Annexure B

The application of farm business analysis to facilitate goal orientated extension services to wool sheep farmers: A case study

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Key words: Goal orientated extension service, farm business analysis, economic results, gross margin, net farm income, efficient use of resources.

ABSTRACT

This paper proofs the explicit success of goal orientated extension services to wool sheep farmers. In this case study, it is clear that the whole group benefitted from the goal orientated extension service. The individual farmer improved more than the group average. He managed a decrease of 42.74 % with the Directly Allocated Variable Costs (DAVC) in comparison with the group average decrease of 0.72%. The Overhead Costs (OC) of the farmer increased with 33.76% in comparison with the group average increase 52 91%. The major impact was the 244.47% increase in the Net farm income (NFI) of the farmer in comparison of the 114.68% increase of the group average.

Farm business analysis provides a comprehensive analysis of different aspects of the farming enterprise to assist the advisor (Extension officer) to deliver a focussed and result driven extension program.

1. INTRODUCTION

Most sheep farming enterprises follow the same farming practices year after year. If a proper economic analysis of the business is not done regularly, the farmer believes that the existing farming practice is the best for the specific farming conditions. Comprehensive economical and management analysis are done by the National Wool Growers' Association of South Africa (NWGA of SA). It is mainly to assist farmers in study groups measuring there performance against themselves and the group average annually. Farm business analysis play a huge role in preventing the stagnation of out dated practises and improves the efficiency of current production systems.

2. PURPOSE

For the farm business analysis, economic- and management data is used. It is an important tool to provide goal orientated advice to farmers in a study group. This is used to calculate the enterprise analysis of all the enterprises of the farming business leading the net farm income. It consists of the Gross Production Value (GPV), Directly Allocated Variable Costs (DAVC), Overhead Costs (OC) and the Net Farm Income (NFI). A report is then compiled and the participants are informed of the detail results. The deviations from the norms are identified and possible solutions to the problem are provided. These results are then followed up by the

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Production Advisor to assist with solutions. The study group averages also help to define different production norms in a specific area. In this case study the results are clearly demonstrated.

3. METHODOLOGY

Farm business analysis and management data of four years (2015/16 to 2018/19) were analysed. The farm data analysis was done with the NWGA of SA enterprise analysis program. This program was developed over a couple of years to give farmers comprehensive and appropriate economic and management information about their farming enterprise. The study group concept and the importance of study groups were introduced to manage focused extension and support to farmers (Geyer, 2009:7; Grobbelaar & Koch, 1989:13-18; Jordaan, 2012:48-57; Marra, Pannel & Abadi Ghandim, 2003:215-234; Stevens & Treurnicht, 2001:104-114; Stones & Terblanche, 2012:58-67; Terblanche, 2007:94-107; Tshibalo, Batha & Geyer, 2017; Zwane, 2012:16-24).

This case study will focus on two categories: a) The one individual farmer and b) The group average. The results of the farmer will be discussed separately followed by the results and discussion of the group average.

The statistical analysis was performed with a trend percentage analysis (Anon, 2020:1-6). The trend percentages are similar to horizontal analysis except that comparisons are made to a selected base year or period. A trend percentage is a type of horizontal analysis that shows a change in financials over a period of time. The first or earliest year of the trend is the "base year" with which you compare the amount in each subsequent year.

Trend percentages are useful for comparing financial statements over several years because they disclose changes and trends occurring through time. Trend percentages, also referred to as index numbers, help to compare financial information over time to a base year or period.

Trend percentages can be calculated by:

a) Selecting a base year or period.
b) Assigning a weight of 100% to the amounts appearing on the base-year financial statements.
c) Expressing the corresponding amounts on the other years' financial statements as a percentage of base-year or period amounts. Compute the percentages by Analysis year amount / base year amount and then multiplying the result by 100 to get a percentage.

These trend percentages indicate the changes taking place in the organization and highlight the direction of these changes. Percentages provide clues to an analyst about which items need further investigation or analysis. Such changes generally indicate areas worthy of further investigation and are merely clues that may lead to significant findings.

