

An inquiry into the competitive performance of Smallholder wool growers: The case of the communal farmers in the Eastern Cape

By

Lwando Nkamisa



*The thesis presented in fulfilment of the requirements for the degree of MAgriAdmin in
Agricultural Economics and Management in the Faculty of Agrisciences at
Stellenbosch University*

Supervisor: Prof C.J. van Rooyen

Co-supervisor: Mr HJ Gerwel

March 2020

Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third-party rights and that I have not previously in its entirety or part submitted it for obtaining any qualification.

Date: March 2020

Copyright © 2020 Stellenbosch University
All rights reserved

Abstract:

The South African wool value chain has potential to increase its production levels from the current 50 million kg to 75 million kg per annum without negatively affecting the wool prices, according to De Beer (2018). That would create 12 500 jobs and contribute an additional R1.5 billion Rand to the agribusiness GDP. However, to achieve such a mammoth task, it must increase the number of wool sheep from 23 million to 50 million. Even though commercial farmers are the backbone of the South African wool industry, they cannot tackle such a gigantic task alone. Thus, smallholder wool growers (SWGs) need to take their rightful place within the industry and assist the sector in fulfilling its potential. Conversely, the lingering question is, how can that be done?

It is from this question that the broad objective of this study was derived, which was to analyse the competitiveness of SWGs in the former Transkei and Ciskei and assess the factors affecting their competitive performance. The specific research questions were: How is the small wool grower's competitiveness defined and measured? Are SWGs competitive? What strategies are needed to promote competitive performance for SWGs?

In order to answer these questions, the study adopted the Delphi sampling procedure and the five-step competitiveness analytical framework (Esterhuizen 2006; Van Rooyen et al. 2011; Ndou, 2012; Jafta, 2014; Abei, 2017; Dlikilili; Sibulali, 2018 and Barr, 2019). The first step of the framework was to define competitiveness. Duly, the study adopted Van Rooyen's (2008) definition. Van Rooyen defined competitiveness as "the ability of a sector, industry, firm or farm to compete by trading their products within the global environment while earning at least the opportunity cost of returns on resources employed." Therefore, the competitiveness of SWGs is their ability to compete in the wool industry, while at least breaking even on the existing trade dynamics.

The second step was to measure competitiveness. Although, scholars usually measure competitiveness at the macro-level instead of the meso- or micro-level (Bahta & Molohe, 2014). This phenomenon is due to lack of reliable data sources. Nevertheless, this study made use of data from the Cape Wool SA. The aforementioned organisation has been keeping records of SWGs data since 1997 and is under the reporting supervision of International Wool Trade Organisation (IWTO).

Consequently, the research measured the competitive performance of SWGs with the RCA (Revealed Trade Advantage) from the Cape Wool SA (1997-2018). However, to measure the SWGs competitiveness, the study modified the RCA formula. Moreover, for the broader SA wool value both RCA and RTA (Relative Trade Advantage) from FAO-STAT (1961-2017), ITC Trade Map (2001-2018). Furthermore, the RTA and RCA values of the SA wool value chain competitors such as

Australia, New Zealand and Argentina were also measured. The third RTA and RCA measurements were for the different wool categories traded in the SA wool value chain. The results revealed that the South African wool value chain continued to compete competitively, even when compared to its major competitors. It is only behind Australia and New Zealand. For example, Australia's RTA in 2018 was 55.91 and 24.48 for New Zealand, while SA's was 21.11.

Unfortunately, the results for the SWGs were not as straight forward, as the analysis showed that their competitive performance had improved significantly over the last 2 decades but at much slower rate than expected. Even though the subsector can be defined as marginally competitive from the start of the 21st century, fortunes started to improve in 2016, as the SWGs RCA values increase. For example, in 2001 the RCA value was 0.03 but in 2018 it had improved to 1.60. In order to assess the factors that helped improve the competitive performance of SWG's, the study analysed the survey results in the third step.

The survey had 45 respondents, from the whole wool value chain. Starting with 23 SWGs, followed by seven extension officers, six wool buyers, five shed leaders and four wool brokers. The SWG's come from both the former Transkei and Ciskei region. The first analysis done was the cluster analysis, which allowed the study to divide the respondents into 3 Clusters. Cluster 1 was constituted by the SWG's, Cluster 2 by the brokers, buyers and extension officers and the third Cluster was made up of the general industry. The Cluster analysis results showed that there was consensus in the views of the respondent. For example, Cluster 1 indicated that 86% the questions asked to them enhanced competitive performance, while the second Cluster cited 59%, and the general industry's average was 65%.

The last step of the framework was to develop a strategic plan for the industry. However, to make such a plan. The study had first to analyse each of the six determinants separately, and then to administer the PCA and Cronbach's alpha tests. The PCA provided the study with correlated variables from the data set, while the Cronbach's alpha test, measured the internal consistency. The Cronbach's alpha test showed that the data set had a high internal consistency as the alpha value was 0.725. The last part of the analysis was to take the 16 identified factors in step 5. That is the smallholder wool-growers strategic plan for competitive performance.

Accordingly, the smallholder wool growers' competitive performance strategic plan was created with both enhancing and constraining factors from the Cronbach's analysis. The plan included innovative approaches to improve access to finance, improving the quality and flow of information and creative ways of dealing with the challenge of communal tenure and provision of primary inputs.

Abstrakte:

Die Suid-Afrikaanse wol waardeketting het potensiaal om sy produksie vlakke van die huidige 50 000 000 kg tot 75 000 000 kg per jaar te verhoog sonder om die wolpryse negatief te beïnvloed, volgens de Beer (2018). Dit sal 12 500 werksgeleenthede skep en 'n bykomende R 1.5 miljard rand tot die agri-besigheid bydra. Om so 'n reuse taak te bereik, moet dit egter die aantal wolskape van 23 000 000 tot 50 000 000 verhoog. Alhoewel kommersiële boere die ruggraat van die Suid-Afrikaanse wolbedryf is, kan hulle nie so 'n reuse taak alleen aanpak nie. Die kleinboere moet dus hul regmatige plek binne die bedryf neem en die sektor bystaan om sy potensiaal te verwesenlik. Aan die ander kant, die voortslepende vraag is, hoe kan dit gedoen word?

Dit is uit hierdie vraag dat die breë doelwit van hierdie studie afgelei is, wat die mededingendheid van kleinboere in die voormalige Transkei en Ciskei ontleed en die faktore wat hul mededingende prestasie beïnvloed, assesser. Die spesifieke navorsing vrae was: Hoe word die kleinboere se mededingendheid gedefinieer en gemeet? Is kleinboere mededingend? Watter strategieë is nodig om mededingende prestasie vir kleinboere te bevorder?

Ten einde hierdie vrae te beantwoord, het die studie die Delphi-steekproef prosedure en die vyf-stap-kompeterende analitiese raamwerk (Esterhuizen 2006; Van Rooyen et al. 2011; Ndou, 2012; Jafta, 2014; Abei, 2017; Dlikilili 2018; Sibulali, 2018 en Barr, 2019). Die eerste stap van die raamwerk was om mededingendheid te definieer. Die studie het behoorlik van Rooyen (2008) definisie aanvaar. Van Rooyen het mededingendheid gedefinieer as "die vermoë van 'n sektor, bedryf, firma of plaas om te kompeteer deur hul produkte binne die wêreld omgewing te verhandel, terwyl ten minste die geleentheid koste van die opbrengs op hulpbronne in diens verdien." Dus, die mededingendheid van kleinboere is hul vermoë om te kompeteer in die wolbedryf, terwyl hulle ten minste gelyk breek selfs op die bestaande handel dinamika.

