’s decision-making is guided by a belief that formsattitudes, these attitudes motivate them –and that attitudes and motivation are created by experience (Blythe, 2013:173).

For tractor dealers selling to be successful in the North West province, it is critical to strengthen and encourage a positive attitude towards their tractor brands. If the farmers' attitudes are negative, the dealers can change that by:

- Changing the beliefs that the farmers have about their tractors, for example, extended warranties offered by dealers. That could say to the farmers "we have confidence in our product",
- When the new belief was formed enforce that belief so that belief turns to a positive attitude towards the dealer.

2.4.5 Personal factors

Concepts like age, income, occupation, personality and self-concept are classified as personal factors and, these factors can influence the buying behaviour of customers (Kumar, 2010:223). According to Jain (2010:121), it is true that as soon as the consumer's income increases, the spending or buying behaviour that they embark on will increase as well.

In the agricultural sector, it is well known that as soon as the farmer has a good harvest and the prices that they receive for their grain are good, they will have a greater appetite for buying tractors. Fahy and Jobber (2015:75) also identifies that the life cycle phase that consumers are in plays a big role in the products that they will buy.

Previously farmers were classified as people of an older age and people that were not up to standard with technology. This is changing at a rapid speed because a younger generation are entering the agricultural sector (follow-up farmers– farmers children). They grew-up with technology and understand devices like smart phones, GPS and computers. Dealers in the North West must take that into account that the farmers of today are well informed about tractors – their prices, specifications and futures because of the Internet and information that is freely available. The trick for dealers is to determine the exact factors that influence the farmers buying behaviour and that is why the questionnaire (refer to Appendix B) will be used to determine that.

2.4.6 Lifestyle

Lifestyle is one of every person's individual characteristics. This characteristic was "printed" into the person by interaction with others or products through his/her lifecycle. A good example of the lifestyle can be foundon the farm itself – the father bought a specific tractor and was happy with it and because of this feeling of happiness the father associated himself with the tractor. The son grew up on the farm and saw the happiness in his father with the tractor and for that reason will keep on buying that specific tractor unless dissatisfaction occurs.

The external factors influencing the decision-making process will be discussed in section 2.5.

2.5 EXTERNAL OR SOCIOCULTURAL FACTORS AFFECTING THE BUYING BEHAVIOUR

Kotler and Armstrong (2012:158), explains external factors as those factors that are affecting the individual through the contact that the individual has with the outside environment. These factors can be dividedinto two categories, firstly sociocultural that include factors like culture, social and economic influences, and secondly, through the marketing mix (the so called four Ps of product, price, promotions,place of a company).

2.5.1 Sociocultural Factors

2.5.1.1 Cultural

Culture is the values, norms and attitudes of a society that will be passed from one generation to the other (Lamb et al., 2015: 107). This view of culture is also mentioned by Kotler and Armstrong (2012:159). In this explanation, it is clear that cultures are society based. Therefore, the assumption can be made that every society has its own culture; this is called subcultures. Farmers in the North West province belong to farmer associations in their area, examples of these associations are Koster study group, Mareetsane study group to name only two. These associations have their own subculture. For instance, these farmers will be interacting socially; they will share the same values. This is a very important point because the dealers in the North West need to understand the subculture of the farmers in the North West. By understanding the subculture, it can serve as a "basis

for entry" to the farmers. Given this, it is safe to say that farmers within a certain area in the North West province will have the same buying behaviour.

2.5.1.2 Social classes

Social classes are a hierarchy of people that are divided into a class because of their status, and people are naturally segmented according to social class (Du Plessis, 2012:22). Peter and Olson (2005:342), support this view by stating that social classes are important to organisations because people of different social classes have different behaviour. Kole (2013:18) states that social classes influence the buying behaviour of farmers. Hoyer and Maccinis (2008:49) support this view by stating that social class influenced the farmers behaviour in three ways:

- obvious buying, this is where the farmer buys a highly technological tractor – first in the country to show his/ her social standing
- through counterbalance buying, this is where the farmer will buy five tractors because he did not buy any the previous year and
- Lastly just for the "fun" of it, to show that he/she has money.

The agriculture sector in the North West province is not immune to these social classes. Farmers belong to associations, and within these associations, there are social classes as well. For that reason,farmers within these associations will look up to highly successful farmers and buy those brands of tractors that they buy because of the understanding that if these successful farmers buy those tractors, it must be good. Dealers need to be attentive to the impact that social class has on the farmers' buying behaviour. By knowing the farmers' attitude towards social class, they will have the right angle to approach him/her from.

2.5.1.3 Family and reference groups

As mentioned in an article published in the Farmer's Weekly in 2016 *"Still tilling the soil after six generations"* (Phillips. 2016), most of the farmers in South Africa are generation farmers. The son takes over from the dad and therefore family influences will play a huge role in the buying behaviour of farmers when it comes to buying a tractor. Kardes et al. (2011:301) support this by saying that farmers will imitate buying behaviour of others and that this imitation will be especially high if family members live together. But family can have a secondary meaning to it as well; by this, it is

meant that buying a specific brand, you as a customer can be regarded as family. An example of this can be seen in advertisements like the John Deere family.

This corporate family can serve as a vital reference group as well. Reference groups can be individuals or groups that the decision maker relates to, or consults with when confronted with a decision. This reference which includes friends, farmers, family and influential people normally possess the same perspectives, attitudes or behaviour as the decision maker (Arnould et al., 2004:608). As mentioned previously,farmers are members of associations and these associations can be regarded as a reference group when a farmer needs to decide on buying a tractor.

2.5.1.4 Economical influences

As mentioned by Bisschoff (1997: 3) supported by Lange (2018), the farmers have limited cash flow because of the droughts, high labour wages and cost of capital. If farmers have limited cash flow, it is safe to say that they are forced to operate within a budget and therefore are forced to choose which tractor to buy and which one to leave to fulfil the need (Van Rensburg et al., 2011:7). During the decision-making process the farmers will use the following formula to determine the affordability of the tractor:

Purchase price less deposit plus financing cost.

And according to the above, they will decide if the deal fits their budget or not.

According to Quester et al. (2011:180), the needs of consumers are important and that companies must appeal to those needs, through their marketing mix that includes - offering value for money products, promotions that inform, explaining to the customers the benefits of the products such as operating costs or guarantee period and lastly where these products can be bought. This view is also emphasised in a more recent journal that was published in 2017 "*Journal of Retailing and Consumer Services"* (Filipe et al., 2017:78-88). Tractors are expensive, and it will be logical for farmers to weigh price and quality of tractors when they decide to compare "apples with apples" for the best value. Sales people from the dealers will have a re-entry market; this is where they will know from previous business with their customers how

to approach the current customer. It is also true that some farmers will be prepared to pay a premium for availability and after service while others are only interested in the lowest price when buying a tractor. The importance of this is evaluated in the fourth part of section B of the questionnaire.

Section 2.5.2 explains the second external factor that influences the buying behaviour in more detail – the marketing mix.

2.5.2 Marketing mix (Four Ps)

The originator of the marketing mix was Borden (1964) when he introduced twelve elements (Egan 2007; Nugroho and Irena 2017:57). McCarthy brought the marketing mix as it is more commonly known, four Ps into existence in 1964(Nugroho & Irena 2017:57). Mahajan (2013) describes marketing activities or mix as it is more commonly known as the controllable external factors that the company uses to influence the buyer's decision-making. The marketing mix consists of four Ps: Product, Price, Promotion and Place. Kimmel (2018:8) describes the marketing mix as **products** that are communicated (**promotions**) to the buyers at a **price** that can add value and at a **place** where it is accessible.

Nugroho and Irena (2017) stated that critics like Booms and Bitner (1981) added another three Ps, people, process and physical evidence to the marketing mix to deal with the service sector. Dealers selling agricultural tractors are involve in both sides of the market – the physical product (tractor) and the service side, warranties of the tractors and after sales. These three Ps will not beincorporated into this study because the researcher is of the opinion that it will be handledas follows: people will be incorporated with product and promotion; physical evidence will be incorporated in product elements and processes will be part of the place. For this reason, the researcher will only discuss the four Ps.

The marketing mix will be discussed in more detail below.

2.5.2.1 Product

Product is any tangible object or intangible services that the company offers the consumer in change for their money (Lamb et al., 2015: 270). Fahy and Jobber

(2015:146) support this by defining a product as any form of "*value that is offeredin exchange for money*". It is important to know that products are not limited to a tangible object; it can be an intangible service that the company offers or a combination of the two. Kole (2013:20) supports this by saying that products are not limited to physical goods but can include services with the physical product. In this study, it is a combination between the product (tractors) and service. The service side of the business will be performed by the people thatwill perform the warranties, workshops and after sales of the parts. The importance of both the tangible product and the service is evaluated in the second and third part of section B in the questionnaire.

Products have characteristics that will influence the decision-making process (Schiffman&Kanuk, 2004:414).For this study the following characteristics can be seen as important when farmer' decide to buy a tractor:

- *Relative advantage* – perceive product is superior to others. In short John Deere as tractor brand has this perceived advantage because they are the market leaders in agricultural tractors;
- *Compatibility* – how good does the product fit in with customers' needs, values and practices? The tractor must fit the needs that the farmer has (see questionnaire - mechanical performance);
- *Complexity* – how difficult is the product to understand or operated. The tractor must not be too complicated to operate because in most cases the tractors will be operated by unskilled labour;
- *Trialability* - how easy is it to try the product on a small scale. The farmer will request a demonstration on the farm, and if it is not possible, the decision to buy can be influenced;
- *Observability* – this is how easy it is to communicate the benefits of the product to the users. During the demonstration, the benefits and differentiations can be communicated.

In some cases,farmers only buy brand when they decide to buy agricultural tractors. In section B of the questionnaire, brand loyalty is tested. The mechanisation environment is fiercely competitive and dynamic. Tractor manufacturers must continuously improve their tractors to stay on track with the farmers' needs. The

manufacturers of tractors are competing with one another by differentiating their product by increasing the specifications and luxury applications like air-conditioning, after sales service and increasing their product offering by selling extra warranty plans and financing it at lower interest rates. All this is to counter the farmers' limited cash (Homburg et al., 2009:133).

2.5.2.2 Price

Price will often determine if a product is bought or not (Kotler and Armstrong, 2012:315). Kotler and Armstrong, (2016:125) defines price, to be the money or value that the buyers are willing to sacrifice to obtain the product or service. From this definition, it is clear that thebuyer sets the value of the product that he/she is prepared to pay for it.The fact of the matter is some farmers prefer the prices of tractors to be higher than the competitors because they look at it and say this is a high-quality product that is a step above the rest and they will pay that price (Peter &Donnelly, 2011:43). It is very important for the tractor salesman to know his customer and what his/her perception about price is. Customers' perception of price can be one of three options:

- high prices give the buyer the perception that the tractor is of high quality,
- moderate prices can give the perception that this tractor is medium on quality and is meant for the middle-class buyer but will still do the job and lastly
- low prices can give the perception that the tractor is of low quality and is meant for the mass market just to satisfy a need (Lantos, 2011:330).

As mentioned in the background to the study in Chapter 1, previously farmers applied for production loans at the Co-operations in their regions. The co-operatives sold tractors, and they determined the value of the tractors they sold and therefore the farmers had to pay the prices because they did those purchases on the production loans. The system changed, and farmers can now apply for seasonal credit with the commercial banks, other institutions and agricultural banks (Coleman; 2016). These financing institutions normally do not prescribe to the farmers where they must buy the tractors; they have the freedom to decide what the value of the tractor is and what price they are prepared to pay.

2.5.2.3 Promotion

Promotions are the way in which the manufacturers of tractors use their dealerships to communicate with the farmers viatools like advertising, sales promotions, personal selling, sponsorships, direct marketing and digital marketing (Fahy&Jobber, 2015:252). In the agricultural tractor market demonstrations on farmer, days are used as informational sessions. The manufacturers of the tractors use a distribution push strategy with their advertising campaigns because they force the dealerships to stock their tractor brands because farmers will come and ask to see the tractors. These communicational mediums or promotional mix are all out to convince the buyers (farmers) of the products (tractors), that their tractors are better than the competitor's tractors (Andrews & Shimp, 2017). Kotler and Armstrong (2016) state that promotions are of cardinal importance to the product because without that promotion the product will not come to the attention of the buyers.

The annual NAMPO agricultural show in Bothaville in the Free Stateis a great example of a promotional activity that promotes tractors as part of the agricultural needs of the farmers because the farmers have the luxury of seeing them performing its work and then if the farmers are interested in the tractor they can book a private demonstration on their farm.

2.5.2.4 Place or Distributional channel

Place is the location, normally a physical address where the product can be bought. This place can be a competitive advantage as well because if the location where the buyer can buy the product is close to the buyer, the more likely it is that the buyer will purchase it there (Blythe, 2008:10).Lamb et al. (2011) and Chamorro (2015) support this by stating that the sales of a product will be more significant if the location is more regional.Farming is dependent on nature for it to be successful, rain for planting season and frost for harvesting season, and this window period can be lost in a two-week period. This is why if the place where the farmers buy their tractors are close to them, in this study the North West province, the more likely it is that the farmers will buy from their local dealers. The farmers do not have the luxury of time during the season; they need parts and replacement tractors urgently when something goes wrong.

Manufacturers of products have to build relationships with suppliers or agents in the supply chain (Kotler &Armstrong, 2012:365). In the North West province tractors are mostly sold by local Cooperation's, and they have branches in the towns close to the farmers. The tractor manufacturers sign dealership agreements with these Cooperatives to serve as the dealers of a specific tractor in the area. SENWES is the John Deere dealer, NWK is the New Holland dealer, Suidwes is the CASE dealer and Cerealis and OBARO are the CLAAS dealers. So, with all this said about place, it is clear that place can influence the decision-making process of a farmer positively or negatively depending on the location of the place where he/she needs to buy the product.