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4. Results:

4.1 Overview of the economic results of the project.

The results are presented in Table 1 and Figure 1 below.

Table 1: The economic analysis results of the Farmer and the Study Group (2016 - 2019).

YEAR	2016		2017		2018		2019	
UNIT	R/SSU		R/SSU		R/SSU		R/SSU	
CATERGORY	Farmer	Group Average	Farmer	Group Average	Farmer	Group Average	Farmer	Group Average
GPV	634.10	660.97	675.98	965.25	727.01	865.52	806.62	1038.47
DAVC	283.81	236.74	341.90	292.56	230.55	212.43	162.52	235.04
GM	350.29	433.23	334.08	672.96	496.46	653.09	644.10	803.42
OC	262.05	205.03	340.08	290.98	465.80	249.98	350.51	313.52
NFI	85.23	228.20	-6.00	381.71	30.66	388.11	293.59	489.91

Where:
GPV: Gross Production Value
DAVC: Directly Allocated variable Costs
GM: Gross Margin
OC: Overhead Costs
NFI: Net farm Income
R/SSU: Rand per Small Stock Unit

Table 1 unpacks the results of the project. The first year of 2016 is used as the baseline to determine the impact of the goal orientated extension service. The categories under investigation is the:

- Gross Production Value (GPV) that refers to the product income, the trade income and the capital change of the enterprise.
- Directly Allocated Variable Costs (DAVC) that indicates all the costs directly allocatable to the specific enterprise.
- Gross Margin (GM): The GPV minus the DAVC = GM. The gross margin is a direct result of the financial performance of the specific enterprise.
- Overhead Costs (OC): The OC are the agricultural related costs that are not directly allocatable to one specific enterprise.
- Net Farm Income (NFI): The GM minus the OC = NFI. The NFI means that all the agricultural costs are paid. Now all the personal expenditures can be executed to reach the farm profit.

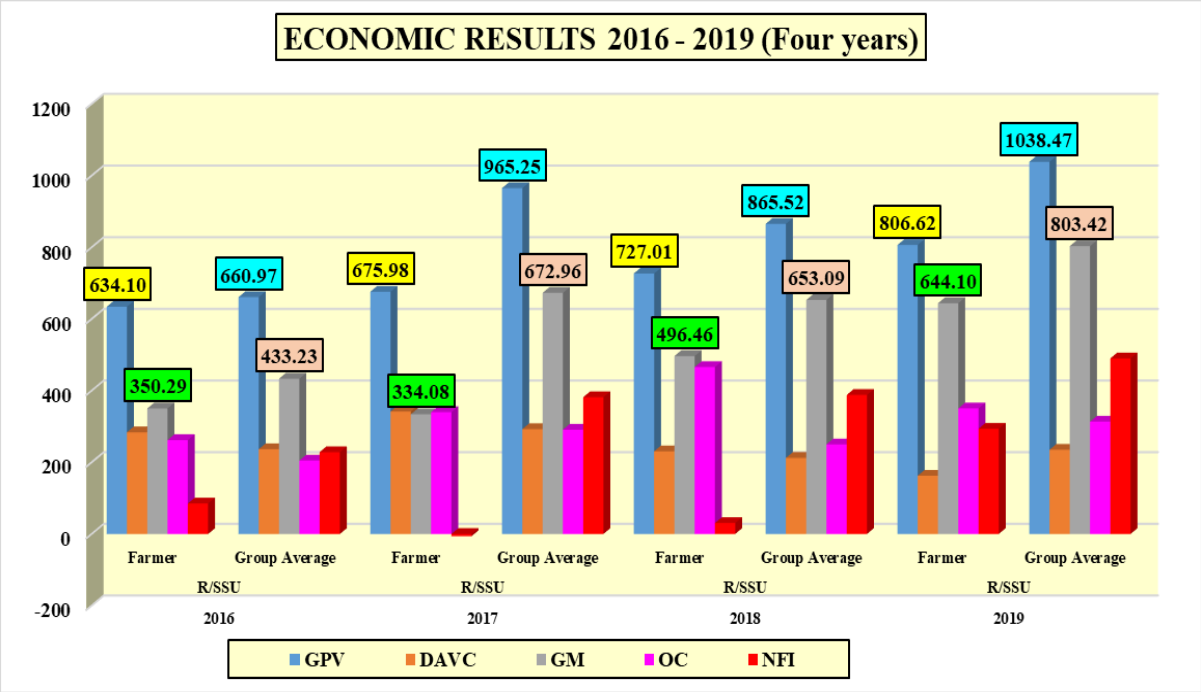

Figure 1: Overview of the economic results 2016 -2019.