Die tweede stap was om mededingendheid te meet. Geleerdes meet gewoonlik mededingendheid op die makro-vlak in plaas van die meso- of mikrovlak (Bahta & Molohe, 2014). Hierdie verskynsel is te wyte aan 'n gebrek aan betroubare data bronne. Nietemin het hierdie studie ons van data van die Cape Wool SA gemaak. Die voorgenoemde organisasie hou al sedert 1997 rekords van kleinboere data en is onder die verslag toesig van Internasionale Wol Handel Organisasie (IWHO).

Gevolgtik het die navorsing die mededingende prestasie van kleinboere met die OHV (Onthulde Handel Voordeel) van die Cape Wool SA (1997-2018) gemeet. Om die kleinboere mededingendheid te meet, het die studie die "formule" verander. Verder, vir die breër SA wol waarde is beide die OHV sowel as RHV (Relatiewe Handelsvoordeel) van die FAO-staat (1961-2017), ITC-Handelskaart (2001-2018)

gebruik. Die RHV en OHV waardes van die SA wol waardeketting mededingers soos Australië, Nieu-Seeland en Argentië is ook gemeet. Die derde OHV en RHV waardes was vir die verskillende wol kategorieë wat in die SA wol waardeketting verhandel is. Die resultate het getoon dat die Suid-Afrikaanse wol waardeketting steeds kompetender meeding, selfs in vergelyking met sy groot mededingers. Dit is net agter Australië en Nieu-Seeland. Byvoorbeeld, Australië se RHV in 2018 was 55,91 en 24,48 vir Nieu-Seeland, terwyl SA se 21,11 was.

Ongelukkig was die resultate vir die kleinboere nie so duidelik nie, aangesien die analise getoon het dat hul mededingende prestasie beduidend oor die laaste 2 dekades verbeter het, maar teen baie stadiger tempo as wat verwag is. Alhoewel die Subsektor as marginaal mededingend van die begin van die 21^{ste} eeu gedefinieer kan word, het hulle in 2016 begin verbeter, aangesien die kleinboere se OHV toeneem. Byvoorbeeld, in 2001 was die OHV-waarde 0,03, maar in 2018 dit het verbeter tot 1,60. Ten einde die faktore wat gehelp het om die mededingende prestasie van kleinboere se te evalueer, die studie ontleed die opname resultate in die derde stap.

Die opname het 45 respondente vanuit die hele wol waardeketting ingesluit. Eerstens met 23 kleinboere, gevolg deur sewe uitbreidings beamptes, ses wolkopers, vyf skuur leiers en vier wolmakelaars. Die kleinboere kom van beide die voormalige Transkei en Ciskei-streek. Die eerste analise wat gedoen is, was die “Cluster Analysis”, wat die studie toegelaat het om die respondente in 3 klusters te verdeel. Cluster 1 is saamgestel deur die kleinboere, Cluster 2 deur die makelaars, kopers en voorligtingsbeamptes en die derde kluster is saamgestel uit die algemene bedryf. Die “Cluster Analysis” resultate het getoon dat daar konsensus in die sienings van die respondent was. Cluster 1 het byvoorbeeld aangedui dat 86% die vrae wat vir hulle 'n verbeterde mededingende prestasie gevra het, terwyl die tweede kluster 59% aangehaal het, en die algemene bedryf se gemiddelde was 65%.

Die laaste stap van die raamwerk was om 'n strategiese plan vir die bedryf te ontwikkel. Die studie moes eers elkeen van die ses faktore afsonderlik ontleed, en dan die PCA en Cronbach se alfa toets administreer. Die PCA het die studie gekorreleer met veranderlikes uit die data stel, terwyl die Cronbach se Alpha Toets, die interne konsekwentheid gemeet het. Die Cronbach se alfa-toets het getoon dat die datastel 'n hoë interne konsekwentheid gehad het, aangesien die Alpha-waarde 0,725 was. Die laaste deel van die analise was om die 16 geïdentifiseerde faktore in stap 5 te neem. Dit is die kleinboere wolprodusente strategiese plan vir mededingende prestasie.

Gevolgtrek is die kleinboere wol produsente se mededingende prestasie strategiese plan geskep met beide die verbetering en baie faktore van die Cronbach se analise. Die plan het innoverende benaderings ingesluit om toegang tot finansiering te verbeter, die verbetering van die gehalte en vloei van inligting

en kreatiewe maniere om die uitdaging van gemeenskaplike ampstermyn en voorsiening van primêre insette te hanteer.

Dedication

I would like to dedicate this thesis to many faceless students I have met during the course of writing this thesis. I say faceless because I may never have the opportunity to meet them again and appreciate their contribution. As minimal as it may have seemed at the time, but the jokes, the laughter, the ‘you gonna be alright’ gestures have carried me through. Thank you fellow Maties for being there for me when I needed you the most. Lastly, I would like to dedicate this thesis to my bundles of joy, the next generation Nkamisa’s, who I hope one day can out achieve me and also be Maties.

Acknowledgments

I would like to first and foremost to acknowledge Prof Vink for the opportunity to be a student in this historic and prestigious institution. Secondly, to Prof Van Rooyen who inspired me to undertake this research. Thirdly to my supervisor Mr Gerwel, without whose support I could have never finished this work.

I would also like to acknowledge the immense role played by various staff members in Stellenbosch University, from the Administrators in the Admin A building who helped me to register and the faculty of Science and Agriculture admin who helped process funding and many more from cleaners to security guards. Whose conversations I will treasure to my heart for ever.

Lastly, I would like to thank Prof Brink, Prof Schoonwinkel and Prof Vink for the financial support they provided me on my last year. When I thought the only solution was to drop out due to financial challenges you came to my rescue. Your contribution to my success will for ever be treasured. May you do likewise for many more students who will come knocking at your doors.

CONTENTS

Declaration	i
Abstract:	ii
Abstrakte:	iv
Dedication	vii
Acknowledgments	viii
List of Figures	xii
List of Tables	xiii
List of Abbreviations	xiv
Chapter 1	1
Introduction	1
1.1 Background	1
1.2 Research problem	2
1.3 Research objective	3
1.4 Research question	3
1.5 The hypothesis of the study	4
1.6 Scientific contribution	4
1.7 Outline of the study	4
1.8 The importance of the study	4
1.9 Delimitations	5
Chapter 2	6
Conceptual Framework and Literature Study	6
2.1 Introduction	6
2.2 Farm typology	6
2.2.1 Commercial farmers	7
2.2.2 Emerging farmers	7
2.2.3 Subsistence farmers	7
2.2.4 Smallholder farmers	7
2.3 Competitiveness	8
2.3.1 Definition of competitiveness	8
2.3.2 Measurement and analysis of competitiveness	9
2.3.3 Summary of ways to measure competitiveness	16
2.4 Previous studies on agricultural competitiveness	18
2.5 Conclusion	20
Chapter 3	21

