Managing farm businesses

BUYING AN AGRICULTURAL TRACTOR FOR COMMERCIAL FARMING IN SOUTH AFRICA

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3190 words

Academic paper

Statement of original research:
The author declares that this is original research carried out by the authors and that it was not published elsewhere.

March 2019 - ISBN 978-92-990062-7-6
www.ifmaonline.org - Congress Proceedings

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Abstract

The agricultural tractor market in South Africa and more particular the landlocked bread basket status of the North West province, near the productive Gauteng area is fiercely competitive with all the main manufacturers of tractors competing in this province. This led to the main objective of this study, namely to determine the factors that influence the buying behaviour of farmers in the North West province when they decide to purchase an agricultural tractor. The literature is founded in the buyer decision making process. The empirical study used quantitative research consisting of a questionnaire that captured responses on a 5-point Likert scale. The questionnaires were distributed to the study population at farmer days and study group meetings. The results showed that 62% of the farmers are between the age of 35 and 54 years. The farmers indicated that financial concerns rate high in their decision making as they tend to buy agricultural tractors in "good" farming years. The results also indicated that the most important buying behavioural influences when a farmer buys a tractor are Economy and finance, Maintenance, Tractor convenience, Tractor management system, Dealer orientation, Mechanical performance, Delivery functionality and Infrastructure and supporting equipment.

Keywords*:* commercial farmer, buyer behaviour, tractor, factors, decision making

INTRODUCTION

Agriculture in South Africa

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 largely 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 1 946 750 hectares being planted, followed by sunflower (718 500 hectares), soya beans (502 800 hectares), groundnuts (22 600 hectares), sorghum (48 500 hectares) and dry beans (34 400 hectares). The total hectares under cultivation in South Africa in the summer rainfall area was 3 273 550 hectares in 2016 (Adapted from SAGIS, 2016:2).

Agriculture has always been a steady contributor to the South African Gross Domestic Product and in 2016 this contribution increased by almost half a percent (SA, 2017b). The agricultural contribution to the GDP for the last eight years is shown in Table 1.

Table 1: Agricultures Total value added to Economy

Year	Total value added	Contribution of agriculture to value added	
	R million	R million	As percentage
2009	2 277 146	56 055	2,5%
2010	2 494 860	52 001	2,1%
2011	2 725 022	55 066	2,0%
2012	2 939 640	59 713	2,0%
2013	3 183 433	63 321	2,0%
2014	3 418 061	70 755	2,1%
2015	3 625 467	72 235	2,0%
2016	3 869 460	94 408	2,4%
2017	4 171 729	106 421	2,6

Source: SA (2017a)

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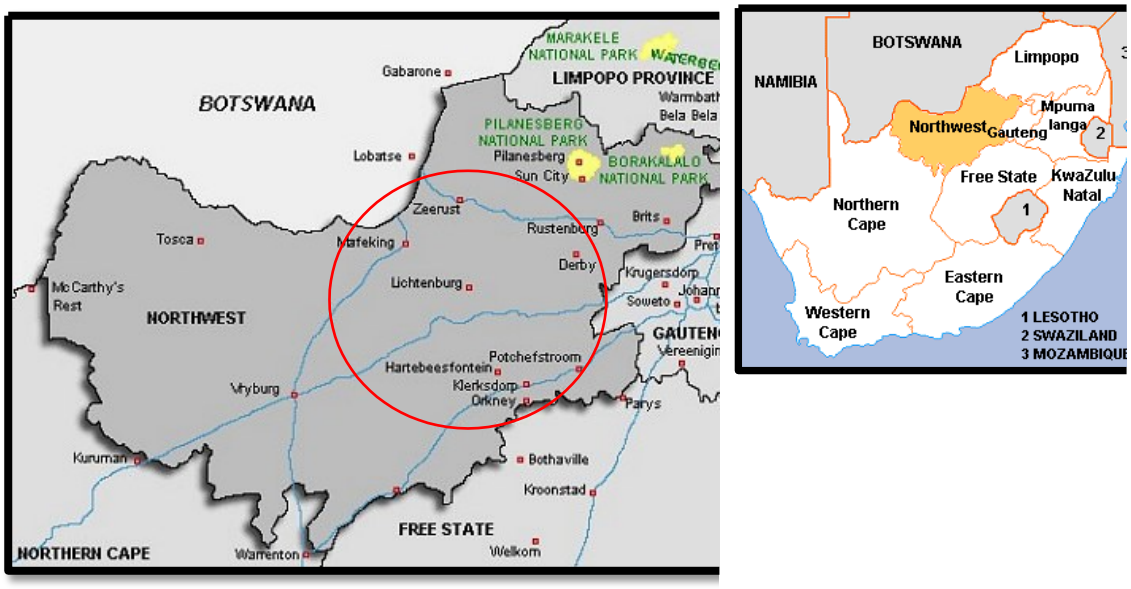
The North West Province