Figure 1 illustrates the economic results of the project. The results of the farmer show an increase in the GPV from 2016 (R634.10/SSU) up to 2019 (R806.62/SSU). The GM of the farmer in 2016 (R350.29/SSU) declined in 2017 (R334.08/SSU) and then increased up to 2019 (R644.10/SSU).

The results of the group average show an increase in the GPV from 2016 (R660.97/SSU) up to 2019 (R1038.47/SSU). The GM of the group average in 2016 (R433.23/SSU) also increased up to 2019 (R803.43/SSU) with a slight decrease in 2018 (R653.09/SSU).

It is important to note that the results of the group average is every time higher than the same results of the farmer. The farmer thus required a specific goal orientated extension service to create a positive impact over the four years (Abdu-Raheem & Worth, 2012:36-47; Geyer, 1998; Geyer, 2002).

Table 2: The trend percentages analysis for the farmer and the group average.

YEAR	2016		2017		2018		2019	
UNIT	R/SSU		R/SSU		R/SSU		R/SSU	
CATERGORY	Farmer	Group Average	Farmer	Group Average	Farmer	Group Average	Farmer	Group Average
GPV	100.00	100.00	106.60	146.04	114.65	130.95	127.21	157.11
DAVC	100.00	100.00	120.47	123.58	81.23	89.73	57.26	99.28
GM	100.00	100.00	95.37	155.34	141.73	150.75	183.88	185.45
OC	100.00	100.00	129.78	141.92	177.75	121.92	133.76	152.91
NFI	100.00	100.00	-7.04	167.27	35.97	170.07	344.47	214.68

The base year trend percentage is always 100.00%. A trend percentage of less than 100.00% means the balance has decreased below the base year level in that particular year. A trend percentage greater than 100.00% means the balance in that year has increased over the base year.

4.2 FARMER: Economic results of the farmer in the project.

Table 3: The Percentage increase/ decrease between the first and last analysis

YEAR	2016		2017		2018		2019	
UNIT	PERCENTAGE (%)		PERCENTAGE (%)		PERCENTAGE (%)		PERCENTAGE (%)	
CATERGORY	Farmer	Group Average	Farmer	Group Average	Farmer	Group Average	Farmer	Group Average
GPV	100.00	100.00	6.60	46.04	14.65	30.95	27.21	57.11
DAVC	100.00	100.00	20.47	23.58	-18.77	-10.27	-42.74	-0.72
GM	100.00	100.00	-4.63	55.34	41.73	50.75	83.88	85.45
OC	100.00	100.00	29.78	41.92	77.75	21.92	33.76	52.91
NFI	100.00	100.00	-107.04	67.27	-64.03	70.07	244.47	114.68

Table 3 presents the results of the final effect of the goal orientated extension service from 2016 up to 2019. The GPV of the farmer increased with 27.21% from R634.10/SSU in 2016 up to R806.62/SSU in 2019. The most important result is that the farmer managed to decrease the DAVC with 42.74% from R283.82/SSU in 2016 to R162.52/SSU in 2019. The OC increased with 33.76% from R262.05/SSU in 2016 up to R350.51/SSU in 2019. The major impact of the goal orientated extension service resulted into a 244.47% increase in the NFI from R85.23/SSU in 2016 up to R293.59/SSU in 2019.
The Gross Production Value (GPV) by the farmer increased by 27.21% (127.21-100.00) over the four year period. If the trend is looked at over a two year period (2016 and 2017) then the GPV by the farmer increased by 6.6% (106.60 – 100.00).