Overview of the South African wool industry	21
3.1 Introduction	21
3.2 Global wool market	21
3.2.1 Global sheep numbers	21
3.2.2 World wool production	22
3.2.3 Global wool trade.....	24
3.3 History of wool farming in South Africa	27
3.4 Overview of South African wool value chain	28
3.4.1 Farmers.....	28
3.4.2 Wool brokers and traders.....	29
3.4.3 Wool buyers.....	29
3.4.4 Wool processors	30
3.5 South African wool production	31
3.5.1 South African sheep numbers.....	31
3.5.2. South African wool production	32
3.5.3 South African wool trade	34
3.6 Threats for the South African wool industry	36
3.6.1 Game farming	36
3.6.2 Policy uncertainty	37
3.6.3 Smallholder wool grower's low-quality clip.....	37
3.7 Opportunities	37
3.8 Contribution of wool to alleviating poverty	38
3.9 Conclusion	38
Chapter 4	39
Research Methodology	39
4.1 Introduction	39
4.2 Stepwise analytical framework	39
4.3 Conclusion	43
Chapter 5:	44
Analysis, findings, and results	44
5.1 Introduction	44
5.2 Definition (Step 1):	44
5.3. Measuring of competitiveness (Step 2):	44
5.3.1 The SA wool value chain RTA and RCA calculations	44
5.3.2 Comparison of competitiveness between the general wool value chain and smallholder wool producers.....	46

5.3.3 Competitive status of SWGs	47
5.3.4 Comparison of different woolen products	50
5.3.5 Comparison of South African wool industry RTA and RCA value with global players	51
5.4 Conclusion	53
Chapter 6	54
Factors affecting competitive performance	54
6.1 Introduction	54
6.2. Factors affecting competitiveness (Step 3)	54
6.2.1 Descriptive analysis	54
6.2.2 Cluster analysis	55
6.2.3 Principal component analysis	57
6.3 The Porter Competitiveness Diamond Framework (Step 4)	58
6.3.1 The production factor conditions	59
6.3.2 The demand factor conditions	60
6.3.3 The Related and supporting industries condition	62
6.3.4 The Firm strategy and rivalry conditions	64
6.3.5 The Government policies and support	66
6.3.6 The chance factor condition	67
6.4 Reliability test: The Cronbach Alpha test results	69
6.5 Summary of constraining and enhancing determinants	71
6.6 Conclusion	73
Chapter 7	74
Summary, conclusion, and recommendations	74
7.1 Introduction	74
7.2 Summary of analyses and major findings	74
7.3 Setting strategic planning to improve the competitiveness of Small Wool Growers	75
7.4 Recommendation for future studies	81
7.5 The validity of the stated hypothesis	82
7.6 Concluding remarks	83
References	1
Appendix A	9
Appendix B	18
Appendix C	19

List of Figures

Figure 2. 1: World Competitiveness Year Book 2018.....	10
Figure 2. 2: GCI pillars and categories	11
Figure 2. 4: Porter diamond model with government and chance	12
Figure 3. 1: World sheep numbers	22
Figure 3. 2: World sheep numbers	22
Figure 3. 3: Distribution of wool production by region	23
Figure 3. 4: Top 10 wool-producing countries since 1961	24
Figure 3. 5: Global wool GPV from 1961 to 2016	24
Figure 3. 6: Global wool trade from 2001 to 2018	25
Figure 3. 7: wool exporting nations from 2001 to 2018	26
Figure 3. 10: South African value chain	28
Figure 3. 11: Distribution of sheep in South Africa.....	29
Figure 3. 12: South African wool buyer market share	30
Figure 3. 13: South Africa sheep numbers.....	31
Figure 3. 14: South Africa wool production	32
Figure 3. 15: Wool production over the years.....	33
Figure 3. 16: Exports vs imports	35
Figure 3. 17: Destination of South Africa's exports	36
Figure 4. 1: Analytical framework	40
Figure 5. 1: South Africa's competitiveness status from 1961 to 2016.....	45
Figure 5. 2: South Africa's competitiveness status from 1961 to 2016.....	45
Figure 5. 3: Small wool grower's competitiveness levels.....	46
Figure 5. 4: Small wool grower's competitiveness levels.....	47
Figure 5. 5: Competitive performance of different wool categories.....	51
Figure 6. 3 Cluster comparison of production factors.....	59
Figure 6. 4 Cluster comparison of demand factors	61
Figure 6. 5 Cluster comparison of related and supporting industries conditions.....	63
Figure 6. 6 Cluster comparison of Firm strategy and rivalry conditions	65
Figure 6. 7 Cluster comparison of government policies and support determinant	67
Figure 6. 8 Cluster comparison of production factors.....	68

List of Tables

Table 2. 1: Types of farmers	6
Table 2. 2: Description of competitiveness measures.....	16
Table 2. 3: Description of competitiveness study in South Africa	18
Table 3. 1: Clean wool average prices	24
Table 3. 2: Greasy wool exports and destination in 2017/18.....	30
Table 3. 3: Distribution of commercial farmers by the province in 2017.....	33
Table 3. 4: Contribution of smallholder farmers.....	34
Table 5. 1: Commercial wool farmers and small wool growers RCA values.....	47
Table 5. 3: Comparison of SA RCA and RTA values with global major wool growers.....	52
Table 6. 1: Description based on role in the wool value chain	54
Table 6. 2: Impact rating of each cluster.....	57
Table 6. 3: Overall factor conditions impact rating	58
Table 6. 4: PCA results for the production determinant	60
Table 6. 5: PCA for demand factor analysis	62
Table 6. 6: PCA results for related and supporting industries	63
Table 6. 7: PCA results for the firm strategy and rivalry determinant.....	65
Table 6. 8: PCA for government policies and support.....	67
Table 6. 9: PCA results chance factor determinant.....	69
Table 6. 10: Cronbach's alpha reliability scores.....	69
Table 6. 11: Cronbach's alpha of correlated factors	70
Table 6. 12: Constraining and enhancing factors.....	71

List of Abbreviations

CMW- Cape Mohair and Wools
EMS- Export Market Share
DAFF- Department of Agriculture, Forestry and Fishing
DRC-Domestic resource cost
FAO – Food and Agriculture Organisation
FDI- Foreign Direct Investment
GCI -Global Competitiveness Index or report
GPV –Global Production Value
GM- Gross Margin
IMD -International Institute for Management Development
ITC- International Trade Centre
KG-Kilograms
KZN-Kwa Zulu Natal
NDP- National Development Plan
Nxi -Net Export Index
NWGA- National Wool Growers Association
PAM- Policy Analysis Matrix
PCA- Principal Component Analysis
PPP –Private Public Partnership
RCA- Revealed Comparative Advantage
RC- Relative Competiveness
RDP- Reconstruction and Development Programme
RMA- Relative Import Advantage
RTA- Relative Trade Advantage
RXA- Relative Export Advantage
SA- South Africa
SCB- Social Cost-Benefit
SWGS- Smallholder Wool Growers
US- United States
UK-United Kingdom
WEF- World Economic Forum
WGA- Wool growers' association

Chapter 1

Introduction

1.1 Background

South Africa is a significant player in the global wool value chain, even though its influence has diminished recently. The country was once the sixth most prominent producer of wool in the world. However, a combination of social, political and economic challenges has made the nation to be a shadow of its former self. Now it is only the 11th biggest producer in the Australian and Chinese dominated global wool industry. However, the type of wool produced in South Africa is a finer micron type which is used to make clothing or apparel. In this niche market, the country is only second to Australia in terms of production. Also, it has a wool clip that is world-renowned for high quality. As a result, the world textile industry, especially the high-end fashion industry, can never have enough of the nation's exports. Duly, the country is the 3rd most significant exporter of wool behind Australia and New Zealand production (Abbott & Ahmed, 1999; IWTO, 2018; FAO, 2019).