The North West Province is one of the nine provinces in South Africa. Farming consists mainly of extensive maize production, while sunflower, wheat (under irrigation), soya, dry beans, sorghum and extensive cattle farming form the main farming activities. Focussing on yields, the North West province, as reported by the Department of Agriculture, Forestry and Fisheries, has the second largest total field crop hectares in South Africa; some 1 573 497 hectares are used for agricultural commodities. In comparison to the whole country during the 2016/7 season, the North West farmers planted 716 000 hectares of summer rainfall crops. These hectares consisted of maize (white and yellow) (440 000 hectares), sunflower (245 000 hectares), soya beans (15 500 hectares), groundnuts (9500 hectares), sorghum (3000 hectares) and dry beans (3000 hectares) (DAFF, 2017).

Figure 1: Area of farmers that participated in the study



Sources: Grainger (2018); Worldlicenceplate (2017)

The agricultural business environment

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 not knowing what is going to be their fate in the future. 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 machinery. Numbers decrease while Kw increases per unit. 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 case 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.

Agriculture in South Africa is highly mechanised, and the infrastructure of the mechanised agriculture industry is well developed in the rural areas. Farmers are working more hectares with bigger kilowatt tractors because of economy of scale and the constant pressure to supply more commodities to feed the growing population. 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. Even the extensive farming has hectares to cultivate and requires a mechanised approach; hence a market for agricultural tractors and accompanying equipment exists in this part of the country. The mechanisation industry in South Africa has three different sectors. They are:

- Sales of agricultural whole goods 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 agricultural tractor sales in South Africa since 2010 are shown in Table 2.

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

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Table 2: Sales of agricultural tractors in the North West and South Africa

Year	Total Sales (units)	North West Province (units)	Percentage North West sales of total sales
2010	5,155	445	9%
2011	7,379	904	12%
2012	7,899	885	11%
2013	7,515	561	7%
2014	7,466	567	8%
2015	6,602	383	6%
2016	5,854	296	5%
2017	6,362	379	6%
Mean	**6,779**	**553**	**8%**
Total	**54,232**	**4,420**	**8%**

(Source: SAAMA, 2018).

Regarding 2018, 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. In the North West province, a total of 4,420 tractors were sold since 2010; this represents an annually mean of 553 tractors sold. However, significantly fewer tractors are being sold every year showing a steady decline from, 904 units in 2011 to 296 in 2016. In the North West province cultivating 22% of the total hectares in South Africa while, on average, Table 2 shows that these farmers only bought 8% of the agricultural tractors. North West farmers buy less tractors than the farmers in other parts of the country. Therefore, pro rata they cultivate more hectares with their tractors. This means that in practice the North West farmers keep their tractors in service much longer and that their tractor fleets are aging faster than their counterparts in the rest of the country. This is worrisome as older tractors have higher maintenance cost and higher break-down frequencies; this negatively influences these farmers' cost of production. Another worrying factor is the consequences of a poor crop yield as a result of the drought resulted in the farmers (as potential tractor buyers) to be faced with carry over debt (compounding debt from the one year to the next). In reality, these farmers are cash strapped and do not

engage in upgrading agricultural equipment in their struggle against the high debt leverage ratio. De Jager (2016) illustrates that many North West farmers are still attempting to recover from one of the worst droughts ever in the 2014/2015 season when only 403 mm of rain fell in the province.

It is also noteworthy that the traditional geographic boundaries of the once cooperatives no longer exist and that these agribusinesses now compete strongly with similar product offering businesses; a tractor is one such product offering. The once competitive advantage of the cooperatives (of which most now operate in a company structure), regarding 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 private institutions like banks. The market is now an open and highly competitive market. The tractors manufacturers John Deere, New Holland, Case, Landini, Agrico and Massey Ferguson are competing for the same buyers in the North West province.