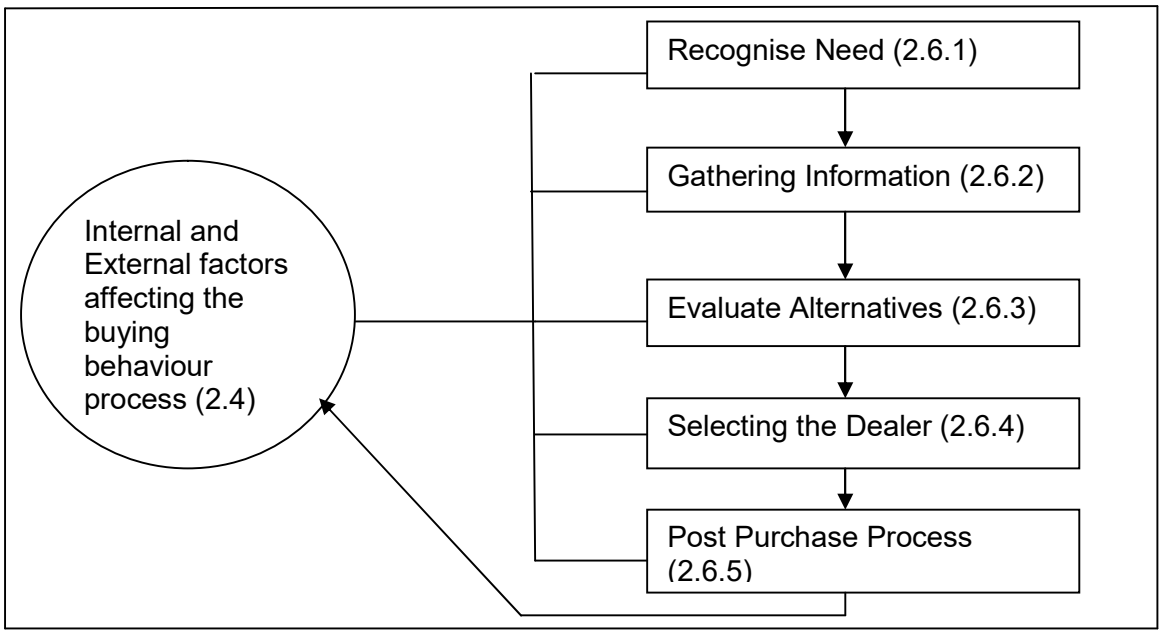
The next section (section 2.6), will cover the decision-making process in more detail.

2.6 DECISION-MAKING PROCESS

The decision-making process that the farmersneed to go through entails a cognitive process that recognises the need for a tractor, searching for information regarding tractors, evaluating the alternatives, consider the replacement tractors available, selecting the dealer where the purchase will be made and finally the post purchase process where the "mind games" begins, where the farmersstart questioning the decision of buying the tractor was the right one or not (Bhoran, 2018).Theinvolvement of the buyer during decision-making will depend on the value and the intervals in which the buying is made(Kotler & Armstrong, 2012:174).

The farmers' decision-making process can be influenced by internal and external factors as mentioned in sections 2.4 and 2.5 above. Figure 2.4 below is a schematic illustration of the decision-making process. This process will be discussed in detail in sections 2.6.1 to 2.6.5

Figure 2.4: Illustration of the consumer decision-making process



Source: Constructed from Kotler and Armstrong (2011:152) and Lamb et al. (2015:84).

2.6.1 Recognise the Need

A problem arises and that triggers the initial need. The farmer sees that due to the problem the state that he/she is in at is not the ideal place and he/she recognise that there is a better place to be in (Du Plessis, 2011:23). To go back to the internal and external stimulus – Internally the consumer experiences discomfortdue to the situation that he/she is in at the present moment – External stimulus like advertising informs the consumer that he/she can be in a better situation if the decision to buy the product is taken (DLM Marketing, 2017).

Due to the maintenance cost on the current tractor, the farmer sees that he/she needs a new tractor (refer table 2.2), through the promotional advertising campaign of the dealer he recognises the solution but at the present moment he does not have the money to pay for it. In this scenario there is an important message – in recognising the problem, another factor becomes important the means to fulfil that need. The means can be any form of payment to fulfil that need. The break even budget calculation (see Table 2.2) will assist the farmer in deciding to buy the tractor or not.

Table 2.2: Break-even budget principle

FIXED COST (FC)	FORMULA	NEW TRACTOR (N)	OLD TRACTOR(O)	
Cost price		R386 319		
Current replacement value	R386 319 – R91 200		R295 119	
Expected trade in value after 8 years		R320 000	R0	
Current trade in value			R91 200	
Total capital provision	Trade-in minus replacement value	R653 726	R882 526	
Capital provision per year	Capital provision / years	R81 716	R176 505	5 Years
Interest	1%			
Insurance & licence		R1 380	R1 380	
Total Fixed costs		R1 776 867	R2 238 056	

VARIABLE COST (VC)	1 200 hours per year			
Fuel (R3,80 per litre)	Total hours * 12.25 *R3.80	R55 860	R67 032	20% higher than new tractor
Lubrication	10% of fuel cost	R5 586	R6 703	
Repairs, maintenance and tyres	7% of R386 319 for 8 years	R216 336	R386 319	15% of R386 319 or R386 319
Total Variable costs		R277 782	R460 054	
Total cost		R2 054 649	R2 698 110	

SOURCE: Louw (2013:194)

Figure 2.2 above indicates that the total cost of the old tractor is R643 461 higher than that of the new tractor. It is advisable that the farmer start planning for the replacement of the current tractor. It is expected that the total cost of the old tractor will rise higher than that of the new tractor (Louw, 2013:194).

Dealers need to familiarise themselves with the problem by recognising patterns of the farmers. This will help them to **react** to it by incorporating it into their marketing

mix strategy. ‘React’ is highlighted because dealers often focus on influencing the problem instead of reacting to it (Peter and Olson, 2005:170). The need has been identified by the farmer; the next step is to gather information to fulfil the need.

2.6.2 Gather Information

The discomfort that the farmers experience because of the problem triggers a natural response to solve the problem, and the gathering of information is a step in the solving stage (Hawkins *et al.,* 2004:525). The gathering of the information is a very important stage for the companies because the decision to buy or not to buy in the mind of the customer is made here.If the marketing mix strategy of the company is not up to standard, the company will be excluded from the “deal” – either because the customer does not know of the promotions, the references in regard to the product from friends, family or experts are negative, the price for the product do not reflect the value to the customer or the place where he/she can buy the product is a headache.

- The two types of search processes to gather information are external and internal sources that the farmers will use to gather information from (Du Plessis, (2011:26). External search is the gathering of information from any external source. Farmers will consult all or some of the external sources mentioned in section 2.4 and according to this information gathered he/she will come to a buying decision or in some cases this information will be weighed against internal factors – if there are any correlations.
- Internal search is where section 2.3 factors will be recalled to assist in the decision-making process. Farmers will recall feelings or emotions that were acquired through experience. The intensity with which the farmers will be involved in the gathering of the information will depend on the type of problem.

The farmer has gathered all the information on products that will solve the problem. Now he/she will evaluate if there are any alternatives to solving the problem.Stated this in point 2.4.2

2.6.3 Evaluate Alternatives

The information that was gathered by the farmers must now be organised to assist the farmers with the decision process. The farmers can draw up a comparison table

that could represent the final three tractors' that he/she is looking at to buy (refer table 2.2).

Table 2.3: Illustration of an evaluation table

Important buying criteria	***CASE Utility Farm C series***	***New Holland T4.110 F Narrow***	***John Deere 85F Orchard &Vineyard***
Horse Power kW	86	106	82.6
PTO Speed, RPM	540 standard; 540 E or 1000 opt	540 standard; 540 E or 1000 opt	540 standard; 540 E or 1000 opt
Transmission	12x12 Power Shuttle	16x16 Synchro Command	Duel Power + reverse shuttle
Wheelbase 4WD	90 (2286)	96 (2438)	77 (1956)
Price	Contact Dealer	Contact Dealer	Contact Dealer
Dealership	Local	Local	400 Kilometres

Source: SAAMA (2018)

In doing this comparison the farmers will use important attributes, and all the tractors that do not fit into these attributes is eliminated. This will leave him/her with a table (refer table 2.2). Out of this information, thefarmers can make a buying decision that will eliminate the problem the best. The farmer at this stage has chosen the product, and he has eliminated the ones he is not interested in – now the decision must be made where he will buy the tractor. That will be discussed in section 2.6.4.

2.6.4 Selecting the dealer

The buyer has reached the stage where he/she must decide on where the product will be bought (Du Plessis.2012:34). This is the final stage before the purchase decision is made. At this stage, the brand selection will be made by the farmer. At this stage, the dealers will have the final option to lower the price on the tractor or to put some other factor on the table that could influence the farmers decision in selecting the successful dealer.

2.6.5 Post Purchase Process

At this stage the most dealers will feel the sale is closed, the fact is for the customer the process is only starting because he/she will be happy about the purchase or

disappointed. This is called the purchase dissonance that customers experience (Kole. 2013:35). Brink and Berndt (2009) supported by Blythe (2013:327), ultimately stated that the post purchase behaviour will entail –'will the customer buy the product or service again or will they bring back the product and complain'. The worst-case scenariois when the customers are so unhappy that they tell friends, family and even associations about their bad experience with the product.

During the post-purchase phase, the farmer will go through the following elements:

- *Post purchase dissonance*– Buying a tractor is one of the most expensive transactions a farmer will have to make. During the decision-making process, the farmers had to choose between two or more tractors, and this leaves the farmer with anxiety (Du Plessis and Rousseau, 2005:121);
- *Product use* – The farmer will use the newly bought tractor. By doing this, they will either relate positively or negatively towards the tractor;
- *Product evaluation*– The previous two steps will lead to the farmer evaluating the tractors. Thiscould lead to a farmer recommending the tractor to their friends or advising them to stay away.

Dealers should know that this post purchase behaviour exist and they should manage the situation. Dealers should acknowledge that by contacting the farmer a day or so after the final sale and enquiring about the tractor and if everything is well with the tractor. The sales representative can make a point to visit the farmer on the farm to drive with him/her and see if every setting has been set and if the farmer is coming to terms with the new machine. This will reduce the post purchase dissonance that the farmer will experience.

2.7 SUMMARY

Chapter two started with defining buying behaviour of farmers when purchasing an expensive agri-tractor. That was followed by discussing the four different consumer behaviour models to determine which model will suit this study the best. The Engel, Blackwell and Miniard's consumer behaviour model was identified as the model that will accommodate the needs of this study the best, because of the high value of the tractors and the intense involvement from the farmers in the decision-making process.

The internal and external factors that could influence the buying behaviour was identified anddiscussed. It is of high importance that the tractor dealers in the North West province pay close attention to these factors influencing the farmer' buying behaviour because they can align themselves with what the farmers see as important and establish a competitive advantage.

The four Ps or marketing mix; product, price, promotions and place, can be used by the dealers to communicate a value offering to the farmers and by doing that influencing the buying behaviour of the farmers. It was noticed that the farmers' involvement during the decision making-process will be high or low because the value of the tractors will differ. Lastly the decision-making process that the farmers will go through in deciding was identified and discussed.

Chapter three explains the research methodology and results of the study.

CHAPTER 3
RESEARCH METHODOLOGY AND RESULTS

3.1 INTRODUCTION

Agricultural farming in South Africa and more particular the North West province has changed drastically over the last ten years. Existence farming has made way for mega scale farming – economy of scale farming. The primary reason for this shift was because of the need to satisfy the ever-growing consumption of commodities due to the increase in the population. Secondary factors like labour cost and input costs that increased dramatically played their part. This shift paved the way for the farmer to mechanise on a big scale. The farmer needstoincrease the yield per hectare, and the only way to do that is to mechanise even further because precision farming is becoming more relevant.

As a result of this change, the agri-dealers selling tractors in the North West province will be forced to know and understand the factors that influence the buying behaviour of the farmer' when buying tractors. Dealers that know and act on these factors will gain a competitive advantage on their competitors. The primary objective of this empirical research is to determine the factors that influence the buying behaviour of farmer' when they buy a tractor for agricultural use in the North West province of South Africa. The researcher chose the farmers from the North West province because the North West province is the second largest, to the Free State, producer of grain commodities like maize and sunflowers thus the "breadbasket" of South Africa (DAFF, 2017). Five of the big co-ops Senwes, NWK,Obaro,Suidwes and Cerealis are dealers of agri-tractors. This research will help them streamlining their marketing strategy to the farmers of the North West province.

In this chapter, the methodology that was used to determine the factors that influence the buying behaviour of farmers in the North West province will be identified. The study population and sampling, the questionnaire that was used to collect the data, data processing and results will be discussed.

3.2 RESEARCH METHODOLOGY

A quantitative research methodology was followed; more specifically a descriptive research with structured questionnaires that was distributed to the study population in the North West province. The study was cross-sectional in nature; this means that the collection of data was performed on a series of variables at a specific point in time (Bryman et al., 2014: 107).

In this study, the variables were the questions that were asked to the farmers on the questionnaires at demo days and farmer association meetings. The variables were collected and entered into a matrix and compared to one another to find the factors that influence the buying behaviour. The research proposal was evaluatedby the Economic and Management Sciences Research Ethics Committee(EMS-REC) of the North- West University, Potchefstroom Campus. The study was acceptedas a low risk category study, and the ethical number *–NWU-00270-18-A4* – was issued (See appendix B).

To comply ethically the researcher ensured the following:

- This research complies with the Protection of Personal Information Act (No. 4 of 2013) (POPI Act), and in particular to Condition 7 of the POPI Act where it makes specific provision for security safeguards to ensure the confidentiality and integrity of personal information (SA,2013).
- The participating farmers that completed the questionnaire will not be named, thus ensuring their confidentiality. This is done by the researcher because accurate and honest data is required by the researcher.
- The participants filled in a consent form that confirms that they participated without any form of pressure (refer to Appendix B).
- There are no vulnerable groups in this study. The term vulnerable entails children under the age of 18 that is still at school, and no medical information is requested by the researcher.

3.2.1 Study Population and Sampling

3.2.1.1 Study Population

When defining the study population definitions like “study populations consist of humans, groups, organisations, institutions or events” (Welman et al.,2010:53). Bryman et al. (2014:116) support Welmanet al. (2010) by saying the following “study population consists of individuals, groups, organisations and societies”.

For this study, the study population or unit of analysis was a single unit consisting of 119 farmers, situated in the agricultural sector of the North West province of South Africa (see to Figure 1.1).Because of the vast area where the farmer’ are operating in, it could have been difficult to access them. But because most of them belong to a specific study group within their geographical area within the North West, it was not difficult to access them.

The researcher contacted the chairmen of the different farmers’ associations and obtained permission from them to attend a meeting. All the farmers who are members of their regions’ farmer association, was handed a questionnaire at the scheduled meetings of the associations. Additionally, meetings of smaller farmer study-groups were used to distribute questionnaires while all farmers attending formal farmer days (demo days) were also requested to complete the questionnaire distributed to them. The purpose of the research and where needed the questions were explained to the farmer’ by the researcher. Farmer’ who were not members of the association or those who did not attend the farmers’ days or study-group meetings were not part of the study.

3.2.1.2 Sampling Strategy

Sampling can be done in two ways, Probability sampling and Non-Probability (Bryman et al., 2014:170). These methods are:

- Probability sampling –Here the researcher can make choice between the following

  (-) Simple random samples, (-) Stratified random samples, (-) Systematic samples, and (-) Cluster sampling Bryman et al. (2014:172-175).
- Non-Probability sampling – Here the researcher can choose between (-) Accidental or incidental samples, (-) Quota samples, (-) Purposive samples, (-)

Snowball samples, (-) Self-selection samples and (-) Convenience samples Bryman et al. (2014: 178-180)

For this study, the probability method was used and in particular random probability sampling, because the margin of error will be reduced. The reason for the random sampling is because of the place (study groups or farmers' days), where the questionnaires were handed out – this avoided the possible confrontation with farmers why theywere not allowed to complete a questionnaire.