In recent years, there has been a high demand for South African grown wool, which is partly due to environmental conscious consumer market, which prefer natural than the synthetic fibers (Cape Wool, 2018). This high demand, coupled with lower global wool production, has increased prices tremendously. Producers are trying to increase production in order to take advantage of favorable prices, but production is yet to increase to the level of the 1960s. That means the industry is below its optimal level. Experts claim that South African wool value chain has the potential to increase production to 75 million kg without negatively affecting prices (de Beer, 2018).

To realize such a potential, all the value chain role players must fire at all cylinders. Unfortunately, such performance is hindered by a myriad of factors. One of these factors is the unequal access to resources, which is due to the nation's divided past. Likewise, South African wool value chain has a dualistic agricultural system (Tshoni, 2015). Where the commercial farmers produced 76% of the nation's wool clip and smallholder farmers only contributed 15% according to Cape Wools (2017).

Generally, wool value chains are some of the most complex value chains. It is estimated that wool takes 18 months to move from the producer to the consumer (Champion & Fearn, 2002). This complexity is also evident in the South African wool value chain. Typically, wool is produced by the commercial and smallholder wool growers. The farmer chooses one of three options available to them. Which are to sell through traders, sell through brokers or go to the auction and sell to the buyers. SWGs tend to sell through local traders, who buys the wool, sort it and sell it the larger brokers or straight to the action.

However, SWGs tend to fetch lower prices as the wool is unclassified or not sorted. While Commercial farmers tend to trade with wool brokers such as BKB or CMW. These brokers, the brokers usually use their own transport to collect the sorted and classed wool from the commercial farmers. The wool brokers usually sell the clip through the auction system in Port Elizabeth. Alternately farmers can access the auction system directly. The wool buyers such as G. Modiano, Lempriere and Standard wool then export the wool to markets like China, Czech Republic or Italy. It is from these countries where apparel is manufactured, which is then imported by South African retailers, where the customers can purchase them. (D'Haese, *et al*, 2001; DAFF, 2016; BKB, 2018).

Even though smallholder wool growers produce less than 15% of the national clip, they are strategic partners in the industry. As farming with woollen sheep is one of the least capital intensive and profitable farming systems in the country, therefore investing more resources to this type of agriculture would benefit the industry and the economy tremendously. This is evident from the initiative carried out by National Wool Growers Association (NWGA) with communal farmers, after the intervention production increase from 222 619 kg in 1997 to 3.8 million kilograms of wool in 2014 (De Beer & Terblanché, 2015). NWGA (2018) noted that in 2016/17 season smallholder wool growers produce increased further to 5.8 million kg, valued at R300 million.

Thus, if the industry is to realise its 75 million kg potential, it will have to capacitate these farmers, increase their access to markets and quality of produce. It was against this background that this thesis took a point of departure to assess the competitiveness of smallholder farmers within the wool value chain and develop a strategic plan to measure, monitor and improve the competitive performance of smallholder wool growers.

1.2 Research problem

South Africa is a semi-arid country, with only 16.5% of the arable land suitable for crop production. As a result, livestock farming is inevitably the mainstay of the nation's agricultural sector. For the resource-poor farmers, characterised by low skills and limited access to other factors of production, livestock is not only fashionable but is one of few profitable enterprises in their disposal. Hence, livestock farming, especially sheep production is very prominent in poverty-stricken areas such as the former homelands like Transkei and Ciskei (Ndou & Obi, 2019). Also, farming with woollen sheep is one of the most profitable and least capital-intensive enterprises for smallholder and communal farmers within rural areas (Wool Trust, 2012).

Moreover, in the former Transkei and Ciskei, there are over 50 000 smallholder wool farmer. That used to produce only 220 00 kg in the late 1990s. Due to interventions from the National Wool Growers Association, Provincial Department of Agriculture, Forest and Fisheries and other stakeholders to these SWGs now produce over 5.8 million kg annually (NWGA, 2018). This intervention has led to a host of

improvements, like in revenue, livelihoods, creation of jobs and lower levels of food insecurity (Van Rooyen et al, 2011; Rust et al, 2015; Cape Wool, 2017).

Therefore, in order to assist the agricultural industry to reach the target of creating up to 1 million jobs in 2030 as per the National Development Plan (2012) target. There is a need to improve the competitiveness of smallholder woolgrowers for the industry to reach its full potential. Still, for such objectives to be fulfilled the question of why are smallholder wool growers are not as competitive as the commercial farmers have to be answered. Also, what are the factors that inhibit SWG's to compete competitively, when identified can they be resolved? Such questions need to be answered first before the industry can reclaim its lost glory.

However, for scholars to be able to advise the wool value chain, there is a need to delve further on these challenges. That is, to measure and define competitiveness concerning not only the whole wool value chain but specifically to the small wool growers. Yet, the most challenging aspect of competitiveness, according to Siudek and Zawajska (2014) is to perform empirical measurements. In the South African agribusiness, this challenge is further compounded by a lack of literature and reliable data sources, as many scholars have measured competitiveness at the national or international level. Pienaar (2013) added that in the South African agricultural sector, there is a lack of reliable empirical data on small-scale farmers. Also, in the SA wool value chain, even though organisations like NWGA and Cape Wool SA keep reliable records for the SWGs, the data is not adequate to perform comprehensive analysis. It is against this background that the study seeks to measure, analyse and describe the competitiveness of wool growers in the meso-level, i.e. within the subsector of the wool industry sector.

1.3 Research objective

The main objective of the study was to analyse the competitive performance of smallholder wool growers in the former homelands. Specifically, to:

- Define the competitive performance of smallholder wool growers
- Measure the competitiveness of SWGs
- Assess factors affecting competitiveness
- Highlight methods of improving competitiveness performance

1.4 Research question

In an attempt to provide further clarity on the research problem, the following questions were asked:

- How is competitiveness defined in the context of the South African wool industry?
- What are the factors affecting the competitiveness of smallholder wool growers?
- How competitive is the wool industry in South Africa, and how is it measured?

- What are the possible strategies that could promote the industry's level of competitiveness concerning smaller holder farmers?

1.5 The hypothesis of the study

The following hypothesis was formulated in the study, to guide the analysis and help in the interpretation of results:

The competitive performance of smallholder wool growers is affected by multitude of factors, each factor has a potential to enhance or hinder competitiveness.

1.6 Scientific contribution

This thesis was written at a time of the continued rise of income inequality, increasing social and political tensions and a general feeling of uncertainty about the future of the South African society. Economic growth remains painstakingly slow, and unemployment is at an all-time high, commodity prices have not fully recovered from the stock market crash of 2007 and government finances are stressed. Farmers are anxious about how the state will implement the new bill on expropriation of land without compensation. Also, Prof van Rooyen always says, "If you can measure it, you can manage it-to get results; otherwise, it remains a good idea". Therefore, there is a need to measure, evaluate, analyze and define competitiveness concerning the South African wool industry. By measuring the competitiveness of the South African industry, the study will assist the sector's stakeholders in dealing with the challenges faced in the industry and utilizing the current and future opportunities in the global wool market.

1.7 Outline of the study

The study is segregated into seven chapters. Chapter one contains the introduction, problem statement, and the objectives of the study, the research questions, scientific contribution, this outline, the importance of the research and the limitations. Literature is reviewed in chapter two, while the overview of the wool value chain is chapter three. Chapter four has the analytical framework and the research design. The results are presented in both the fifth, sixth chapters. Conclusions and recommendations are drawn in chapter seven.