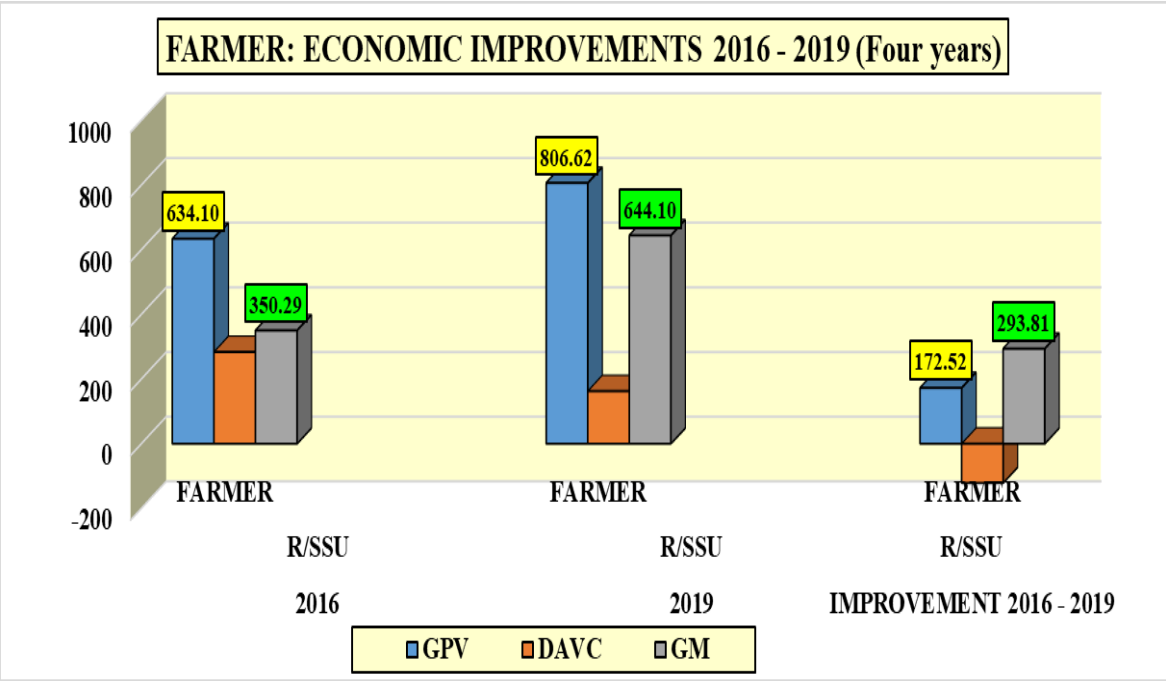

Figure 2: Farmer: Economic Improvements 2016 – 2019.
Figure 2 illustrates the economic results of the farmer from 2016 to 2019. The 27.21% increase in the GPV and the 42.74% decrease in the DAVC resulted into and 83.88% increase in the GM from R350.29/SSU in 2016 up to R644.10/SSU in 2019.

4.3 GROUP AVERAGE: Economic results of the Group Average in the project.

Table 3 presents the results of the final effect of the goal orientated extension service from 2016 up to 2019. The GPV of the group average increased with 57.11% from R660.97/SSU in 2016 up to R1038.47/SSU in 2019. The DAVC of the group average decreased with 0.72% from R236.74/SSU in 2016 to R235.04/SSU in 2019. The OC increased with 52.91% from R205.03/SSU in 2016 up to R313.52/SSU in 2019. The NFI increased with 114.68% from R228.20/SSU in 2016 up to R489.91/SSU in 2019.