3.2.2 Data Collection Instrument – Questionnaire

A similar study was done by Bisschoff (1992) and the questionnaire that was used in that study was used as basis for this study. This questionnaire was edited and enhanced to reflect on the literature study that was done in chapter two on the buying behaviour of customers. To ensure that the study had a high validity the researcher took the following actions:

- An earlier questionnaire was used as basis for this questionnaire (Bisschoff, 1992).
- The researcher insured that the questions were not of a leading nature.
- The sample participants that were used for the study was selected on a probability method and came from different farmer' associations across the North West province. This ensured that the sample was representative.

"Factors influencing farmers' buying behaviour of agricultural tractors in the North West province" – consisted of 59 questions determining the importance of each statement on the buying behaviour, which was measured on a five-point Likert scale.

Track record of the salesman

1	2	3	4	5
Extremely unimportant	**Very unimportant**	**Uncertain**	X **Very important**	**Extremely important**

The questionnaire had two sections and eight parts, namely:

Section A: Biographical information consisting of age, gender, home language, farming details and farming activities.

Section B: Eight parts consisting of:

Part one: Dealership orientation – How important is the dealership when making a buying decision -Eight statements.

Part two: Maintenance – How important is the overall maintenance when buying a tractor -Nine statements.

Part three: Mechanical performance – How important is the mechanical performance of the tractor when making a buying decision -Thirteen statements.

Part four: Economy & Finance – How important is the total financial cost of the tractor on the buying behaviour and how does it impact on the buying decision -Twelve statements

Part five: Delivery schedule – How important is it that the dealers explain the functionality of the tractor at delivery -Three statements.

Part six: Infrastructure and supporting equipment – The fact that the dealer has supporting equipment. How does it influence the buying decision - One statement.

Part seven: Management – How important is it that the tractor has a user-friendly management system. How does it impact the buying decision- Six statements.

Part eight: Convenience – How does convenience aspects like air-conditioning influence the buying decision - Seven statements.

3.2.3 Data Processing

Data collected was statistically analysed by using the Statistical Package for Social Science (IBM SPSS version 25), in assistance of the Statistical Consultation Services at the North- West University. The analysis included reliability statistics using Cronbach alpha, sample adequacy with the Kaiser-Meyer-Olkin measure, Sphericity analysis that is suitable for factor analysis, exploratory factor analysis. Regarding correlations, Pearson correlation coefficients were calculated and some inferential statistics such as mean values and standard deviations were also used.

3.3 RESULTS

3.3.1 Biographic Profile Frequency Tables

The demographic information requested from the farmer' consisted of the following age, gender, home language and farming detail (how often do farmer' buy tractors). These four aspects will be illustratedby way of frequency tables 3.1 – 3.4and discussed.

Table 3.1: Frequency table of the farmer' age

Age				
Valid	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	1	0.8	0.8	0.8
2	10	8.4	8.4	9.2
3	28	23.5	23.5	32.8
4	46	38.7	38.7	71.4
5	21	17.6	17.6	89.1
6	10	8.4	8.4	97.5
7	3	2.5	2.4	100.0
Total	**119**	**100.0**	**100.0**	

After the study, the results indicated that (38.7%) of the farmer' fall into the age category of 45 – 54 years. It is noticeable that the second highest was the age category 35 – 44 years (23.5%). This is important because farmers in South Africa and more particularly the North West province are generation farmer', this could indicate that the next generation are already active involved with the farming. This

generation is more interested and up to date with the internet of things, which could be seen as a focus area for the dealers in the North West province.

Table 3.2: Frequency table of the farmer' gender

Gender				
Valid	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	11	9.2	9.2	9.2
2	108	90.8	90.8	100.0
Total	**119**	**100.0**	**100.0**	

The results of the study indicated that (90.8%) of the farmer' are male and (9.2%) are female. The study indicates that the overwhelming majority respondent farmer' is male. Given the physicality and labour intensive of farming this result makes sense.

Table 3.3: Frequency table indicating the home language of the farmers

Language				
Valid	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	35	29.4	29.4	29.4
2	77	64.7	64.7	94.1
3	7	5.9	5.9	100.0
Total	**119**	**100.0**	**100.0**	

Afrikaans with (64.7%) is the language that is spoken the most by the responding farmer. While (29.4%) of the respondents speak English. Although third with a (5.9%) it is noticeable that farmer' in the North West province are speaking other languages – in this case, Setswana. Dealers in the North West province need to take note of this because with the National Development Plan and land repatriation laws from the South African Government these respondents could increase. By being proactive and training representatives and marketers in the mechanisation industry could be a unique selling point in the future.

Table 3.4: Frequency table indicating how often farmer' buy tractors

Often Purchase				
Valid	**Frequency**	**Percentage**	**Valid Percentage**	**Cumulative Percentage**
1	7	5.9	5.9	5.9
2	19	16.0	16.0	21.8
3	30	25.2	25.2	47.1
4	17	14.3	14.3	61.3
5	34	28.6	28.6	89.9
6	12	10.1	10.1	100.0
Total	**119**	**100.0**	**100.0**	

According to the study (28.6%) of farmer' buys tractors in a "good" farming year. Followed by (25.2%) of the farmer' indicated that they will buy tractors when the tractors reach certain hours. This result confirms the fact that the farmer' are cash strapped at this stage. But more important if factors two, three and four in table 3.4 are combined more than half of the responding farmer' (55.50%) grasp the fact that tractors need to be replacedwhere it starts to cost them money on maintenance and by replacing tractors at certain hours these maintenance costs can be limited.

Section 3.3.2, will deal with the statistical interpretation of the factor analysis with regards to the information that was obtained.

3.3.2 Factor Analysis

Factor analysis is where largemeasurable data, in this case, the questionnaire, is tested for statistical significance. By doing this, the researcher reduces the data and groups them according to fewer components "factors" that have a common variance (Bartholomew et al., 2011).By doing a factor analysis, the researcher identifies latent variables embedded within the data set. To test if the sample used was adequate to yield scientific results, the statistical technique developed by Kaiser-Meyer-Olkin was used while the sphericity qualities of the data were evaluated by using Bartlett's test of Sphericity. These results appear in Table 3.5.

Table 3.5: Kaiser-Meyer-Olkin and Bartlett Measure for significance

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of sample adequacy		.778
Bartlett's Test of Sphericity	Approx. Chi-Square	6550.306
	df	1711
	Sig.	.000

AKMO Measure 0.70 and above indicates that the sample is adequate for analytical purposes(Statisticshowto, 2018). This study has a satisfactory KMO value of 0.778, which indicate that the data set is sufficient to conduct multivariate statistical analysis (Pallant, 2007; Tabachnick & Fidell, 2007; Hair et al., 2010). Bartlett's test ofSphericity determinesthe internal relationships between the variables and should be lower than 0.005 to facilitate meaningful multivariate statistical analysis (Chan& Idris, 2017:403). This study's sphericity is below 0.005 and therefore supports multivariate statistical analysis (such as factor analysis).

The Varimax rotated factor analysis extracted a number of factors. Normally the Kaiser criterion (Eigenvalue exceeds one) or a scree plot is used to determine the number of factors retained. However, Patil et al. (2008a) indicated that parallel analysis, as a secondary measure, should be employed to retain a more accurate and scientific number of factors. According to Patil et al. (2008a), extracted factors should be retailed if the eigenvalue exceeds one and also if this eigenvalue is larger than the value calculated by the parallel analysis software (called the parallel analysis engine). These results appear in table 3.6.

Table 3.6: Retained factors as per the Parallel Analysis Engine

Factor	Parallel Analysis Engine	Eigenvalue	Retain or discard factor
1	2.2652	27.934	Retain
2	2.0766	14.711	Retain
3	1.9466	7.437	Retain
4	1.8195	4.743	Retain
5	1.7200	3.642	Retain
6	1.2666	3.423	Retain
7	1.5347	3.113	Retain
8	1.4530	2.541	Retain
9	1.3762	2.356	Retain
10	1.3013	2.218	Retain
11	1.2279	1.982	Retain
12	1.1631	1.790	Retain

Generated from: Patil et al. (2008b).

The parallel analysis revealed twelve factors that that needed to be retained for this study.

3.3.2.1 Factor identification

A total of 58 statements loaded onto the rotated factor matrix. One statement (B40) was eliminated from the study because it had a low factor loading (below 0.40). The other statements loaded strongly on one factor; no dual loading therefore resulted in any of the other statements to be discarded from the rotated factor matrix. The rotated factor matrix, the variance explained of the factors and the factor reliability (as per Cronbach alpha coefficients) is shown in table 3.7.

Table 3.7: Rotational Component Matrix indicating the factor loadings

Rotated Component Matrix[a]												
	Factors											
	1	2	3	4	5	6	7	8	9	10	11	12
B52	.876											
B48	.866											
B51	.860											
B18	.860											
B27	.850											
B19	.848											
B17	.846											
B55	.812											
B37	.802											
B23	.793											
B9	.785											
B10	.721											
B14	.718											
B43	.706											
B44	.698											
B45	.680											
B53	.679											
B13	.656											
B7	.630											
B47	.602											
B50		.867										
B58		.851										
B41		.810										
B56		.687										
B28		.659										
B20		.645										
B57		.627										
B12		.606										
B32		.584										
B38		.550										
B30		.503										
B6		.471										
B22			.846									
B26			.703									
B25			.699									
B8			.617									
B29			.585									

Rotated Component Matrix[a]												
	Factors											
	1	2	3	4	5	6	7	8	9	10	11	12
B46				.683								
B59				.641								
B54				.557								
B42				.551								
B31					.782							
B33					.733							
B1						.832						
B3						.714						
B4						.460						
B36							.765					
B34							.520					
B21							.518					
B35							.478					
B40												
B2								.761				
B39								.585				
B11									.886			
B15									.637			
B24										.684		
B49										.622		
B16											.793	
B5												.767
VAR%	24.12	12.13	7.79	4.93	4.084	3.96	3.79	3.402	3.26	2.98	2.95	2.48
CUM %	24.12	36.26	44.06	48.981	53.07	57.02	60.82	64.21	67.47	70.45	73.41	75.89
ALPHA	0.964	0.901	0.852	0.753	0.693	0.619	0.663	0.590	0.796	0.211	***	***

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 13 iterations.

- **Factor One: Dealer competency and design quality**

According to the rotated component matrix 20of the 59statements loaded onto factor one. The researcher identified the inter-relationship between these statements. Statements B7, 9, 10, 13, 14, 17, 37, 43, 44 and 45 share statements that rate the dealer's competency. Statements B18, 19, 23, 27, 47, 48, 51, 52, 53 and 55 share statements that relate to the design quality of the tractor. Given these two closely

related areas the researcher named factor one “Dealer competency and design quality”. Factor one had a variance of 24.12%.

- **Factor Two: Pre-Purchase considerations**

Some 12 statements loaded onto factor two. All twelve statements related closely to evaluation criteria before the farmers make a purchasing decision. For that reason, the researcher named factor two “Pre-Purchase considerations”. Factor two had a variance of 12.13%.

- **Factor Three: Deal enhancers**

Five statements loaded onto factor three. Statement B8 are closely related to internal factors more particular perception imbedded because of experience that influences buying behaviour. Statements B22, 25, 26 and 29 are closely related to the performance of the tractors. These performances of the tractors are normally also familiar concepts to the farmers’ because they have experienced the positives and negatives when these aspects are not part of the performance of the tractor. Experience from the farmer’ are the common denominator and for that reason the researcher named factor three “Deal enhancers”. Factor three had a variance of 7.79%.

- **Factor Four: Potential future savings**

Four statements loaded onto factor four. Statements B42 and 46 has a convenience and cost saving element to it, because farmer’ apply for production loans at their local cooperation and if they are successful, they will receive lower interest on their interest rate when they buy tractors. The dealers close to the farmer who stock complementary implements will also stock service parts that could lower the cost for sourcing parts. Statement B54 and 59 also have a cost saving element to them. Tractors work in dust and dust can have a severe maintenance effect on the instrument panels inside the cabins. By dust proofing, the cabins the maintenance cost inside the cabin should be constituted to breakage cost only. Tractors with air-conditioning will enhance the working conditions of the drivers and by doing that the productivity of the drivers should increase which should lead to a better cost per hectare. Because of this savings connection the researcher named factor four “Potential future savings”. Factor four had a variance of 4.93%.

- **Factor Five: Perceived value**

Two statements loaded onto factor five. Statements B31 and 33 focus on the value for money concept. The farmers evaluate the initial purchase price to the perceived value that they will receive when buying the tractor. The finance period will depend on the initial purchase price, the higher the price, the longer the period because the farmers have a budget that determines the instalment. The instalment will influence the finance period. Because of this explanation the researcher named factor five "Perceived value". Factor five had a variance of 4.08%.

- **Factor Six: Dealership concerns**

Factor six had three statements loaded onto it. All three statements B1, 3 and 4 are concerned with the dealer. The researcher named factor six "Dealership concerns". Factor six had a variance of 3.96%.

- **Factor Seven: Financial implications**

Four statements loaded onto factor seven. Statements B34, 35 and 36 are self-explanatory because they deal with the financial aspects that the farmers are taking into consideration. Aspects like interest rate and total financing package cost. Statement B21 deals with mechanical performance, but if the lift that is fitted does not handle the weight as is specified by the manufacturer, the farmers will have an extra financial implication in the form of rebuilding the lift. The researcher named factor seven "Financial implications". Factor seven had a variance of 3.79%.

- **Factor Eight: Mutual future benefit**

Factor eight had two statements that loaded onto it. Statement B2 deals with the reputation of the dealers' salesman. It is common practice that farmer' buy tractors from specific salesman; because they had a good experience when they last bought a tractor. This could have a future benefit to the farmers. The farmers have the peace of mind that they will be serviced and receive the best information regarding the tractor. The dealers, on the other hand, will have the future benefit of historic performance from the salesman. This information can be used for appraisals or rectifying steps Statement B39 deals with the deposit when buying a tractor. This also has a future advantage because the farmer' instalments will be reduced.

Because of the potential future benefit the researcher named factor eight “Mutual future benefit”. Factor eight had a variance of 3.40%.

- **Factor Nine: After sales competency of the dealer**

Factor nine had two statements that loaded onto it. Statements B11 and 15 deals with the dealers’ ability to perform satisfactorilywhen it comes to after sales services to the farmer. Firstly, the turnaround time for tractors when they are being worked on at the dealers’ workshops. Secondly, the facilities where the workshops are being operated from are both indicators to the farmer’ how competent the dealers will service them. Competency was the main factor in factor nine and because of that the researcher named factor nine “After sales competency of the dealer”. Factor nine had a variance of 3.26%.

- **Factor Ten: Potential trouble**

Two statements loaded onto factor ten. B24 and 49 both deal with operational concerns of the tractors. Statement 24 deals with the fuel consumption of the tractor and 49 deals with the operational difficulty on the tractor. Because both these statements could lead to future confrontations with the dealer the researcher named factor ten “Potential trouble”. Factor ten had a variance of 2.98%.