1.8 The importance of the study

This thesis was written at a time when the economic growth was painstakingly slow, unemployment an all-time high. The wool industry was recovering from a record-breaking drought. To compound matters, it is hit again by the zero-sum trade war between the US and China. However, it was also written at the time when wool prices were favourable, and the opportunity for growth was ample. Therefore, there was a need to measure, evaluate, analyse and define competitiveness concerning the

South African wool industry. By measuring the competitiveness of the South African industry, the study hoped to assist the wool sector's stakeholders in utilising the opportunities in the global wool market better.

1.9 Delimitations

The study aimed to assess the competitive performance of smallholder wool growers in the former Ciskei and Transkei, in the Eastern Cape Province. The study focused only on wool, even though mutton is also a complementary product of sheep farming. The analysis was done on the farm, industrial and national levels. However, many scholars have measured competitiveness on the national level due to the unavailability of the reliable data source. Therefore, the study also used data from Cape Wools SA and National Wool Growers Association (NWGA), which has reliable data of the South African wool value chain, including smallholder wool growers. Therefore, the thesis did not attempt to predict the future of the industry; instead, it made recommendations based on the findings from analysing and interpreting factors influencing the competitiveness of the sector. Lastly, the use of focus groups limits the potential application of the study to smallholder wool growers in general. However, certain pointers can be drawn due to the generality of the smallholder farming typology investigated (Fundira, 2004; Modiselle et al, 2005; Tshoni, 2015; Gerwel, 2019)

Chapter 2

Conceptual Framework and Literature Study

2.1 Introduction

This chapter aims to review the literature related to the competitiveness of smallholder wool growers. That is done by first defining the smallholder farmers. Then, the study adopts the appropriate definition of smallholder woolgrowers which is used throughout the research. After the research delves into the various definition of competitiveness. The last three sections focus more on the ways competitive performance is measured and the previous studies on competitiveness in agricultural economics, specifically in South Africa.

2.2 Farm typology

In the United States, a farm is defined as any place that produces and sells products worth \$1000. While a small-scale farm is a farm with less than \$350 000 of revenue a year, and a large-scale farm is any farm with more than \$1 million income per year (USDA, 2015). However, this definition focuses mainly on the financial aspect of farming. In South Africa, some farmers practise farming to supplement incomes or to secure food. As a result, they do not sell all their produce. Alternately, farmers also farm for lifestyle-related purposes (Tshoni, 2015). The study uses the definition of farm types illustrated in table 2.1. Besides, in this section, various forms of farming systems are discussed — specifically, commercial, emerging, small-scale and subsistence farmers and communal systems or styles.

Table 2. 1: Types of farmers

Farm type	Revenue	Ownership and management
Large commercial	>R3 million	Multiple farms and professional management
Medium commercial	R 1-3 million	Could be multiple farms but family management
Small commercial	<R1 million	Family owned and could be lifestyle farming
Commercial in a communal area	>R 1 million	Communal ownership
Emerging commercial in the communal area	<R 1million	Greater than 20 ha farm in a communal ownership
A subsistence farmer in a communal area	-	Less than 20 ha farm in communal ownership

Source: Vink, 2010; Vink & van Rooyen, 2009

2.2.1 Commercial farmers

Due to the racial past of South Africa, the majority of commercial farmers are White. However, partly due to the land reform programs, there is a small but growing number of Black commercial farmers. Vink and van Rooyen (2010) differentiated commercial farmers into four different classes, based on the revenue of the farm, ownership, and management, as shown in table 2.1. Van Zyl (2018) noted that there were around 40 000 commercial farmers in South Africa. In the wool industry, there are approximately 9 000 commercial farmers, as reported by BKB (2018), these farmers are responsible for approximately 85% of the nation's production.

2.2.2 Emerging farmers

Agri-Seta (2010) defined emerging farmers as those who are striving from subsistence farming to a more commercial way of production, i.e. those striving for more profitability. Earlier Ortmann and Machete (2003) estimated that there were 240 000 emerging farmers in South Africa, who due the dualistic agricultural past were mostly Black and from the former homelands. The authors added that many of these farmers provided a livelihood for more than a million dependants or family members and are more commercially focused. Moreover, emerging farmers are those who produce on farmland that is larger in scale (HSRC, 2006). Pienaar (2013) added that emerging smallholder farmers are those farmers that are in the former homeland areas and who are commercially inclined by marketing their produce.

2.2.3 Subsistence farmers

Kirsten and Van Zyl (1998) noted that subsistence farmers are characterized by low surplus or storage, low in resources such as finance, equipment, and information. Groevewald and Niewouldt (2003) added that most small-scale farmers are considered as semi-subsistence farmers as they do not produce enough to meet their household consumption. However, DAFF (2012) defined subsistence farmers as those households that are involved in agricultural production, which only produce for their household consumption.

2.2.4 Smallholder farmers

Kirsten et al (1998) disputed the use of farm size as one of the criteria for the definition of small-scale farmers. For example, they said a one-hectare irrigated farm in a peri-urban area that used for vegetable production will have higher profit potential than a 500-ha farm in a dryer area like the Karroo. So, net farm income determines the farm category, not the size of land. Additionally, the World Bank (2003) defined this group as farms with less than two hectares of land planted with crops and those with a low base of assets. However, Pienaar (2013) mentioned that scholars tend to use the terms smallholder, subsistence, resource-poor, low income and low input interchangeably.

Earlier, Kirsten and Van Zyl (1998) defined smallholder farmers as "... one whose scale of operation is too small to attract the provision of the services he/she needs to be able to increase his/her productivity

significantly." It is evident from the sources as mentioned above that farmers first can be defined as large scale or small scale. Also, they are classified by access to resources, which are resource-rich or resource-poor. Thirdly, they can be commercial or subsistence. Meaning a small-scale farm can be resource-rich, resource-poor and be involved in commercial or subsistence production.

Therefore, in the study, a smallholder wool grower is a farmer who farms with sheep to grow wool at a smaller scale due to a variety of factors, such as reduced resource endowment, lack of capital and household needs. The farmer may be in a private plot or the communal land. Also, the bulk of labour resources come from family members or relatives. However, given the realities of South African agricultural systems, the term smallholder wool grower can be used interchangeably as the term communal grower (Pienaar, 2013; Nyarai, 2015; Tshoni, 2015).

2.3 Competitiveness

In this section, the study looked at the various definitions of competitiveness considered, and the determinants of competitive advantage. Then the definition of competitiveness applied in the study. Then after the ways of measuring the subject at hand are addressed. Nevertheless, economic competitiveness is multi-perspective and thus is difficult to define (Basu, 2014). Boonzaaier (2015) concurred that competitiveness is an extremely complex concept, as it can be defined and measured in several ways. In terms of measurement, Bahta and Molohe (2014) added there are three ways of measuring competitive performance. Primarily, in the microeconomic level; measured on a single firm or farm. Then at the meso-economic level; where it is measured sectoral or in a single industry. Lastly, in the macroeconomic level; where a country's competitiveness in a particular sector is measured. However, before competitiveness can be measured, it has to be defined.

2.3.1 Definition of competitiveness

Competitiveness is a multifaceted concept. Therefore, it needs to be defined in each of the levels, as mentioned earlier. Firstly, there is no universally accepted definition of competitiveness. However, scholars have attempted over the years to come with the closest definition that better articulates the situation in real-life terms. Also, the term competitiveness stems from a Latin word *picture*, which translated as to 'attack as a collective' (Boonzaaier, 2015; Abei, 2017).