This study focuses on the whole goods sector in the selected area of the North West Province of South Africa (see Figure 1). More particularly the focus is on the buying behaviour of farmers when they embark on the journey to buy an agricultural tractor.

PROBLEM STATEMENT

The drought and the fact that the farmers have limited funds available to buy tractors resulted in fierce competition among dealers in the mechanisation sector, and in particular the tractor market. This necessitates that local agricultural business selling tractors must understand the factors that influence the buying behaviour of farmer' 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). However, limited buying behavioural studies have recently been done, and with the changing agricultural environment, advances in technology, and other influences, marketers should strive to answer the core research question on this study, namely "What are the key factors influencing the buying behaviour of farmers in the North West province when they decide to buy an agricultural tractor?"

OBJECTIVES OF THE STUDY

The 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.

RESEARCH METHODOLOGY

Research design

A quantitative research methodology was followed using a structured questionnaire. The questionnaire postulated possible important criteria for buying an agriculture tractor on which the farmers had to respond by indicating the importance of each of the criteria on a five-point Likert scale. Data were collected during farmer days and meetings of farmer study-groups. The researcher contacted the chairmen of the different farmers associations and obtained permission to attend the meeting, explain the purpose of the study, and to distribute the questionnaires to the attending farmers. Farmers were requested to complete the questionnaire after the meeting and to place the completed questionnaires in the collection bin. A total of 119 usable questionnaires were collected. 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.

Ethical clearance

The study was evaluated by the Ethics Committee of the Faculty of Economic and Management Sciences Research at the North-West University, Potchefstroom Campus. The study was categorised as a low-risk study and the ethical clearance number NWU-00270-18-A4 was issued.

LITERATURE STUDY: FARMER BUYER DECISION-MAKING PROCESS

The decision-making process of capital equipment (such as a tractor) is intense because of the technical, financial and operational criteria the farmer needs to consider (Lamb et al., 2015:84). The buying behavioural process (also for a capital product such as a tractor) consists of recognising the need to replace the tractor, then searching for information, evaluating the alternatives (in a highly competitive product offering environment where multiple replacement tractors are available), selecting the dealer where the purchase will be made, eventually buying the tractor, and finally the post purchase process where farmer

must evaluate whether his decision of buying the specific tractor from a specific dealer, was the right one or not (Kotler and Armstrong, 2017). As a tractor is a high-value product, high levels of buyer involvement during the buying decision making process exists. These phases in the buying process are discussed and applied below.

- **Recognise the need**: Some problem arises that triggers the initial need for a new tractor. Typically, the realisation of high maintenance costs, low productivity of a current tractor of just the age of the tractor could result in the fact that the farmer realises that, at present, the farmer's tractor fleet is not satisfactory (Du Plessis, 2011:23). The farmer also realises that a new tractor could eradicate the limitations of the current fleet.
- **Gather information:** This important stage exposes the farmer to a variety of attractive options; this is especially true in highly competitive markets such as the agricultural tractor market in the North West province where multiple manufacturers and credible dealers compete for tractor sales. Farmers consider the full marketing mix by comparing product characteristics, prices and payment options), services and other value-adding features offered by dealers and manufacturers.
- **Evaluate alternatives:** The information that was gathered by the farmer must now be organised to assist the farmer with the decision process. The farmer can, for example, draw up a comparative table, revisit the dealers, visit other farmers with similar tractors to gain insight from these farmers are reference groups to assist in the final choice of tractor. In this evaluation process, the farmer uses important attributes to compare and evaluate all the attractive options and to eliminate tractors that do not fit into these attributes are eliminated.
- **Selecting the dealer:** The farmer has decided which tractor to purchase, now the next decision of who should be the supplier of the tractor needs to be decided. Here the favourite choice may be unseated by a close competitor; although the farmer may prefer tractor A, the fact that its dealer may not be located close by could result in the farmer opting for tractor B who is supplied by a dealer nearby (Du Plessis, 2011:34). This is the final stage before the purchase decision is made. Once the final decision is made, the purchase is affected and the farmer parts with his money and becomes a new tractor owner. This is a stressful experience because attractive alternatives have been discarded in the process (Kotler and Armstrong, 2017).