- **Factor Eleven: Availability of spare parts**

Factor eleven had one statement that loaded onto it. Statement B16 deals with the availability of service spare parts. The availability of spare parts are a big concern of the farmer’, because out of stocks on these spare parts means that the farmer’ loses valuable productivity time and leads to a negative perception of the product and dealer. The researcher named factor Eleven “Availability of spare parts”. Factor eleven had a variance of 2.95%.

- **Factor Twelve: Post purchase peace of mind**

One statement loaded onto factor twelve. Statement B5 deals with the guarantee the dealers offer farmer’. This guarantee gives the farmer’ peace of mind because if the manufacturers of the tractors have confidence in their product – why should the farmer’ mistrust the product. The researcher named factor twelve “Post purchase peace of mind”. Factor twelve had a variance of 2.48%.

The factor analysis revealed that there are twelve primary factors that influencing farmers' buying behaviour when buying agricultural tractors in the North West Province. Cumulatively these factors explain a very satisfactory variance of 75.89% signifying a good fit to the data.
Section 3.3.3 will deal with the ranking of the most important criteria by using the mean values and standard deviation for each criterion.

3.3.3 Mean values and standard deviations of the categories

3.3.3.1 Buying behaviour criteria

Mean values are used by the researcher to determine the most important criteria, according to the five-point Likert scale of the questionnaire (Dietrich 2017:65). The criterion with the highest mean value is considered to be the most important criteria. The standard deviation indicates that the study population, in this study the farmers' in the North West province, differs from one another with regards to the importance of a given statement. This difference is indicated in the value of the standard deviation.Ifthe value is closer to zero, it means that the study population feels the same about the impact that the statement will have on the buying decision. For example, the standard deviation of statement B8 in table 3.10 is 1.480 and B4 is .518. This means that the study population differs more in their opinion regarding the importance of statement B8 than B4.

The mean values and standard deviations for this study are shownin tables 3.8 – 3.15according to the eight categories on the questionnaire. Table 3.16 illustrated the most important mean values in descending format according to the data collected from the farmers. This was done to give the reader an indication of the most important mean values at a glance. The farmers' farming detail and activities are illustrated in table 3.17.Normally a mean value of 3.5 and above is used as a general rule to indicate the importance of the statement. This is supported by Kole (2013:61) in research that he performed. For this study, the researcher will also use a mean value of 3.5as the evaluation criteria. In figure 3.1 the average mean values of the eight categories are illustrated.

Table 3.8: Mean values and standard deviation of Dealer Orientation

	N	Mean	STD Dev	Variance
B1	119	3.60	1.152	1.327
B2	119	3.27	1.418	2.012
B3	119	3.62	1.186	1.407
B4	119	4.53	.518	.268
B5	119	4.14	.667	.446
B6	119	3.92	1.331	1.773
B7	119	4.03	.828	.686
B8	119	3.22	1.480	2.189
Mean value		**3.79**		

Table 3.9: Mean values and standard deviation of Maintenance

	N	Mean	STD Dev	Variance
B9	119	4.02	1.186	1.406
B10	119	3.75	1.223	1.495
B11	119	3.81	1.271	1.615
B12	119	4.52	.735	.540
B13	119	4.39	.738	.544
B14	119	4.18	1.005	1.011
B15	119	3.50	1.314	1.727
B16	119	4.39	.690	.476
B17	119	3.08	1.453	2.112
Mean value		**3.96**		

Table 3.10: Mean values and standard deviation of Mechanical Performance

	N	Mean	STD Dev	Variance
B18	119	3.34	1.392	1.937
B19	119	3.36	1.274	1.623
B20	119	4.03	.961	.923
B21	119	4.22	.865	.748
B22	119	3.23	1.343	1.804
B23	119	3.39	1.297	1.682
B24	119	4.61	.540	.292
B25	119	3.57	1.176	1.383
B26	119	3.50	1.534	2.354
B27	119	3.46	1.163	1.352
B28	119	4.20	.766	.586
B29	119	3.67	.975	.951
B30	119	3.82	1.135	1.288
Mean value		**3.72**		

Table 3.11: Mean values and standard deviation of Economy and Finance

	N	Mean	STD Dev	Variance
B31	119	4.29	.975	.952
B32	119	4.33	.949	.900
B33	119	4.36	.722	.521
B34	119	4.63	.580	.337
B35	119	4.57	.576	.332
B36	119	4.71	.640	.409
B37	119	3.91	1.214	1.474
B38	119	4.20	.777	.603
B39	119	3.34	1.429	2.041
B40	119	2.54	1.287	1.657
B41	119	4.39	.931	.866
B42	119	2.52	1.551	2.404
Mean value		**3.98**		

Table 3.12: Mean values and standard deviation of Delivery Schedule

	N	Mean	STD Dev	Variance
B43	119	2.82	1.555	2.418
B44	119	4.04	1.399	1.956
B45	119	2.92	1.634	2.671
Mean value		**3.26**		

Table 3.13: Mean values and standard deviation of Supporting Equipment

	N	Mean	STD Dev	Variance
B46	119	2.95	1.512	2.286
Mean value		**2.95**		

Table 3.14: Mean values and standard deviation of Tractor

	N	Mean	STD Dev	Variance
B47	119	4.06	1.052	1.107
B48	119	3.58	1.292	1.669
B49	119	4.18	.802	.643
B50	119	4.39	1.099	1.207
B51	119	3.66	1.417	2.007
B52	119	3.29	1.355	1.836
Mean value		**3.86**		

Table 3.15: Mean values and standard deviation of Convenience

	N	Mean	STD Dev	Variance
B53	119	3.86	.914	.835
B54	119	3.63	1.234	1.523
B55	119	3.52	1.088	1.184
B56	119	4.14	.941	.886
B57	119	3.97	1.189	1.415
B58	119	4.40	.942	.887
B59	119	3.60	1.223	1.497
Mean value		**3.87**		

A summary of the most important criterion according to the mean values is illustrated in descending order in table 3.16 below. The table is sorted in descending order of importance.

Table 3.16: Summary of the most important statements

Criterion number	Statement	Mean value	Standard deviation
B36	"Total package financing costs" purchase price + finance cost	4.71	.640
B34	Interest rates	4.63	.580
B24	Fuel consumption of tractors	4.61	.540
B35	Running costs per kW power	4.57	.576
B4	Geographical presence of the dealer	4.53	.518
B12	Time it takes for mobile repair units to make repairs from a specific dealership	4.52	.735
B58	Glass al around the cabin of tractor - visibility	4.40	.942
B16	Common wear spare parts are kept in stock	4.39	.690
B13	Professional workmanship	4.39	.738
B41	Technological equipped – Precision	4.39	.931

Table 3.16 (Continued)

Criterion number	Statement	Mean value	Standard deviation
B50	Precision GPS and monitor fitted	4.39	1.099
B33	Financing period	4.36	.722
B32	Value of trade-in on old tractor	4.33	.949
B31	Purchase price	4.29	.975
B21	Lift's ability to handle weight as specified	4.22	.865
B28	Rated KW measurement at rear traction wheels	4.20	.764
B38	Conversion of purchase price in R/kW	4.20	.777
B49	Operational difficulty	4.18	.802
B14	Trained mechanics	4.18	1.005
B5	Guarantees from the dealer	4.14	.667
B56	Seating comfort (adjustable, padded, shock-absorbing seat)	4.14	.941
B47	KW per hectare in order to cut on Labour cost	4.06	1.052
B44	After delivery technical demonstration by salesman	4.04	1.399
B7	Reliability of the dealer	4.03	.828
B20	Limited wheel slip	4.03	.961
B9	Hourly rate charges by dealer	4.02	1.186

The results on the farming activities of the respondents are summarised in table 3.17.

3.3.3.2 Farming activities

Table 3.17: Mean values and standard deviations of the respondents' farming activities

Convenience	N	Mean	Mean %	STD Dev
Hectares owned	119	1195.83	84.20	793.489
Hectares rent	119	223.92	15.80	318.229
Hectares cultivated	119	1117,03	78.70	788,322
Maize	119	622,87	55.80	477,863
Sunflower	119	269,41	24.10	247,778
Soya beans	119	61,34	5.50	120,795
Sorghum	119	43,70	3.90	109,063
Wheat	119	83,61	7.50	156,983
Others	119	40,03	3.6	106,820
Cattle	119	105,28	88.50	74,909
Sheep	119	18,22	15.30	27,630
Cows	119	22,85	19.20	29,805
Game	119	0,35	0.30	0,480
Others	119	0,56	0.50	0,633

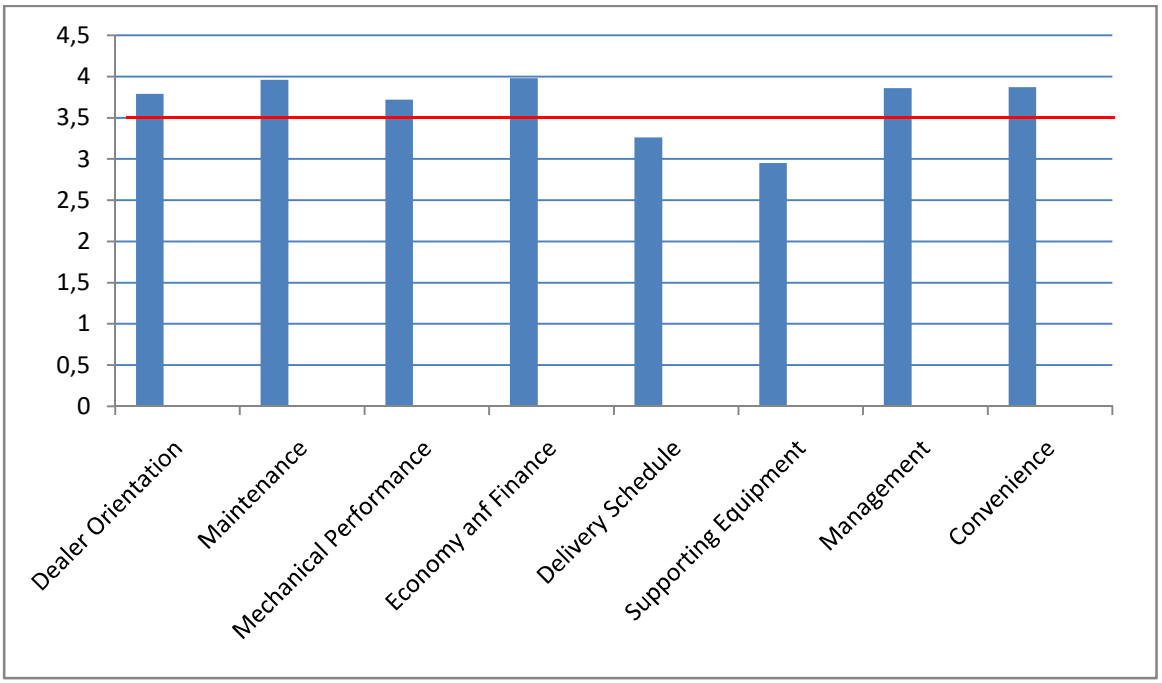
From the data that was processed it is clear that the statements that influence the farmers' buying behaviour when they buy tractors the most is, B36 ("*Total package financing costs" purchase price + finance cost*) and second with a mean value of 4.71 and B34 (*Interest Rates*) with a mean value of 4.63. Both these statements fall under the economy and finance category on the questionnaire. This supports the statement in section 1.2 from the researcher that the farmers are cash strapped. They will hold on to their tractors for longer, and when they buy, they will consider the whole picture. In some cases, the mean value alone cannot be considered alone because of statement B28 (*Rated KW measurement at rear traction wheels)* and B38 (*Conversion of purchase price in R/Kw)* both has a mean value of 4.20. In a case like this, a secondary evaluation tool is needed. The standard deviation will be used by the researcher because it reports on the stability of the score. In this case, B28 has a standard deviation of .764 and B38 a score of.777, and therefore B28 is ranked higher.

It is clear from table 3.16that external factors in particular *economical influence, service, product and place* are the main forces that influence the buying behaviour of farmers when they decide to buy a tractor because statements that reflect these factors mean values are the highest. There are two exceptions B5 (*Guarantees from the dealers*), and B7 (*Reliability of the dealer*) was also rated high by the farmers. These two statements fall under internal factors in particular perception that influence their buying behaviour. B5 could be because the farmers see these statements as part of the “value offering” that the dealers give to them to ease their minds about the product. The same argument can be put forward with regards to B7; if the farmers perceive the dealer to be reliable, they will support that dealer because of previous experience with the dealer or “word of mouth” by fellow farmers within the North West province.

Table 3.17 gives the reader a biographical profile of the farmers’ farming activities. The respondents have a mean of 1117.03 that is cultivated of which 1195.83 hectares are owned by the farmers and 223.92 rented. Maize is still the preferred as the main dry land crop with a mean of 622.87 (55.80%), followed by sunflower with 269.41 (24.10%). The rest of the crops are made up of soya beans, sorghum and wheat with a total mean of 228.68. Livestock that are preferred by the farmers are cattle with a mean of 105.28 (88.50%) followed by cows with 22.85 (19.20%).

Figure 3.1 visually indicates the average mean values that were used as the cut off criterion by the researcher. Statements above the red line were identified by the farmers as important. Below the red line was unimportant to the farmers. It is clear from figure 3.1 that B40 (*Buying tractor for Income Tax purposes*) and B42 (*Dealer finance available*) influences the farmers’ buying decision the least.
The average of each category is illustrated in Figure 3.1 below.

Figure 3.1: Average of the mean values per category



3.3.4 Correlations or Bivariate analysis

Correlations are used by researchers to evaluate the degree and type of the relationship between two and more variables (Dadhe, 2016b:139). In this study, the researcher will determine what is the correlation between the factors that influence the buying behaviour (dependent variable) and the decision-making process (independent variable) when farmers (population) in the North West province are buying tractors.

According to Bryman et al. (2014:321), there are three techniques to determine the correlation between two variables:

- Pearson's correlation coefficient (r);
- Spearman's rho (p) and
- Phi coefficient (ø)

For this study, the researcher used the Pearson's correlationCoefficient (r) because the factors that influence the buying behaviour are interval variables. The researcher wants to determine the linear relationship between the factors and the decision making.

3.3.4.1 Biographical correlations

The biographical variables age, gender, hectares rented and all crops except maize and wheat showed no significant correlations (p≤0.05; p≤0.10) with any of the factors. Also, the factors 3, 4, 6, and 8-12 did not correlate significantly with any biographical variables (p≤0.05; p≤0.10). However, some significant correlations were recorded between some of the factors and the biographical variables. These correlations are shown in the table 3.18below.