2.3.1.1 Definition of competitiveness macro-level

Competitiveness in the macro-level is the country's ability to trade goods or services in the international market while keeping revenue levels increasing, according to Sinngu (2016). This definition is similar to that of the Directorate of Agriculture in Canada had (Esterhuizen, 2016), which was that international competitiveness as the ability to remain profitable while offering consumers products and services at a cost that is at least as attractive as the competitors. Moreover, at the macroeconomic level

competitiveness is the country's ability to produce goods and services to meet the demands of the global markets, under free trade and fair market conditions, while maintaining and increasing the real incomes of its people over the period (World Economic Forum, 2016).

2.3.1.2 Definition at the meso-level

On the national level, Michael Porter (2002) noted that competitiveness should be defined and thus, measured on the nation's production ability. Porter added that production not exporting is the main objective because production influences the living standards and cost of doing business. Moreover, Porter (1998) had mentioned that even if a country has more access to factors of production than its competitors do. That alone does not make it competitive, but it is the utilization of technology and the industry's ability to be innovative that matters the most. Jafta (2014) defined competitiveness at a national level as the ability of a country to produce goods and services and trade them, while meeting the international standards under free and fair trade while increasing the standards of living for its citizens.

2.3.1.3 Definition at the micro-level

Basu (2014) defined competitiveness at the micro-level as the firm's (or farm on the study's case) ability to produce products and services of high quality and at a lower cost than its regional or international competitors. The study uses the definition of competitiveness by Van Rooyen (2008:2), who defined competitiveness as “the ability of a sector, industry, firm or farm to compete by trading their products within the global environment while earning at least the opportunity cost of returns on resources employed.” In the context of smallholder wool growers in the former homelands of the Eastern Cape, competitiveness is the wool subsector’s ability to grow and trade wool competitively while remaining profitable in the current trade conditions.

2.3.2 Measurement and analysis of competitiveness

The modern international trade has advanced beyond the traditional, classical, neoclassical trade theories. Though, Boonzaaier (2015) insisted that the transition would not be possible without them, as the traditional, classical and neoclassical models form the bases of the current understanding of international trade. Thus, the Michael Porter diamond model, Relative Trade Advantage (RTA), Revealed Comparative Advantage (RCA) and Net Export Index (Nxi) which will be discussed in detail shortly must not be studied in isolation. Instead, they must be viewed in the greater scheme of international trade. Also, Siudek and Zawojcka (2014) reaffirmed that competitiveness could be measured in three dimensions, namely on the macro-level (international), meso-level (regional or national) and micro-level (firm, farm or sub-sector).

2.3.2.1 Macro level

In the macro-level competitiveness is analysed in the World Competitiveness Year Book and Global Competitiveness Index. Two Swiss institutions organize the World Competitiveness Yearbook. The

World Economic Forum (WEF) and the International Institute for Management Development (IMD). The World Competitiveness Year Book measures how competitive countries and companies are annually. That is carried out through both quantitative and qualitative data. The data is gathered through executive questionnaires and interviews from the participating nations and institutions (Esterhuizen, 2006). Abei (2017) added that this measure had been carried out for the past 26 years and the it compares and ranks 63 countries based on competitive determinants, which are the economic performance, government efficiency, business efficiency, and infrastructure. The determinants are further broken down into five factors or sub-sectors that comprise 350 competitiveness criteria. As illustrated in figure 2.1, South Africa is ranked country number 53 out of the 63 nations.

2018	Country	2017	Change	2018	Country	2017	Change
1	USA	4	+3	33	Portugal	39	+6
2	Hong Kong SAR	1	-1	34	Poland	38	+4
3	Singapore	3	-	35	Chile	35	-
4	Netherlands	5	+1	36	Spain	34	-2
5	Switzerland	2	-3	37	Slovenia	43	+6
6	Denmark	7	+1	38	Kazakhstan	32	-6
7	UAE	10	+3	39	Saudi Arabia	36	-3
8	Norway	11	+3	40	Latvia	40	-
9	Sweden	9	-	41	Cyprus	37	-4
10	Canada	12	+2	42	Italy	44	+2
11	Luxembourg	8	-3	43	Indonesia	42	-1
12	Ireland	6	-6	44	India	45	+1
13	China Mainland	18	+5	45	Russia	46	+1
14	Qatar	17	+3	46	Turkey	47	+1
15	Germany	13	-2	47	Hungary	52	+5
16	Finland	15	-1	48	Bulgaria	49	+1
17	Taiwan	14	-3	49	Romania	50	+1
18	Austria	25	+7	50	Philippines	41	-9
19	Australia	21	+2	51	Mexico	48	-3
20	United Kingdom	19	-1	52	Jordan	56	+4
21	Israel	22	+1	53	South Africa	53	-
22	Malaysia	24	+2	54	Peru	55	+1
23	New Zealand	16	-7	55	Slovak Republic	51	-4
24	Iceland	20	-4	56	Argentina	58	+2
25	Japan	26	+1	57	Greece	57	-
26	Belgium	23	-3	58	Colombia	54	-4
27	Korea Rep.	29	+2	59	Ukraine	60	+1
28	France	31	+3	60	Brazil	61	+1
29	Czech Republic	28	-1	61	Croatia	59	-2
30	Thailand	27	-3	62	Mongolia	62	-
31	Estonia	30	-1	63	Venezuela	63	-
32	Lithuania	33	+1				

Figure 2. 1: World Competitiveness Year Book 2018
Source IMD, 2018

Global Competitiveness Index or report (GCI) is the second macro analysis, which is compiled by the World Economic Forum (WEF). It is a complex and comprehensive measure, which measures the macro-economic criteria that determines competitiveness. WEF has 12 pillars of competitiveness namely: institutions, infrastructure, macroeconomic environment, higher education and training, goods market efficiency, health and primary education, labour market efficiency, financial market development, technological readiness, market size, business sophistication and innovation (Abei, 2017). Dlamini (2012) noted that these 12 pillars of competitiveness undergo further division into efficiency enhancers, innovation and sophistication factors. Nonetheless, South Africa is ranked number 61 out of 137 economies, as far as the recent GCI report (WEF, 2018).