- **Post purchase process:** Buying a tractor is one of the most expensive transactions a farmer has to make. High valuer transactions lead to anxiety because the farmer needs to reassure him/herself that the correct choice was made (Du Plessis and Rousseau, 2005:121). Typical post purchase behaviour then includes (Kole, 2013:35):
    - Product use to confirm product performance expectations;
    - Product evaluation of all product characteristics and accompanying services; and
    - Repeat purchase or loyalty where the farmer will base future purchases on the satisfaction derived from the current tractor (Blythe, 2013:327).

DISCUSSION OF RESULTS

Demographic profile

Some 38.7% of the farmer' fall into the age category of 45-54 years old while 23.5% fall into the age category 35-44 years. This is important because it indicates that the "next generation" are already actively involved with the farming.

Farming activities

The farming activities of the respondents appears in Table 3.

March 2019 - ISBN 978-92-990062-7-6
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Table 3: Farming activities of North-West province farmers

Farm size	Mean hectare	Mean %
Hectares owned	1195	84.2%
Hectares rented	223	15.8%
Hectares cultivated	1117	78.7%
Commodity cultivated	**Mean hectare**	**Mean %**
Maize	622,87	55.8%
Sunflower	269,41	24.1%
Soya beans	61,34	5.5%
Sorghum	43,70	3.9%
Wheat	83,61	7.5%
Others	40,03	3.6%
Livestock	**Mean number**	**Mean %**
Cattle	105,28	88.5%
Sheep	18,22	15.3%
Game	0,35	0.3%
Others	0,56	0.5%

The farmers mostly own the majority of the farm, renting some additional hectares and cultivate on average 78% of the arable land. Maize is clearly the most important crop while cattle adds livestock to the mixed farming enterprise.

Tractor buying behaviour

Interestingly, 28.6% of farmers buy tractors in a "good" farming year; this indicates affordability considerations. In this regard, the significant, more positive projections in agricultural yields between November 2017 and December 2017 shows the volatile role agricultural conditions play on tractor sales. During this period, South African tractor sales expanded by 19% (year-on-year) in December 2017 (with 417 units sold) opposed to a decline of 26% (year-on-year) in the previous month (Silobo, 2018).

Planned replacement or age of the tractor also plays a role as 25% of the farmers indicated that they will buy tractors when the tractors reach a certain number of working hours. The majority of the farmers, however, indicate that maintenance cost is the major criterion when replacing a tractor. Here 55% reported that they replace a tractor when its

maintenance costs are unacceptably high. They also stated that by replacing tractors before a certain number of working hours these maintenance costs can be limited.

Also, the farmers' buying preferences were also measured against eight important criteria that could influence their buying decision. These preferences and its importance in the buying decision is shown in Table 4 below. (The table is sorted in descending order of importance based on the respective calculated mean values in percentage format.)

Table 4: Factors influencing farmers' buying behaviour

Criterion and description	Importance (%)
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	79.6%
Maintenance – How important is the overall maintenance when buying a tractor.	79.2%
Convenience – How does convenience aspects like air-conditioning influence the buying decision.	77.4%
Management system – How important is it that the tractor has a user-friendly management system. How does it impact the buying decision?	77.2%
Dealership orientation – How important is the dealership when making a buying decision?	75.8%
Mechanical performance – How important is the mechanical performance of the tractor when making a buying decision?	74.4%
Delivery functionality – How important is it that the dealers explain the functionality of the tractor at delivery?	65.2%
Infrastructure and supporting equipment – The fact that the dealer has supporting equipment. How does it influence the buying decision?	59.1%

From the results, it is clear that, firstly, criteria such as economy, finance and maintenance are important considerations. Secondly, product performance features like convenience to work with the tractor, a user-friendly tractor management system and mechanical performance are also important considerations. Thirdly, Dealership issues such as

March 2019 - ISBN 978-92-990062-7-6
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dealership orientation, functional delivery and dealer infrastructure plays an important role when a farmer buys a tractor.

SUMMARY

A tractor is an expensive capital investment and facilitates a high-involvement buying decision. Dealers should be knowledgeable about how farmers buy tractors and what is important to negotiate a sale successfully. This is even more important in the North West province of South Africa where competition among manufacturers and dealers are rife. The tendency of farmers in this province to also keep their tractors working longer also negatively influences potential tractor sales, either due to lower liquidity levels of farmers in this province or to slower replacement policies. However, statistics show that the aging North West province tractor fleet does offer opportunities because sooner than later farmers will have to replace tractors in their fleets to maintain their farming activities. The dealers should be ready to capitalise when that happens.

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