Table 3.18: Correlations between the biographical variables and the factors

		FACTOR1	FACTOR2	FACTOR5	FACTOR7
Language	Pearson Correlation	.112	-.378**	.215*	-.042
	Sig. (2-tailed)	.223	.000	.019	.649
	N	119	119	119	119
Hectares owned	Pearson Correlation	-.391**	.263**	-.455**	-.092
	Sig. (2-tailed)	.000	.004	.000	.317
	N	119	119	119	119
Hectares cultivated	Pearson Correlation	-.391**	.247**	-.458**	-.133
	Sig. (2-tailed)	.000	.007	.000	.148
	N	119	119	119	119
Often purchase	Pearson Correlation	-.228*	-.287**	-.033	-.307**
	Sig. (2-tailed)	.012	.002	.718	.001
	N	119	119	119	119

		FACTOR1	FACTOR2	FACTOR5	FACTOR7
Maize	Pearson Correlation	-.429**	.193*	-.446**	-.145
	Sig. (2-tailed)	.000	.035	.000	.117
	N	119	119	119	119
Wheat	Pearson Correlation	-.338**	.065	-.253**	-.189*
	Sig. (2-tailed)	.000	.481	.005	.039
	N	119	119	119	119

* p≤0.05; ** p≤0.10

In general, the information in table 3.18 indicates a negative correlation–minus before the Pearson value whichin this regard means that if the one component increases the factor which it correlates to will decrease and the other way around. According to the study the correlations can be interpreted as:

- The home language of the farmers has a weak negative linear relationship (-.378) with factor two “pre-purchase considerations”. This negative correlation is unexpected because it shouldn’t make a difference what language you speak when elements like guarantees and substitute tractors are negotiated. However, itis speculated that language differences may indicate another indicator here such as trust, understanding or even cultural differences where the buyer and seller has less common ground in negotiation that for example, two same language speaking parties negotiate the buying of a tractor. If these speculative theories could be substantiated by further research, it could become important for dealers to match up sales personnel with buyers about language (or other differentiating variable for that matter).
- The hectares that the farmers own have a weak negative correlation (-.391) to factor one “dealers’ competency and design quality” and moderate negative towards factor five “perceived value”. This negative correlation makes sense because the smaller the farm, the lower the impact on the dealer competency or the perceived value of the tractor. These negative correlations are similarly

explained by the hectares cultivated (-.391) towards factor one “dealers’ competency and design quality” and moderate negative (-.458) towards factor five “perceived value”. Also, if the dealer is incompetent in servicing the tractor, the farmer would not be able to work a lot ofhectares, and that would impact negative on the perceived value of the tractor.

- How often the farmers’ purchase tractors correlate negatively weak (-.307) towards financial impact. This negative correlation indicates that if the farmers don’t have finances available, they will not buy tractors.
- Maize correlated moderate negative (-.429) towards factor one “dealer competency and design quality” and moderate negative (-.446) towards factor five “perceivedvalue”. Initially these two negative correlations towards the factors was surprising, but closer scrutiny into the statements that loaded onto factor one “dealer competency and design quality” and five “perceived value” revealed that if the farmers that plant maize do not have a competent dealer with quality competencies and tractors, they will have to locate one that does. This is even more so with rain-dependent planting season on extensive crop farms. The decision to plant maize is a financial and supply and demand decision for the farmers, and a competent dealer needs to supply quality service and value for money tractors, especially during peak times in the season.
- Wheat correlated negatively weak (-.338) towards dealer competency and design quality with a significance of (.000). The same initial scepticism about the negative correlation was present with the researcher. But the same explanation as with maize is postulated.

3.3.4.2 Factor correlation

The correlation matrix shows that most of the factors do correlate with the other factors. In such an event, Imandin et al. (2016:97) indicate that the significance of the factors about the most important factor should be analysed using multiple regression. The results of the multiple regressions where Factor 1 serve as the dependent variable are shown in the table 3.19below.

Table 3.19: Multiple regressions

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.786[a]	.618	.579	.63642
a. Predictors: (Constant), Factor12, Factor3, Factor7, Factor9, Factor6, Factor10, Factor5, Factor4, Factor2, Factor8, Factor11				

The regression model explains a favourable variance (R^2 = 0.618); this indicates that the other factors do influence (and predict) the role Factor 1 (dealer competency and design qualities) plays in the agricultural tractor buying behaviour of farmers. Table 3.20below indicates the beta values and the significance levels of the predicting factors.

Table 3.20: Beta values and significance levels of the predicting factors

Coefficients[a]						
Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.915	.806		-2.376	.019
	Factor2	-.007	.121	-.005	-.059	.953
	Factor3	-.011	.084	-.011	-.126	.900
	Factor4	.199	.072	.210	2.757	**.007**
	Factor5	.354	.111	.243	3.192	**.002**
	Factor6	.143	.088	.110	1.614	.109
	Factor7	.361	.162	.177	2.226	**.028**
	Factor8	-.194	.091	-.241	-2.136	**.035**
	Factor9	-.217	.132	-.261	-1.646	.103
	Factor10	.079	.160	.057	.493	.623
	Factor11	.493	.123	.661	4.023	**.000**
	Factor12	.141	.098	.096	1.429	.156
a. Dependent Variable: Factor1						

The regression formula of the predicting factors is thus:

$Y = \beta + ax + bx \ldots ix$

Factor 1 = -1.915 = 0.199 (Factor 4) + 0.354 (Factor 5) + 0.361 (Factor 7) – 0.194 (Factor 8) + 0.493 (Factor 11)
Dealer Competency and Design quality= -1.915 = 0.199 (Potential Future savings) + 0.354 (Perceived Value) + 0.361 (Financial impact) – 0.194 (Mutual Future Benefit) + 0.493 (Availability of Spare Parts)

3.3.5 Reliability

Reliability is satisfactory if the Cronbach alpha coefficient equals or exceeds 0.70 (Field, 2009:668). Scores exceeding 0.80 is regarded to be very satisfactory. Regarding a lower limit of reliability, research by Cortina (1993:91) seminally defined an alpha coefficient of 0.57 to be acceptable in exploratory research and where interval scales are used (such as the Likert scale in this study). This study returned satisfactory reliability coefficients (see Table 3.7) for factors 1, 2, 3, 4, and 9 ($\alpha \geq 0.70$), and acceptable reliability coefficients for factors 5, 6, 7 and 8 ($\alpha \geq 0.57$). Factor 10 is unreliable with an alpha coefficient of 0.211 while the alpha coefficients could not be calculated for factors 1 and 12 because of only one statement loading onto each of these two factors.

3.4 DISCUSSION OF RESULTS

The results from this study will be discussedby Bisschoff (1992) "*Factors Identification in the Agricultural Tractor Industry*".

The study from Bisschoff will be the main reference when correlating the results from this study. The focus of the correlations will mainly be on the similarities within the studies.

Firstly, the biographical information will be discussed. In this study 38.7% of the respondents fell in the age group 45 to 54, 90.8% are male with Afrikaans 64.7% indicated as the home language. This study indicated 9.20% female farmers. Bisschoff (1992) indicated 2.3% female farmers. It is an increase of 6.9% in 26 years. An explanation for this could be that the female farmers inherited the farm from their parents and they are the owners and their husbands are farming the land or it could be that they were never married and are farming themselves. Framers' own more

hectares than they rent with a mean of 1195.83 and maize are considered as the main crop with a mean of 622.87. Bisschoff (1992) study indicated that 25.3% was in the age group 45 to 54 years, 98.7% was male, and 91.0% indicated that Afrikaans was the home language. The mean value of the farmers owned hectares was 1009.1.From this comparison, it is clear that farming is dominated by the middle age group because in all three studies this age group was the highest.

Owned hectares are more than rented hectares. This will be the case because the farmers use hectares owned as collateral when applying for production loans at the financial institutions and co-ops. It is noticeable that the owned hectares increased from 1009.1 (Bisschoff 1992) to 1195.83 in this study. This can be explained by the fact that farmers are farming according to economy of scale – more hectares will reduce the input cost. Maize is still preferred as the main crop that is being planted because of the need to feed the growing population. It is however interesting to note that maize contributed (81.9%) towards the planted hectares in the study that was done by Bisschoff (1992). In this study, it only contributed (55.80%). This can be directly contributed to the deregulation of the South African agricultural market in 1996 (DAFF, 2017:12). From 1996 the farmers had to compete in an open international market where supply and demand and exchange rates dictated the market. Farmers moved towards crops that had a better return on investment, from there the increase in popularity in the sunflower crops from 9.6% in (1992) to 24.10% in (2018).

Secondly, factors that influence the buying behaviour will be discussed. This study indicated that the farmers regarded twelve factors as important when buying agricultural tractors. Bisschoff (1992) identified eightfactors labelled "*Product and service qualities of the tractor"* as the main factor with a total variance explained of 17.07%. This study revealed that the farmers consider *"Total package financing costs purchase price + finance cost"* with a total variance of 27.93% as the main factor that influence agricultural tractor buying behaviour. Although the main factors from this study that contributed to the buying behaviour of the farmers could not be "purely" identified to be similar. "Pure" factors are factors that were identified by both studies as important and were named the same. An "impure" factor is one that shows similarities but are not identical in comparison (Fields and Bisschoff, 2013). The

factors from the two studies are compared in table 3.21 and the impure factors that showed similarity are indicated.

Table 3.21: "Impure" factor correlations

Factor number	This studies factors	Bisschoff (1992) Factors
1	Dealer competency and design quality	Product and service quality
2	Pre-Purchase considerations	Operational qualities
3	Deal enhancers	Pre-Purchase planning
4	Potential future savings	Potential savings
5	Perceived value	Ergonomics
6	Dealership concerns	Ease of operation
7	Financial implications	Cost of credit
8	Mutual future benefit	
9	After sales competency of the dealer	After-sales service
10	Potential trouble	
11	Availability of spare parts	
12	Post purchase peace of mind	

The table shows that some similarities in buying behaviour between farmers of 1992 and 2018 exist. One observation from the table is that farmers today have more precise buying criteria, hence the fact that 12 factors were identified compared to eight in 1992. For example, in 1992 "After sales service" included both the modern factors "After sales competency of the dealer" and "Availability of spare parts". This observation is important as the modern farmer now exercise more precise buying behaviour; marketers of agricultural tractors should take note and adjust their marketing strategies accordingly.

3.5 SUMMARY

In this chapter the methodology that was usedto collect data to determine the factors that influence the buying behaviour of farmers in the North West province when they buy agricultural tractors was explained. A quantitative research methodology was used. The researcher used a structured questionnaire that was distributed to the study population – 119 farmers' in the North West province. The study was approved by the Economic and Management Sciences Research Ethics Committee (EMS-REC) of the North-West University, Potchefstroom Campus.

The biographical information that was retained from the respondents included the age, gender, language and basic farming activities. The biographical data was statistically analysed by using frequency tables. The objective of the research was to identify factors that the study population see as important when buying tractors. Because of the different responses from the respondents with regards to the importance of the statements the researcher had to use factor analysis to identify the underlying dimensions. Twelve important factors were identified. These factors are *Dealer competency and design quality, Pre-purchase considerations, Deal enhancers, Potential future savings, Perceived value, Dealership concerns, Financial implications, Mutual benefits, After sales competency of the dealer, Potential trouble, Availability of spare parts and post purchase peace of mind.*

The correlation between the important factors and the buying behaviour was determined by using the Pearson correlation,and the correlations to factor one showed some favourable predictive properties by other factors as indicated by the regression model. The reliability of all the factors except the last three were either satisfactory ($\alpha \geq 0.7$) or acceptable ($\alpha \geq 0.57$).

The chapter was concluded by correlating the results of this study to one other study that was done in the same field. Chapter four will focus on the conclusions and recommendations.

CHAPTER 4
CONCLUSIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

Chapter four will start by finalising the empirical study by highlighting the factors' that influence the buying behaviour of farmers' when buying agricultural tractors.

The middle part will offer recommendations to the dealers in the North West province on how to market agricultural tractors to the farmers. To conclude, the critical evaluation and limitations of the study will be discussed.

4.2 CONCLUSIONS

Factors' influencing the buying behaviour of farmers' in the North West province when they decide to buy agricultural tractors was the primary objective of this study.To establish the primary objective, the researcher identified secondary objectives that had to be addressed first.

This study made liberal use of the literature to build a sound foundation and to have a clear understanding of buying behaviour. The recognised buying behaviour model by Engel, Blackwell and Miniard was used to serve this purpose. The model and accompanying literature also assisted in compiling the relevant antecedents and measuring criteria to analyse farmer buying behaviour of an agricultural tractor.

A descriptive quantitative methodology, consisting of a structured questionnaire was used to distribute to hundred and nineteen participants within the geographical study area. According to the empirical study conducted in chapter three the twelve factors that influence the buying behaviour of farmers' in the North West province when they buy agricultural tractors are:

- Dealer Competency and Design Quality
- Pre-purchase considerations
- Deal enhancers
- Potential Future Savings
- Perceived Value
- Dealership concerns

- Financial Implications
- Mutual Future Benefit
- After sales competency of the dealer
- Potential trouble
- Availability of Spare Parts
- Post purchase peace of mind

These twelve factors were not discussed individually in the literature review, but it was discussed as part of the internal and external factors that could influence the buying behaviour of farmers.

From this methodology, it can be concluded that:

Conclusion 1: A sound literature basis provides a solid basis for the empirical research

Conclusion 2: The selection of an acknowledged consumer behaviour model assisted greatly in identifying the relevant buying behaviour antecedents and also their measuring criteria

Conclusion 3: During the gathering of the information the farmer' assisted the researcher vary well

Conclusion 4: With the use of the professional statistical services of the North West University the information that was gathered could be analysed meaningful

Conclusion 5: The methodology that was used in this study enabled the researcher to gather good information with regards to the buying behaviour of farmer.'

4.2.1 Biographical Information

The biographical information in this study concluded that:

- 62.20% of the farmer' are in the prime of their lives and still, have numerous years of farming left on the farms. This can be a good opportunity for the dealers selling agricultural tractors in the North West province because if they

can build a sound and proper relationship with these farmers they can insure continues business for their dealerships.

- Farming is still dominated by males with 90.8%. It is noticeable that females are becoming more involved in farming with 9.2% representation
- Afrikaans with 64.7% is still the most spoken language by the farmer' farming in the North West province, but it is noticeable that English and Setswana make up 35.3% of the respondents.
- 28.6% of the farmer' indicated that they only buy agricultural tractors when they feel it was a good farming year, 25.2% indicated that they will buy when their old tractors start to break down, and 10.1% indicated they will rather rebuild than buy tractors. This figure of 63.90% strengthens the argument made in chapter one – that the farmers' in the North West province are holding on to their tractors.

4.3 IMPORTANT FACTORS INFLUENCING TRACTOR PURCHASING DECISIONS

The research concluded that 75.890% of the components that was asked to the farmer' in the questionnaire were regarded as important. These factors concluded that:

4.3.1 Factor One "Dealer Competency and Design Quality"

- If the dealers in the North West province are not competent and their tractors are not designed with quality, they will struggle to sell tractors to the farmer'. The farmer' feels so strong about this factor that 24.124% contributes to the 75.890%.
- Therefore, dealers need to be at the top of their game to have the competitive advantage towards their rivals. Dealer competency means - spare part cost, professional workmanship from the mechanics and the hour rate that the dealer charges the farmers for services or repairs. Design quality means the ease with which repairs or service parts are being replaced, warning systems to reduce maintenance costs and the day to day operation of the tractor by the operator.