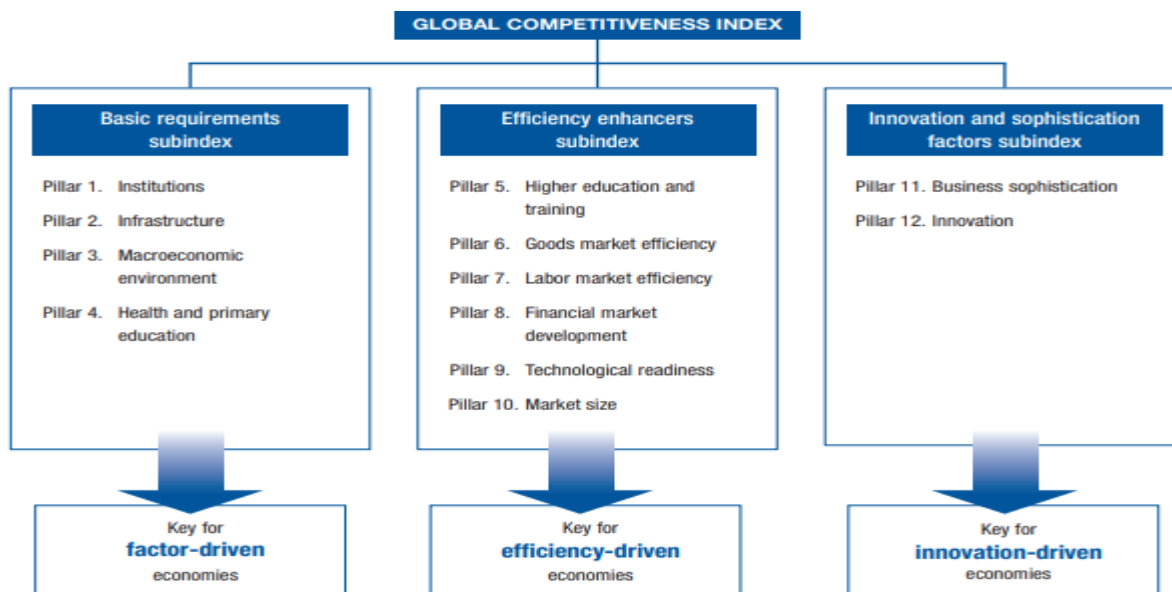


Figure 2. 2: GCI pillars and categories
Source: WEF, 2018

2.3.2.2 Meso and micro level

Scholars have criticized the use of macroeconomic level measurements for competitiveness as they compare countries rather than firms or farms. Therefore, to accurately analyse competitiveness, one must also use micro or industry/ farm economic measures. Dlikilili (2018) mentions that microeconomic measures of competitiveness are better suited as they measure determinants of competition for individual industries or firms. Also, given the fact that the study is concerned with the competitiveness of smallholder farmers within the wool industry, micro-level measures will be deployed.

Porter's diamond model

Porter (born Michael E. Porter in 1947), a Harvard economics professor, did a study in 1990 to investigate 100 companies from 10 different countries namely; Denmark, Germany, Italy, Japan, South Korea, Singapore, Sweden, Switzerland, the UK, and the US. The aim was to find out 'Why do some social groupings, economic institutions, and nations advance and prosper?' The product of this extensive research is the famous Porter Diamond Model, which many scholars have used to measure factors affecting competitiveness, especially in agribusiness. The model has four determinants of competitive advantage, which are: (i) Factor condition, (ii) Demand condition, (iii) Related and supply industry and (iv) Firm strategy, structure and rivalry (Porter, 1990; 69-71; Esterhuizen, 2006; Dlamini, 2015; Nkurunziza, 2015). However, it is worth noting that the Porter Diamond model is not without criticism (Esterhuizen, 2006). One of the major points of contentions for the model is its assumptions on multinational companies and governments. As a result, scholars have extended the model in order to fit the real conditions on the ground (Boonzaaier, 2015).

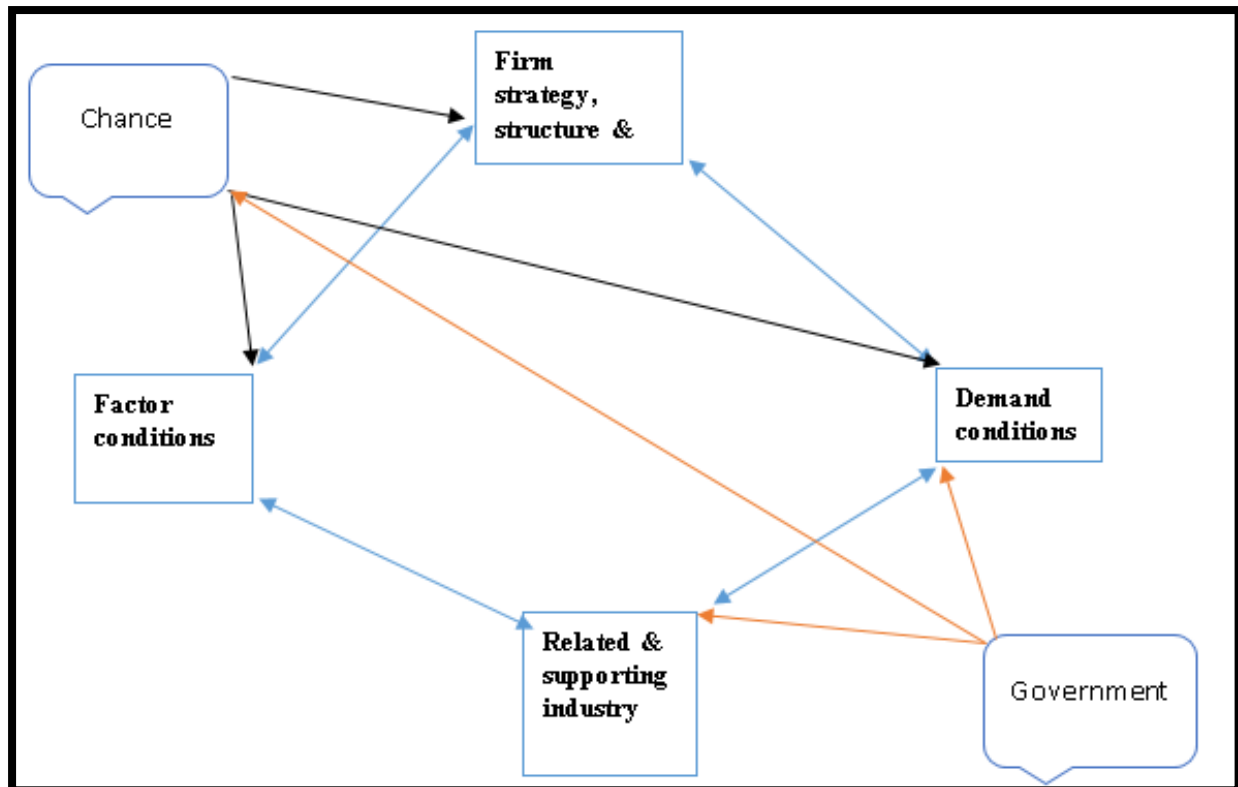


Figure 2. 3: Porter diamond model with government and chance
Source: Porter, 1990

Production factor condition determinant:

Porter (1990; 70-73) noted that each nation or firm has factors of production, which are labour, land, natural resources, capital, and infrastructure. However, to understand how these factors affect competitive advantage, he advised that they must be further broken down to:

- Human resources- the quality and skills of labour.
- Physical resources- the availability of resources.
- Knowledge resources- scientific, technical and market knowledge available.
- Capital resources- the amount and cost of capital available.
- Infrastructure- the type, quality, and cost of infrastructure available.

Sibulali (2018) added that the factor condition subgroups are either necessary or advanced, general or specialized and inherited or created. When a firm has advance, functional and created factors condition, the probability of competitive performance is enhanced. Moreover, Dlikilili (2018) mentioned that the availability of these factors is not necessarily an indicator of competitiveness, rather its efficiency that matters.

Demand condition determinant:

Porter (1990:70-73) mentioned that the size of the domestic demand is essential in attaining comparative advantage, but the sophistication or diversity of the local demand is equally important. The diversity

of the local market is to the cornerstone in encouraging the company or industry to continually upgrade its product offering and be innovative in the manner in which it provides its services.

Related and supply industry determinant:

The company operating in an environment or industry/country that has a supplier industry that is globally reputed for its competitiveness in providing services can easily attain a comparative advantage compared to its competitors who are in an inverse environment (Porter, 1990). While related industries may provide competition to the farmer, the supply industry provides inputs such as feed, medicine, and equipment in the case of wool producers.

Firm strategy, structure and rivalry determinant:

Another determinant of competitiveness, according to Porter (1990), is the company's strategy, the context at which the company, organized and ran may determine its competitiveness within the industry. Besides, competition makes companies upgrade and be innovative to fight for market share, which in turn increases their competitive advantage if done correctly. Also, the way firms are structured differs from country to country, for example, in Italy firms tend to be more like family businesses, while in Germany, companies usually consist of individuals with technical backgrounds.