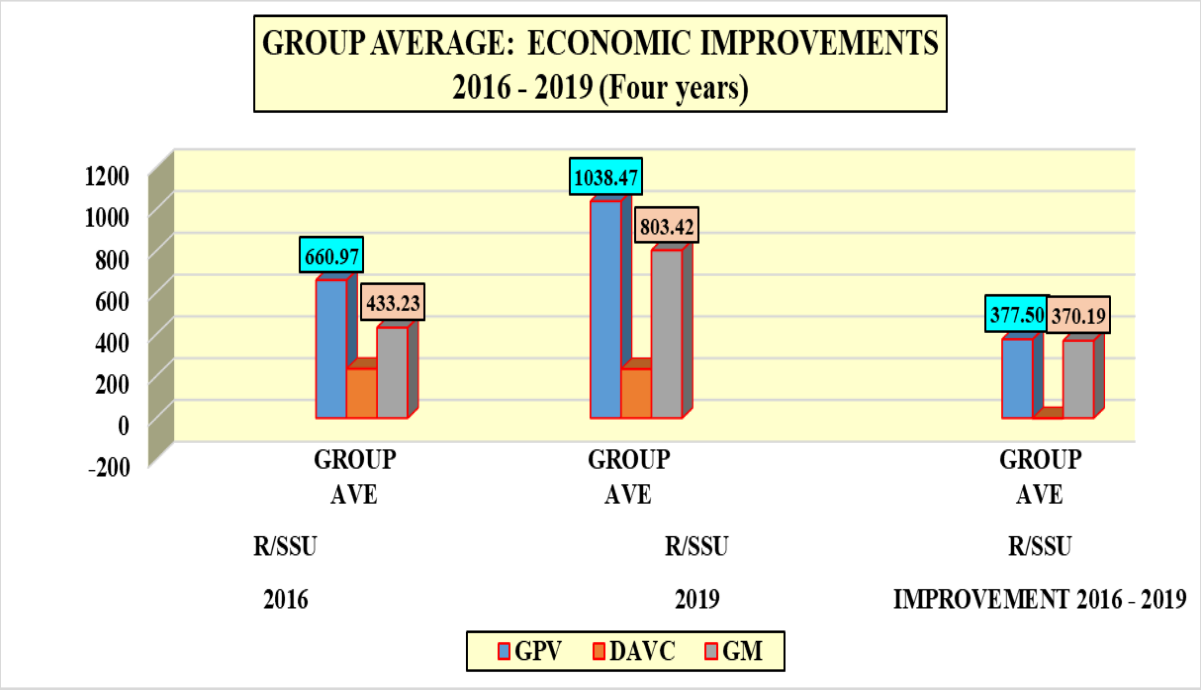

Figure 3: Group Average: Economic Results 2016 – 2019.

Figure 3 illustrates the economic improvements of the group average. From this graph it is evident that the GM increased with 85.45% from R433.23/SSU in 2016 up to R803.42/SSU in 2019.

Overhead Costs (OC) vary quite significantly from year to year and is therefore difficult to explain the specific reasons for this increase, however labour cost and fuel cost are the biggest contributors to the increase in overhead costs. In the case of the farmer his labour cost is way above the norm for a stock farm and he needed to look at the productivity of his workers. This was addressed by training the workers and find ways to improve productivity. The cost of electricity also played a significant role in the rising overhead cost. Economics of scale plays an important role in containing overhead costs (Geyer & Viljoen, 1999; Geyer, 2007:54; Geyer, Van Heerden & Venter, 2011:16-19; Geyer, Van Niekerk, Henning & Coetsee, 2012:56; Geyer, 2013:98-99; Geyer & Venter, 2015:60).

5. Conclusion

In this case study, it is clear that the whole group benefitted from the goal orientated extension service. The individual farmer improved more than the group average. He managed a decrease of 42.74 % with the DAVC in comparison with the group average decrease of 0.72%. The OC of the farmer increased with 33.76% in comparison with the group average increase 52 91%.

The major impact was the 244.47% increase in the NFI of the farmer in comparison of the 114.68% increase of the group average.

Farm business analysis provides a comprehensive analysis of different aspects of the farming enterprise to assist the advisor (Extension officer) to deliver a focussed and result driven extension program. The Farmer receive a comprehensive analysis and can use this information to make decisions regarding expanding his business and management changes to improve efficient use of resources. This analysis is also used to enable improvement of the NFI of especially woolled sheep enterprises.

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