4.3.2 Factor Two “Pre-purchase considerations.”

- Farming are seasonal in nature,and this implies that the farmer’ need to work the maximum time to be productive. During the season there is no time for extensive breakdowns on tractors, and if that is the case, the farmer’ would like to see that the dealer provides a replacement tractor forthem to keep on working.
- With the agricultural industry becoming more and more precision orientated because of the financial strains with regards to input cost that are increasing every season. Tractors need to be precision ready. This means that GPS receivers and precision monitors need to be standard features within the tractors.
- The economy of scale forces the farmers to work more hectares within the limited time frame; this implies more hours on the tractors. To keep these longer hours productive, features like seating comfort and adjustable steering wheels are becoming more important and farmers are insisting that it is standard features in the tractors.

These aspects are all part of the pre-purchase analysis that the farmer’ go through before they buy an agriculturaltractor. If they are convinced from previous experience or by word of mouth that these aspects exist, they will consider buying the tractor.

4.3.3 Factor Three “Deal enhancers”

- Dealers should have the freedom to allow the farmer’ to ad features to the tractors that will make the tractor “fit for purpose” in other words the work on that particular farm. For instance, the farmer has to load big pack hay balls on a regular basis. The fact that the dealer allows the farmer to add a lift system on the nose of the tractor will enhance the chances of that dealer making the deal. Another option that the farmer’ would like to have is the option to select the width of the tyres. The wider the tyre, the less soil compacts onto the tyre and that helps with the fuel consumption and pulling power.

Although these aspects represent a small value at 7.437% in comparison to factor one it could be a deal terminator if the option is not available.

4.3.4 Factor Four "Potential Future Savings"

- If the dealers have implements available at their premises the farmer' will be in the position to save on secondary charges like transport that is associated with buying implements from a dealer that is not close to the farmer'. With regards to the availability of finance at the dealer, farmers' buy mechanisation equipment on a finance basis. If the dealers can provide the farmer' with finance, it could mean that both the tractor and the implement can be bought at that same dealer which could mean that the farmer' can negotiate bulk discounts. This would mean a smaller instalment and a saving on interest for the farmer'.

4.3.5 Factor Five "Perceived Value"

- The farmer' has an attitude towards the tractor, that attitude helps the farmer' to form an initial perceived value of the tractor. After the demonstration, the farmer' will form a perceived value, and that value will determine the price that he/she is prepared to pay for that value. The dealers, on the other hand, have a value that they feel are putting their tractor in a competitive advantage to other manufacturers and that will be the dealers asking price. The asking price of the dealer and price that the farmer are prepared to offer must be in cohesion before a deal will be on the table.

4.3.6 Factor Six "Dealership concerns"

- The farmer' is concern about the dealers' that service them. This concern is with regards to the geographical presence of the dealer and the dealers' reputation. These concerns could be un grounded for a non-farmer, but as the researcher pointed out previously, farming is seasonal. This seasonality implies that if farmersneed mechanisation equipment or services, they need it within a short time frame. Therefore, the closer the dealers are to the farmer' operations the better.

If this is the case, the researcher could conclude that the dealers that are the closes to the farmer' will have the "inside track" when it comes to support from the farmer' because it reduces the time that the farmer' will lose when working the land. The only way that the dealer will not be successful within that geographical area is when

the dealer has a negative reputation because of bad service that they are giving the farmer'.

4.3.7 Factor Seven "Financial Impact"

- Financial implications are important to the farmer'. These financial impacts are related to the total package financing costs, interests and the running cost of the tractors. These impacts have a long-lasting financial impact on the cost per hectare that the farmer' are working because the lower the running costs and the instalments of the tractor the lesser the cost per hectare and the better the farmer' can do per hectare that they harvest.

4.3.8 Factor Eight "Mutual Future Benefit"

- Mutual future benefit has a very close relationship with factor seven because both of them are per sè connecting to the financial impact that the farmer' will experience. Component 39 of the questionnaire "*Deposit when buying tractors"* has a great financial impact on the installment that the farmer' will pay per month. The reason that it falls with the track record of the salesman is because it has a mutual future benefit to it. The reason for that is, the dealer that gives the farmer the best trade-in for his old tractor will have the "inside track" of closing the deal. This concludes that the dealer gets the sale of a tractor and the farmer gets a bigger deposit to reduce the installment. Both parties – the farmer and the dealer – win.

4.3.9 Factor Nine "After sales competency of the dealer"

- The effectiveness of the dealer implies that if the dealer's facility is up to standard the time that the farmer' tractors spent in the dealers workshops for services or repairs will be as speedy as possible. This speedy turnaround time will increase the effectiveness of the dealer.

4.3.10 Factor Ten "Potential trouble"

- Agricultural tractors are expensive equipment that farmer' entrust to their farm workers to work with. If the tractors are too complicated to operate it will cause frustration with the farmer' and a negative connotation towards the tractor will be formed by the farmer'. This negative connotation could imply potential

trouble for the dealer selling that brand of tractor because the farmer' will not buy the next tractor unless these operational difficulties are rectified.

4.3.11 Factor Eleven "Availability of Spare Parts"

- The availability of common wear spare parts can also be categorised under dealer competency. The difference for the researcher lies in the classification that the farmer' will connect to it when they talk to fellow farmer'. Farmer' will say – that dealer has no after sales service because they don't have common parts. After sales service is not incompetence, it is a lack of commitment from the dealer.

The conclusion is if common spare parts are not available at the dealer the farmer' will think twice to buy the next tractor from that dealer.

4.3.12 Factor Twelve "Post purchase peace of mind"

- Post purchase peace of mind lies in the fact that the farmer will be at ease if he/she can see that the dealer has confidence in their tractor that they are prepared to give guarantees on the tractor. This will lessen the "mind games" that the mind plays with the farmer' when they start second guessing their decision of buying that particular tractor.

To conclude the question could be asked. Must all twelve these factors be present before farmer' will consider buying agricultural tractors? The answer to this question is not a simple yes or no. It will depend on the farmer that is in the market to buy a tractor. The opposite is also true that if these factors are not present when the farmer' decide to buy a tractor, they will move to the next dealer that could provide them with this important decision-making factor.

The recommendations will follow next.

4.4 RECOMMENDATIONS

Given a study as this, the researcher would conduct the recommendations in two-fold namely recommendations regarding the methodology that was used in this study and secondly the researcher will make recommendations with regards to the results of the study.

Firstly, recommendations to future researchers regarding the methodology that was used in this study:

Recommendation 1: Future researchers should follow a similar research design where the sound literature basis guides the empirical research.

Recommendation 2: Future researchers should also consider using validated and tested models as literature basis to enhance the quality of their results.

Recommendation 3: Because of the vast area within which the study population operates in. The researcher would recommend that future researchers use the same methodology to gather information when they conduct studies in the agricultural industry.

Recommendation 4: Factor analyses are an important part of the statistical analyses process. There are different software programs that will provide the researcher with different results. Therefore, the researcher would recommend that future researchers use professional statistical services for the analyses of their information. This would insure the use of the right statistical methods and will ensure the quality of the information.

Secondly, recommendations to the marketers and dealers that wants to sell agricultural tractors to the farmers from the results of the factor analyses.

The dealer that wishes to sell tractors should focus their efforts towards satisfying the components that connect to factor one “Dealer Competency and Design Quality”. Factor one contributed 24.124% towards all the factors’variance explainedof 75.850%. This indicates that the component that connect to factor one is regarded as the most important component when the farmers embark on buying an agricultural tractor.

Factors six “Dealership concerns”, factor nine “After sales competency of the dealer”, factor ten “Potential trouble” and factor eleven “Availability of spare parts” are all

closely related to the competency of the dealer in factor one. For that reason, the researcher will recommend the following in recommendation five below.

Recommendation 5: It is recommended that the dealership adds an after sales or customer care department that can focus on this crucial part of the business. This department in cohesion with the marketers should identify the components that loaded the heaviest onto factors one, six, nine and eleven. The dealers should “take stock” with regards to these components that contributed to the competency of the dealership and see to it that they comply with the farmers expectations of competency. The marketers should visit the farmers’ and identify the aspects that they perceive to be a quality product and focus the farmers’ attention to the fact that the dealership is close to them and that will reduce standing time because the spare part are close to them. This perceived quality should be communicated to the manufacturer of the tractors. The manufacturers need to comply with these quality aspects and in doing so don’t make the fault to over complicate the equipment so that it sets the stage for future troubleif they wish to increase their market share in the North West province.

Factor two, “Pre-purchase considerations” with a variance of 12.136%indicated that the farmers’ spends a considerable amount of time ensuring that the dealers will support them during the high season with regards to a loan tractor. The practise of loan tractors due to extended brake-downs are becoming more and more important because of the hectares that needs to be planted and the limited time available in which to do it. The farmers’ also see precision equipment as standard in the agricultural tractor otherwise they will not consider buying that tractor. The time spent during this stage of the buying behaviour process is indicative to a high value and sophisticated asset as an agricultural tractor.

Recommendation 6: Itis recommended that the marketers keep to the demonstrations on the farmers farms, but in addition to that they should demonstrate the capabilities and features of the precision equipment fitted into the agricultural tractor.To speak to the need of the farmers with regards to a loan tractorandfuture mutual benefits. It is recommended that the dealers urgently look into the possibility

to add a clause into the service contract that speaks to the need for a replacement tractor when the need arises.

Factor Three, “Deal enhancers” accounted for 7.795% of the variance. The fact that the farmers’ identified these components as the third highest factor indicates that they would like to have the freedom to choose features to the agricultural tractors that would make the tractor more purpose build.

Factors four “Potential future savings” and factor five “Perceived value” all relates to the aspect of enhancement.

Recommendation 7: The recommendation to the dealers is that they need to consider the possibility to move to a pre-selling method like in the motor industry. This is where the customer has the freedom to choose features that gets put on or into the agricultural tractor – customisation – and the manufacturer builds it like that from the start. The marketers should also focus the farmers’ attention to the fact that the dealership has complimentary implements at the dealership. Thisis close to the farm, and that would benefit them because of transport cost and standing time, and ultimately financially it could enhance the perceived value that the farmers’ ad to the tractor.

After examining factors seven and eight, it is clear that these factors refer to the financial implication of buying an agricultural tractor. Factor seven was named “Financial impact” and factor eight “Mutual future benefits”. The assumption could be made – what does this financial implication has to do with the marketer or the dealership. The fact is if the dealer/ marketer reduces this impact on the farmer’ they could benefit in the future because of an increase in sales and

Recommendation 8: The recommendation is that the manufacturers look into a finance product that will increase the sale of agricultural tractors. The researcher cannot comment on what this financial product should be because it falls outside the objectives of this study.

Factor twelve “Post-purchase peace of mind” contributed 2.483% variance and one component connected to this factor. For these reasons, noformal recommendations will be made by the researcher. It is however important that the dealership formulate a marketing strategy that stipulates how they will insure post-purchase peace of mind with the farmer’.

Factors one and two represents33.260% of the total variance of 75.890%; it is almost 50% of the total variance. For this reason, the researcher recommends the following:

Recommendation 9: Dealerships and marketers should focus all their attention on factors one and two as recommended in recommendation five and six above, and see to it that these components that connect to these two factors are addressed.

When the dealerships are certain that these components are addressed in the marketing strategy, they can move on to factors six, nine, ten and eleven. The dealerships that intend using this study should take notice that although all twelve factors contribute to the total variance, they do so in a diminishing manner. This means that they should be handled from factor one to twelve. By doing it in this manner, they will make the most difference first, and the return will be the most.

4.5 CRITICAL EVALUATION OF THE STUDY

To evaluate the study, the researcher will re-visit the primary and secondary objectives.

4.5.1 Primary objectives re-visited

The primary objective of this study was to determine the factors that influence the buying behaviour of farmer’ when they buy a tractor for agricultural use in the North West province of South Africa.To accomplish the primary objective, the formulation of the secondary objectives was needed.

4.5.2 Secondary objectives re-visited

- Define buying behaviour and how it fits to the behaviour of farmer’ when they buy agricultural tractors;

- Compile a demographic profile of the farmer-market in the North West province;
- Identify, from a literature study, the factors that influence the buying behaviour of farmers of agricultural tractors;
- Identify factors that the farmer' of the North West deem important in their buying decision- making of agricultural tractors;
- Determine the relative importance of each of the elements of the marketing mix in the agricultural tractor market.

Secondary objective one – define the buying behaviour and how it fits to the behaviour of farmer' when they buy agricultural tractors. Thiswas successfully done threw the literature study in chapter two.

Secondary objective two – compiling a demographic profile of the farmer-market in the North West province. Thiswas successfully done during the empirical study in chapter three. Specifically, in section 3.2.2 "*Data collection instrument – questionnaire"*. Section A of the questionnaire collected the data, and in chapter three this data was analysed threw the use of frequency tables.

Secondary objective three - Identify, from a literature study, the factors that influence the buying behaviour of farmers of agricultural tractors. Thiswas successfully done by identifying internal and external factors during the literature study that could influence the buying behaviour in chapter two.

Secondary objective four– Identify factors that the farmer' of the North West deem important in their buying decision- making of agricultural tractors. These twelve factors were successfullyidentified in chapter three and placed in descending order by using the rotational component matrix. And concluded in chapter four.

Secondary objective five– Determine the relative importance of each of the elements of the marketing mix in the agricultural tractor market.

By achieving all five of the secondary objectives, the researcher can conclude that the primary objective namely to determine the factors that influence the buying

behaviour of farmer' when they buy a tractor for agricultural use in the North West province of South Africa was successfully obtained.

4.6 AREAS FOR FUTURE RESEARCH

This study identified that dealer competency and product quality was the main factor that influences the buying behaviour of farmer' in the North West province when buying agricultural tractors. For future research, the researcher could suggest two areas.

Firstly, it is with reflection on the area of study. This study reviled that dealer competency and product quality are the most important factor when farmer' decide to buy agricultural tractors. For future research, the focus area should be on this competency aspect and an in-depth research on what is this competencies and product quality that the farmer' refer to. This study also reviled that farmer' see competency as buying an agricultural tractor, but with that, they do not only buy a product but a perceived service with it. In marketing, these two disciplines (products and services) of buying are separate and require different processes. With this perception from the farmer', it could indicate that product and service marketing are closer within the agricultural tractor industry. Therefore, by researching within this area could revile interesting findings that could assist manufacturers and dealerships selling agricultural tractors when conducting a marketing strategy.

Secondly, future researchers could do the same study with regards to the buying behaviour of farmer' when they decide to buy agricultural implements. By doing such a study, it could add value to the manufacturers and dealers selling mechanisation equipment because they can then improve their marketing strategies to optimise sales and product offering to farmer'.

4.7 SUMMARY

Chapter four started with the conclusion of the empirical study that was done on the buying behaviour of farmer' in the North West province when buying agricultural tractors. The methodology used by the researcher was discussed,and the Engel, Blackwell and Miniard behavioural model was identified as the road map to the

literature study. The twelve important factors were highlighted,and this led to the conclusions.

The biographical information of the farmers was concluded. That was followed by concluding the twelve factors. The chapter included nine recommendations to the manufacturers and dealers of agricultural tractors. For the critical evaluation of the study, the researcher re-visited the primary and secondary objectives of the study. It was concluded that the primary objective namely to determine the factors that influence the buying behaviour of farmer' when they buy a tractor for agricultural use in the North West province of South Africa was successfully obtained.

The final stage of chapter four was where the researcher identified two areas for future research.

LIST OF REFERENCES

Andrews, J.C. & Shimp, T.A., 2017. Advertising, promotion, and other aspects of integrated marketing communications. London: Nelson Education.

Arnould, E., Price, L. &Zinkhan, G. 2004.Consumers. 2nd ed. New York, NY: McGraw-Hill.

Bartholomew, D., Knotts, M. & Moustaki, I. 2011.Latent variable models and factor analysis: A unified approach. 3rd ed. West Sussex: Wiley.

Bisschoff, C A. 1992. Factors Identification in the agricultural tractor industry.(Thesis – DCom). Pretoria: University of South Africa.

Bisschoff, C.A., Lotriet, R.A. & Kole, A. 2017. Assessing fertilizer buying behaviour of emerging farmers in South African grain production area.*Problems and Perspectives in Management*, 15(2):456-467.

Blythe, J. 2008. Consumer behaviour. London: Thompson Learning.

Blythe, J. 2013. Consumer behaviour. 2nd ed. London: Sage

Bhoran, A. 2018. Decision-making process: Complete Guide. https://blog.cognifit.com/decision-making-process/ Date of access: 26 Oct. 2018.

Booms, B. & Bitner, M. 1981. Marketing Strategies and Organization Structures for Service Firms. Chicago, IL: American Marketing Association.

Brandon, C. 2015. McClelland's need theory. Boundless management. https://www.boundless.com/management/text books/boundless-management-textbook/organizational-behavior5/employee-needs-and-motivation46/mcclelland-s-need-theory-238-1041/ Date of access: 22 Oct. 2018.

Brink, A. & Berndt, A. 2009. Relationship marketing and customer relationship management. Pretoria: Juta.

Britz, J.P. 2011. Feed buying behaviour of small-scale broiler farmers. (Dissertation – MBA). Potchefstroom: North-West University.

Bryman, A., Bell, E., Hirschsohn, P., Dos Santos, A., Du Toit, J., Masenge, A., Van Aardt, I. & Wagner, C. 2014. Research methodology: Business and management contexts. Cape Town: Oxford University.

Cambridge Dictionary. 2018. Perception. http://dictionary.cambridge.org/dictionary/english/perceptionDate of access:14 Aug. 2018.

Chamorro, A., Rubio, S. & Miranda, F.J. 2015. The region-of-origin (ROO) effect on purchasing preferences: the case of a multiregional designation of origin. *British Food Journal*, 117(2):820-839.

Chan, L.L. & Idris, N. 2017.Validity and reliability of the instrument using exploratory factor analysis and Cronbach's alpha. *International Journal of Academic Research in Business and Social Sciences,* 7(10):2222-6990.http://hrmars.com/hrmars_papers/Validity_and_Reliability_of_The_Instrument.pdf Date of access: 22 Oct. 2018

Cloeman, A. 2016. Agricultural financing and its challenges.https://www.farmersweekly.co.za/bottomline/agricultural-financing-and-its-challenges/ Date of access: 16 Feb. 2019

Compare Tractors and Farming Equipment | Case IH. 2018. https://www.caseih.com/northamerica/en-us/service/resources/compare-specs Date of access: 17 Aug. 2018.

Cortina, J.M. 1993. What is coefficient Alpha? An examination of theory and applications. *Journal of Applied Psychology,* 78(1):98-104.

South Africa (SA). 2017. Department of Agriculture. Trends in the agricultural sector. Pretoria: Government printers.

Crop Estimates Committee (Oesskattingskomitee). 2018. DAFF.http://www.daff.gov.za/docs/Cropsestimates/Media%2015%20Feb%2018_Final%20Summer.pdfDate of accessed: 11 July 2018.

Schiffman, L.& Kanuk, L. 2004. Consumer behavior. Upper Saddle River, NJ: Pearson Prentice Hall.

Fields, Z. and Bisschoff, C.A. 2013. A theoretical model to measure creativity at a university. Journal of Social Sciences, 34(1):47-59.

Craven, J. 2014. Assessing antecedents of customer engagement for a South African fertilizer company. (Dissertation – MBA). Potchefstroom: North-West University.

Borden, N.H. 1964. The concept of the marketing mix. *Journal of advertising research*, 4(2):2-7.

Dadhe, A. 2016a.Consumer buying behaviour & integrated marketing communication. Delhi: ArchanaDadhe&Smashwords.

Dadhe, A. 2016b.Research methodology. Delhi: Archana Dadhe&Smashwords.

De Jager, E. 2016. SA rainfall in 2015 the lowest on record.http://www.politicsweb.co.za/documents/sa-rainfall-in-2015-the-lowest-on-record-sawsDate of access: 1 Sep. 2018.

Dietrich, C.F., 2017.Uncertainty, calibration and probability: the statistics of scientific and industrial measurement. London: Routledge.

Department of Agriculture Forestry and Fisheries (DAFF). 2017. Crop estimates committee.https://www.daff.gov.za/daffweb3/home/crop-estimatesDate of access: 21 Oct. 2018

DLM Marketing 2017. Consumer needs and motivation. https://www.dlmmarketing.com.au/motivation/Date of access: 21 Oct. 2018.

Du Plessis, O. 2011. The buying behaviour of farmers in the Eastern Free State when purchasing wire products. (Dissertation – MBA). Potchefstroom: North West University.

Du Plessis, P.J. &Rousseau, G.G. 2005. Buyer behaviour: A multi-culturalapproach. 3rd ed. Cape Town: Oxford.

Egan, J. 2007. Marketing communications. New York, NY: Cengage Learning EMEA.

Fahy, J.& Jobber, D. 2015. Foundations of marketing. 5th ed. New York, NY: McGraw-Hill Education.

Farmer's Weekly. 2016. Emerging farmers must beempowered.https://www.farmersweekly.co.za/opinion/by-invitation/emerging-farmers-must-be-empowered/ Date of access: 23 Oct. 2018.

Farmer's Weekly. 2016. Still tilling the soil after six generations.https://www.farmersweekly.co.za/rural-insight/still-tilling-the-soil-after-six-generations/ Date of access: 10 Feb. 2019.

Field, A.P. 2009. Discovering statistics using SPSS. 3rd ed. London: Sage.

Filipe, S., Marques, S.H. & de Fátima Salgueiro, M. 2017. Customers' relationship with their grocery store: Direct and moderating effects from store format and loyalty programs. *Journal of Retailing and Consumer Services*,37:78-88.

Fowler, S. 2014. Why motivating people doesn't work…and what does: the new science of leading, energizing, and engaging. Oakland, CA: Berrett Koehler.

Statistics South Africa (SSA). 2018. Gross Domestic Product. https://www.statssa.gov.za/publications/P0441/P04412ndQuarter2018.pdf Date of access: 10 Oct. 2018.

Gbadamosi, A., Bathgate, I.&Nwanko, S. 2013. Principles of marketing: A value-based approach. London: MacMillan.

Gitman, L.J. & McDaniel, C. 2009.The future of business: The essentials.4th ed. New York, NY: South Western/Cengage learning.

Greenburg, S. 2015. Why size matters for farmers. https://mg.co.za/article/2015-03- Date of access: 10 Feb. 2019

Groenewalt, L. 2018. SA tractor sales continue positive trend. https://www.farmersweekly.co.za/agri-news/south-africa/sa-tractor-sales-continue-positive-trend/ Date of access: 10 Oct. 2018.

Hair, J.F., Black, W.C. &Babin, B.J.&Anderson, R.E. 2010. Multivariate data analysis: A global perspective. Upper Saddle River, NJ: Pearson Prentice Hall.

Hawkins, D.I., Best, R.J. & Coney K.A. 2004. Consumer behaviour: Building marketing strategy. 9th ed. New York, NY: McGraw-Hill.

Hawkins, D.I.& Mothersbaugh, D. 2010. Consumer behaviour. Building Marketing Strategy. 11th ed. New York, NY: McGraw Hill Irwin.

Head, T. 2018. Farm murders: Six surprising facts we learned from crime stats 2017/2018. https://www.thesouthafrican.com/farm-murders-crime-stats-2017-2018/ Date of access: 10 Oct. 2018.

Homburg, C., Kuester, S. &Krohmer, H. 2009. Marketing management: A contemporary perspective. New York, NY: McGraw Hill.

Hornes, S.&Swarbrooke, J. 2016.Consumer behaviour in tourism. 3rd ed. New York,NY: Routledge.

Hoyer, W.D. &Maccinis, D.J. 2008.Consumer behaviour.5rd ed. New York, NY: South Western/Cengage learning.

Imandin, L., Bisschoff, C.A. & Botha, C.J. 2016. Confirmatory analysis of the model to measure employee engagement. *Problems and Perspectives in Management*, 14(2):93-103

Jain, A. 2010.Principles of Marketing. New Delhi: V.K Enterprises.

Kole, A. 2013. Analysing fertilizer buying behaviour of emerging farmers in the Free State Province. (Dissertation – MBA). Potchefstroom: North West University.

Kotler P. & Armstrong G. 2011. Principle of marketing. 14th ed. Upper Saddle River, NJ: Pearson Prentice Hall.

Kotler, P. & Armstrong, G. 2012.Principles of marketing. 14th ed. London: Prentice-Hall

Kotler, P. & Armstrong, G. 2015. Marketing: An introduction. Upper Saddle River, N.J: Pearson Prentice Hall.

Kotler, P. & Armstrong, G. 2016. Principles of Marketing.16th ed. Boston: Pearson Education Limited.

Kardes, F.R., Cronley, M.L. & Cline, T.W. 2011.Consumer behaviour. New York, NY: South-Western/Cengage learning.

Kerin, R.A., Hartley, S.W.&Rudelius, W. 2009. Marketing: The core. New York, NY: McGraw Hill.

Kimmel, A.J. 2018.Psychological Foundations of Marketing: The Keys to Consumer Behavior. New York, NY: Routledge.

Kumar, P. 2010. Marketing of hospitality and tourism services. New Delhi: Tata McGraw Hill.

Kushwaha, P. & Singh, R. 2018. Purchasing behaviour of farmers towards non-durable inputs: a case study. *Children*,8(20):8630.

Lamb, C.W., Hair, J.F. & McDaniel, D.C. 2011. Marketing.11th ed. New York, NY: South-Western, Cengage Learning.

Lamb, C.W, Hair, J.F. & McDaniel, D.C. 2012. Essentials of marketing.7th ed. New York, NY: Cengage Learning.

Lamb, C.W, Hair, J.F., Boshoff, C., Terblanche, N., Elliott, R.&Klopper, H.B. 2015. Marketing.5rd ed. Cape Town: Oxford

Landsbaum, M. 2004. Streetwise low-cost marketing. New York, NY: FTW.

Lange, L. 2018. September Month report on NWK mechanisation.

Lantos, G.P. 2011. Consumer behaviour in action: Real-life applications for marketingmanagers. New York, NY: M.E. Sharpe.

Locke, E.A. & Schattke, K. 2018. Intrinsic and extrinsic motivation: time for expansion and clarification.*Motivation Science*. http://dx.doi.org/10.1037/mot0000116 Date of access: 23 Oct. 2018.

Louw A. 2013. Finance and Farm Management. Johannesburg: Standard Bank.

Mahajan, N. 2013.The thinker interview with Phillip Kotler. The father of marketing.http://knowledge.ckgsb.edu.cn/2013/10/08/marketing/philip-kotlerDate of access: 21 Aug. 2018.

Paine, M. 2017. What are the different models of consumer behaviour? https://bizfluent.com/info-8083297-different-models-consumer-behavior.htmlDate of access: 3 Mar. 2018.Nugroho, A.R. & Irena, A. 2017. The impact of marketing mix, consumer's characteristics, and psychological factors to consumer's purchase intension on Brand "W" in Surabaya.http://publication.petra.ac.id/index.php/ibm/article/view/5874 Date of Access: 24 Oct. 2018.

Osemeke, M. & Adegboyega, S. 2018. Critical review and comparism between Maslow, Herzberg and McClelland's Theory of Needs. *Funai Journal of Accounting, Business and Finance*, 1(1):161-173. https://www.fujabf.org/wp-content/uploads/2018/01/Critical-Review-and-Comparism-between-Maslow-Herzberg-and-McClellands-Theory-of-Needs.pdfDate of access: 25 Oct. 2018.

Pallant, J.F. 2007. Development and validation of a scale to measure perceived control of internal states. *Journal of Personality Assessment*, 75(2):308-337.

Peter, J.P. & Donnelly (Jr), J.H. 2011.A preface to marketing management.12th ed. New York, NY: McGraw-Hill.

Peter, J.P. &Olson, J.C. 2005.Consumer behaviour and marketing strategy.7th ed. New York, NY: McGraw-Hill.

Patil, Vivek H., Singh, S.N., Mishra,S. and Donovan, T. 2008a. Efficient theory development and factor retention criteria: a case for abandoning the

‘eigenvalue greater than one’ criterion.*Journal of Business Research*, 61(2):162-170.

Patil, Vivek H., Singh, S.N., Mishra,S. & Donovan, T. 2008b. The ParallelAnalysisEngine. Lawrence, KS: Kansas University. https://analytics.gonzaga.edu/parallelengine/ Date of access: 10 Sep. 2018.

Quester, P.G., Pettigrew, S. & Hawkins, D.I. 2011. Consumer behaviour: Implications for marketing strategy. 6th ed. North Ryde: McGraw Hill.

Ramaphosa, C. 2017. ANC's decision on land expropriation without compensation a radical move. ANC National Conference. 21 December 2017. https://ewn.co.za/2017/12/21/anc-s-decision-on-land-expropriation-without-compensation-a-radical-move Date of access: 19 Oct. 2018.

Rankin, J.M. 2018. Agricultural Machinery Price Comparisons. AGFACTS. August 2018.

Senwes. 2018. *Good results and increase capital expenditure* [Press release]. 27 June. Available at: http://www.senwes.co.za/en-ZA/News/Article/View/good-results-and-increased-capital-expenditureDate of access: 10 Feb. 2019.

Rubadevi, S. & Palanisamy, T., 2018. Factors influencing preference of fertilizers in erode district. *Global Journal for Research Analysis*, *7*(3):77-80.

South Africa (SA). 2018. Minimum sectoral wages: Agriculture, Forestry & Fisheries. http://www.labour.gov.za/DOL/downloads/legislation/sectoral-determinations/basic-conditions-of-employment/farmforestrywages_1march2018.pdf Date of access: 19 Oct. 2018.

South African (SA). 2013.Protection of Personal Information Act.http://www.justice.gov.za/inforeg/docs/InfoRegSA-POPIA-act2013-004.pdfDate of access: 11 Oct. 2018.

South African Agriculture Machinery Association (SAAMA). 2018. https://www.saama.co.za/ Date of access: 11 Oct. 2018.

Solomon, M.R, Russell-Bennett, R. &Previte, J. 2013. Consumer behaviour: buying, having, being. 3rd ed. London: Pearson Education.

Statisticshowto. 2018. The Kaiser-Meyer-Olkin measure of sampling adequacy. http://www.statisticshowto.com/kaiser-meyer-olkin/Date of access: 7 Oct. 2018.

Statistics South Africa (SSA). 2007. Census of Agriculture Provincial Statistics: Financial and production statistics: North West, 2007.http://www.statssa.gov.za/?page_id=1854&PPN=Report-11-02-07 Date of access: 21 Feb. 2018.

Stoll-Kleemann, S. & Schmidt, U.J. 2017. Reducing meat consumption in developed and transition countries to counter climate change and biodiversity loss: a review of influence factors. *Regional Environmental Change*, 17(5):1261-1277.

Tabachnick, B.G. & Fidell, L.S. 2007.Using multivariate statistics.5thed. Boston, MA: Pearson Education.

Trehan, M.T.R. 2007. Advertising and sales management. New Delhi: V.K Enterprises.

Vianikka, B.2015. Psychological factors influencing consumer behaviour. Kokkola: Centria University of Applied Sciences.

Van Rensburg, J.J., McConnell, C.R. & Brue, S.L. 2011. Economics: Southern African edition. New York, NY: McGraw-Hill.

Welman, C., Kruger, F. &Mitchell, B. 2010.Research methodology. Cape Town: Oxford.

APPENDIX A: LETTER OF INTRODUCTION AND INFORMED CONSENT

North-West University Business School

Factors influencing farmers' buying behaviour of agricultural tractors in the North West province

Research conducted by:
Mr. BG Grainger (28206576)
Cell: 076 617 0469
Date: 13 June 2018

Dear Participant

You are hereby invited to participate in an academic research study that is conducted by Brian Gavin Grainger a Masters student of the North-West UniversityBusinessSchool at the North-West University by answering a manual questionnaire.

The main objective of the study is to determine the factors that influence the buying behaviour of farmers when they buy a tractor for agricultural use in the North West province of South Africa. The questionnaire will consist of eight sections. Each section will determine a factor that can possibly influence the decision a farmer makes before buying a tractor. All these factors will be statistically analysedand the important factors will be determined. In determining these factors, the tractors that the dealers put on offer to the farmers' will be more purpose specific for the North West province.

By addressing the factors that influence the buying decision of farmer's the tractor dealers within the North West province should be able to run their business sustainable. The farmers on the other hand will be able to get the after sales service that they are entitled to – by having dealers with spare parts and workshops in the towns close to them.

The questionnaire will take 30 minutes to complete. Information that you provide will remain confidential; that is why you are not required to state any personal information on the questionnaire, please **do not** include your name or surname on the questionnaire.

Please note the following:

- By giving consent you give permission for the information to be usedpublicly in this dissertation.
- Results of this study will only be used for academic purposes and may be published in an academic journal. Results can be requested and we will provide you with a summary of our findings.

- Your willingness to help the researcher to obtain the information that is required for the completion of my dissertation is highly appreciated and I want to thank you in person.

Please indicate by ticking ✓ the box if you agree or X if you do not agree and choice not to partake in the study in the bottom right corner.

If you ✓ tick you agree to the following:

- You have read and understood the information provided above.
- You give your voluntary consent to participate in the study. .

Date of consent:

APPENDIX B: QUESTIONNAIRE

CONFIDENTIAL
Please do not write your name or any form of identification on the questionnaire. The questionnaire will be treated as confidential and the outcome is for research purposes only.

INSTRUCTIONS

This questionnaire represents a series of evaluation criteria a consumer/farmer might consider in making a purchase decision regarding a new or used tractor.

Every criterion should be evaluated by you, by means of five alternatives which are indicated alongside each criterion. The elective which most accurately or closely explains the statement should be crossed as indicated below (in this example below "Very important"):

Alternatives:

1 - Extremely unimportant
2 - Very unimportant
3 - Uncertain
4 - Very important
5 - Extremely important

1	2	3	4	5
			X	

Please respond to all the stated questions.

SECTION A

BIOGRAPHICAL INFORMATION

Please complete the following questions by placing an "**X**" in the appropriate square.

AGE: In what age group do you fall?

Under 25	25-34	35-44	45-54	55-64	65-74	Over 75

GENDER:

Female	Male

HOME LANGUAGE:

English	Afrikaans	Other

FARMING DETAILS:

Total number hectares of farmland that you own?			
Total number hectares of farmland that you rent?			
How many hectares are cultivated?			
How often do you purchase agricultural tractors?	Yearly	When tractor reaches certain hours	Tractor starts to break down more than expected
	On a specific preplanned schedule	In a "good" farming year	I rather rebuild than buy new tractors

Any other reasons how and when you replace/buy tractors?

……..

……..

FARMING ACTIVITIES:

How many of the following crops does the farm produce (Please add area cultivated in hectares in each option)?	Maize	Sunflower	Soya beans
	Sorghums	Wheat	Others
How many livestock is on the farm	Cattle	Sheep	Cows
	Game	Others	

SECTION B

Please indicate **the importance of each of the evaluation criteria listed below when making a purchase decision regarding tractors**. Indicate how important each criterion is by marking off against the number as indicated in the alternatives.

Alternatives:

1 - Extremely unimportant
2 - Very unimportant
3 - Uncertain
4 - Very important
5 - Extremely important

DEALERSHIP ORIENTATION

		UNIMPORTANT				IMPORTANT
1	Reputation of the dealer	**1**	**2**	**3**	**4**	**5**
2	Track record of the salesman	**1**	**2**	**3**	**4**	**5**
3	Continues business relationship with the dealer	**1**	**2**	**3**	**4**	**5**
4	Geographical presence of the dealer	**1**	**2**	**3**	**4**	**5**
5	Guarantees from the dealer	**1**	**2**	**3**	**4**	**5**
6	Possibility of a substitute loan tractor from the dealers when a new tractor breaks down	**1**	**2**	**3**	**4**	**5**
7	Reliability of the dealer	**1**	**2**	**3**	**4**	**5**
8	Loyal to a tractor brand when buying a tractor	**1**	**2**	**3**	**4**	**5**

MAINTENANCE

		UNIMPORTANT				IMPORTANT
9	Hourly rate charged by dealer	**1**	**2**	**3**	**4**	**5**
10	The speed at which “out of stock”	**1**	**2**	**3**	**4**	**5**

	spare parts are sourced					
11	Turnaround time of tractors at the dealers workshop	**1**	**2**	**3**	**4**	**5**
12	Time it takes for mobile repair units to make repairs from a specific dealership	**1**	**2**	**3**	**4**	**5**
13	Professional workmanship	**1**	**2**	**3**	**4**	**5**
14	Trained mechanics	**1**	**2**	**3**	**4**	**5**
15	Facility of dealer "workshop"	**1**	**2**	**3**	**4**	**5**
16	Common wear spare parts are kept in stock	**1**	**2**	**3**	**4**	**5**
17	Satisfactory services in the guarantee period	**1**	**2**	**3**	**4**	**5**

MECHANICAL PERFORMANCE

		UNIMPORTANT				**IMPORTANT**
18	Quality of the components and materials	**1**	**2**	**3**	**4**	**5**
19	Effective warning instrument panel with meters and gauges	**1**	**2**	**3**	**4**	**5**
20	Limited wheel slip	**1**	**2**	**3**	**4**	**5**
21	Lift's ability to handle weight as specified	**1**	**2**	**3**	**4**	**5**
22	Is the option to select the width of the tires and rims available	**1**	**2**	**3**	**4**	**5**
23	Stability of lift	**1**	**2**	**3**	**4**	**5**
24	Fuel consumption of tractors	**1**	**2**	**3**	**4**	**5**
25	Turbo-charged engine	**1**	**2**	**3**	**4**	**5**
26	Lift system fitted at the front of the tractors	**1**	**2**	**3**	**4**	**5**
27	Simple operational diagnostic system that will ease troubleshooting	**1**	**2**	**3**	**4**	**5**
28	Rated KW measurement at rear traction wheels	**1**	**2**	**3**	**4**	**5**
29	(4x4) Specification	**1**	**2**	**3**	**4**	**5**
30	Distance to "Turn-about"	**1**	**2**	**3**	**4**	**5**

ECONOMY AND FINANCE

		UNIMPORTANT				**IMPORTANT**
31	Purchase price	**1**	**2**	**3**	**4**	**5**
32	Value of trade-in on old tractor	**1**	**2**	**3**	**4**	**5**
33	Financing period	**1**	**2**	**3**	**4**	**5**
34	Interest rates	**1**	**2**	**3**	**4**	**5**
35	Running costs per kW power	**1**	**2**	**3**	**4**	**5**
36	"Total package financing costs" purchase price + finance cost	**1**	**2**	**3**	**4**	**5**
37	Spare parts cost	**1**	**2**	**3**	**4**	**5**
38	Conversion of purchase price in R/kW	**1**	**2**	**3**	**4**	**5**

39	Deposit when buying tractor	**1**	**2**	**3**	**4**	**5**
40	Buying tractor for Income Tax purposes	**1**	**2**	**3**	**4**	**5**
41	Technological equipped – Precision	**1**	**2**	**3**	**4**	**5**
42	Dealer finance available	**1**	**2**	**3**	**4**	**5**

DELIVERY SCHEDULE

		UNIMPORTANT				**IMPORTANT**
43	Time frame beforepurchases tractor is delivered	**1**	**2**	**3**	**4**	**5**
44	After delivery technical demonstration by salesman	**1**	**2**	**3**	**4**	**5**
45	Explaining post-delivery schedule (PD) of the tractor	**1**	**2**	**3**	**4**	**5**

SUPPORTING EQUIPMENT

		UNIMPORTANT				**IMPORTANT**
46	Complementary implements are readily available at the dealer	**1**	**2**	**3**	**4**	**5**

MANAGEMENT

		UNIMPORTANT				**IMPORTANT**
47	KW per hectare in order to cut on Labour cost	**1**	**2**	**3**	**4**	**5**
48	Cut-out system to protect engine	**1**	**2**	**3**	**4**	**5**
49	Operational difficulty	**1**	**2**	**3**	**4**	**5**
50	Precision GPS and monitor fitted	**1**	**2**	**3**	**4**	**5**
51	Accurate hour and fuel meters	**1**	**2**	**3**	**4**	**5**
52	Ease with which oils, fuel and other fluids can be drained or topped up	**1**	**2**	**3**	**4**	**5**

CONVENIENCE

		UNIMPORTANT				**IMPORTANT**
53	Power steering	**1**	**2**	**3**	**4**	**5**
54	Sealed cabin for dust proofing	**1**	**2**	**3**	**4**	**5**
55	Steps and handlebars fitted to safely enter and exit the tractor	**1**	**2**	**3**	**4**	**5**
56	Seating comfort (adjustable, padded, shock-absorbing seat)	**1**	**2**	**3**	**4**	**5**
57	Adjustable steering wheel	**1**	**2**	**3**	**4**	**5**
58	Glass all around the cabin of tractor - visibility	**1**	**2**	**3**	**4**	**5**
59	Air conditioning	**1**	**2**	**3**	**4**	**5**

60 Are there any other factors that strongly influence you when you consider buying a new tractor?

……

……

THANK YOU FOR YOUR TIME AND PARTICIPATION

APPENDIX C:ETHICAL APPROVAL CERTIFICATE

Private Bag X6001, Potchefstroom,
South Africa, 2520

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Web: http://www.nwu.ac.za

Research Ethics Regulatory Committee
Tel: +27 18 200 4840
Email : Ethics@nwu.ac.za

ETHICS APPROVAL CERTIFICATE OF PROJECT

Based on approval by the Economic and Management Sciences Research Ethics Committee (EMS-REC) on 05/03/2018 after being reviewed at the meeting held on 23/02/2018, the North-West University Research Ethics Regulatory Committee (NWU-RERC) hereby approves your project as indicated below. This implies that the NWU-RERC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title: Factors influencing farmer' buying behaviour of agricultural tractors in the North West province

Project Leader/Supervisor: Prof CA Bisschoff
Student: BG Grainer (28206576)

Ethics number: NWU-00270-18-A4
(Institution – Project Number – Year – Status)

(Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation)

Application Type: Single Study
Commencement date: 2018-03-05 **Expiry date:** 2021 03 04 **Risk:** Low

Special conditions of the approval (if applicable):

- The application is approved, with the understanding that the issue after the sample is in line with the POPI legislation. This ethics approval only applies to future research application.
- The committee approves the questionnaire, but advises that it should be language edited.

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- *The project leader (principle investigator) must report in the prescribed format to the NWU-RERC via EMS-REC:*
  - *annually (or as otherwise requested) on the progress of the project, and upon completion of the project without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.*
  - *Annually a number of projects may be randomly selected for an external audit.*
- *The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the EMS-REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.*
- *The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-RERC via EMS-REC and new approval received before or on the expiry date.*
- *In the interest of ethical responsibility the NWU-RERC and EMS-REC retains the right to:*
  - *request access to any information or data at any time during the course or after completion of the project;*
  - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process,*
  - *withdraw or postpone approval if:*
    - *any unethical principles or practices of the project are revealed or suspected,*
    - *it becomes apparent that any relevant information was withheld from the EMS-REC or that information has been false or misrepresented,*
    - *the required annual report and reporting of adverse events was not done timely and accurately,*
    - *new institutional rules, national legislation or international conventions deem it necessary.*

The RERC would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the RERC or EMS-REC for any further enquiries or requests for assistance.

Yours sincerely

Prof Refilwe Phaswana-Mafuya
Chair NWU Research Ethics Regulatory Committee (RERC)

APPENDIX D: EDITOR'S CERTIFICATE

Dynamic Language & Translation Specialists

Antoinette Bisschoff
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Potchefstroom
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Sunday, 28 October 2018

To whom it may concern

Re: Confirmation of language edit, typography and technical precision

The dissertation *Factors influencing farmers' buying behaviour regarding agricultural tractors in the North West province* by *B Grainger (*28206576*)* was edited for language, typography and technical precision. The referencing and sources were checked as per NWU referencing guidelines (Harvard Style).

Final, last minute corrections remain the responsibility of the author.

Antoinette Bisschoff

BA Languages (UPE – now NMU); MBA (PU for CHE – now NWU); Translation and Linguistic Studies (NWU)

Officially approved language editor of the NWU since 1998
Member of SA Translators Institute (no. 100181)

Precision ... to the last letter