Chance factor determinant

The characteristics mentioned above are vital in ensuring that companies are competitive, however, sometimes factors outside the control of the firm can change the playing field, and these factors can be chance or the influence of the government. Chances are circumstances or events that happen to the advantage of the company, while the company had no direct influence on these events (Mashabela, 2008).

The role of government policies and support:

Moreover, the influence of the politicians or the state can enhance or discourage competitiveness, for example, trade wars or the signing of free trade agreements. One of the fundamental responsibilities of the state is to formulate trade legislations and policies. Depending on these policies, the government can undermine the competitive potential of a sector or industry if its policies are not investment friendly. However, this is outside the domain of the farmer or firm. Therefore, they have limited influence on the policy direction (Esterhuizen, 2006).

Extending the Porter Diamond model

One of the first extensions of the Diamond model was done by Rugman and D'Cruz (1993). They suggested that in order to be globally competitive, both local and foreign factors must be utilized efficiently. Especially if the firm wants to survive, be profitable and grow. This extension was the Double Diamond framework (Esterhuizen, 2006). One of its important contribution of on the modification of the 'home market' assumption. They suggested that in the free trade modern era this

assumption had to be modified. Another extension was the Generalized Double Diamond model by Rugman and Verbeke (1995). This was done because the Double Diamond framework was mainly applicable in developed economies but not in small economies. Again, the major change was on the 'home market' assumption. The point of contention was that the previous extension was geared towards domestic markets, even though firms from smaller countries focus on both domestic and foreign markets. They continued that the difference between national and global diamond is the international activities.

a. Revealed Comparative Advantage (RCA)

Balassa modified the present Relative Comparative Advantage was modified in 1965 from the Liesner's methodology (Esterhuizen, 2006). There are two widely used RCA indices. First, the original RCA index commonly called the Balassa index and the Vollrath's index, an improved version of the original RCA index (Mashabela, 2008). Dlikilili (2018) added that the RCA is used to measure the intensity of trade, to evaluate the commodities market potentials. The RCA can help determine whether a nation is in the process of extending the products in which it has trade potential. It can also indicate potential trade prospects with new partners. That is in the nation's post-trade data. The RCA index of the country I for product j is measured by the product's share in the country's exports concerning its share in world trade:

$$(1) \text{ RCA} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt}) \dots\dots\dots$$

Source: World Bank, 2018

In this formula, x_{ij} and x_{wj} represent the values of the export product (i) of the country in question, while (j) is the world export of the product and X_{it} and X_{wt} is the nation's total export and total world export. The result is interpreted as follows: if the index is higher than 1 that particular country is deemed to have a positive revealed comparative advantage in the export of the product in question, however, if the index is smaller than 1 the country has a negative revealed comparative advantage (World Bank, 2018).

The revealed comparative advantage is one of the most used measures of international competitiveness and has gained general acceptance in the literature (Boonzaaier, 2015 Abei, 2017; Sihlobo, 2016; Dlikilili, 2018). The RCA has undergone modification over the years from Vollrath (1991), Dimelis and Gatsios (1995). This study uses the original Balassa index. However, one of the reasons the measure has gain popularity amongst scholars is its ability to identify sectors nations has both comparative advantage and disadvantage (Dlamini, 2012).

b. Relative Trade Advantage (RTA)

Vollrath (1991) expanded the Balassa RCA index, and this was done to correct some of the RCA faults such as double counting countries. Vollrath's index is known as Relative Trade Advantage or RTA as it is commonly known. The RTA does not only measure imports, but it includes exports; also, it is a trade base measurement of competitiveness (Abei, 2017). Dlamini (2014) added that RTA is rooted in the RCA as it indirectly measures the revealed comparative advantage by calculating the importance relative imports and exports relative advantage, this is done by measuring the difference between relative export advantage (RXA), just like the Balassa index but it goes further by also including the relative imports advantage (RMA). The significant difference between RCA and RTA is that the latter avoid the double-counting of countries and commodities.

(1) $RTA = RXA - RMA$

RXA= relative exports

$= (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$

RMA= relative imports

$= (m_{ij}/m_{it}) / (m_{nj}/m_{nt})$

RTA= revealed the comparative advantage

Thus: $RTA = [(x_{ij}/x_{it}) / (x_{nj}/x_{nt})] - [(m_{ij}/m_{it}) / (m_{nj}/m_{nt})]$

An RTA value greater than zero indicates that a country has a competitive advantage, while an RTA value less than zero implies the opposite. If RTA is equal to zero, it means the country has a marginal competitive advantage. The formula can be further modified by Vollrath to calculate Relative competitiveness, which is the difference in the logarithm of the relative export advantage (ln RXA) and relative import advantage (Abei, 2017):

(2) $RC = \ln RXA - \ln RMA$

c. Net export index

There have been growing concerns among scholars about the shortcomings of the RCA index as a tool to properly measure competitiveness as it only takes account of exports and double count countries. To correct these shortcomings Vollrath (1991) and Balassa (1998) developed the Net Export Index (Nxi) (Mashabela, 2007; Dlikilili, 2018). The Nxi takes inter-industry trade, product differentiation, flows of imports, flows of exports and net trade effects into consideration when measuring the comparative advantage of a country (Jafta, 2007). By subtracting the country's imports from exports in order to get the net exports and then net exports are divided by the sum of exports and imports of the commodity. Where X_i represents the country's exports, while M_i is the imports. The index value ranges from (-1) to

(+1) for imports and exports respectively, and if the index value is zero it implies that the country's imports equal to the country's exports

$$(3) N_{xi} = [(X_i - M_i) / (X_i + M_i)] \dots\dots\dots$$

d. Gross Marginal analysis

Gross Marginal analysis, which is derived from the revenue of the enterprise in question less the total cost of production (Nyarai, 2015). Mahlanza (2003) noted that gross margin analysis is used to assess economic efficiency, and it can also be used to compare enterprises with similar traits of production in the value chain. For example, in this study, the cost of producing wool by smallholder wool growers can be used to measure the gross margin. The analytical model can be expressed mathematically as follows:

$$(4) GM_i = TR_i - TVC_i \dots\dots\dots$$

Where:

TR_i = Total revenue of wool (i)

TVC_i = Total variable cost of wool (i) production

$$(5) TVC_i = P_i \times Q_i \dots\dots\dots$$

2.3.3 Summary of ways to measure competitiveness

This part of the study reviewed the literature concerning the ways various others have used in measuring competitive performance. The measures are divided into 3 broad categories, namely: micro, meso and macro levels. Each measure is mentioned and then described.

Table 2. 2: Description of competitiveness measures

	Measure	Description
Macro-level	Global competitiveness index	Is a comprehensive measure that measures macro-economic criteria that determine competitiveness performance, the measure has 12 pillars of competitiveness which are: institutions, infrastructure, macroeconomic environment, higher education and training, goods market efficiency, health and primary education, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation.
	Competitive Indexes	It is used to measure international competitiveness by analysing each country's competitiveness and comparing them against each other.
	World Competitiveness Yearbook	The World Competitiveness Yearbook measures how competitive countries and companies are. That is carried out through both quantitative and qualitative data. The data is gathered through executive questionnaires and interviews from various nations and participating institutions.
Meso level	Export Performance	The measure calculates competitiveness performance by analysing export performance in trade, even though designed for international trade but can be used to measure regional competitiveness.
	Export Market Share	EMS is measured in terms of quantity or in terms of value. It is used to measure competitiveness by analysing the export market share of products of a particular nation within the global market.
	Constant Market Share	It is used for the evaluation of international exchanges involving one or more countries exporting in one or more eight destinations.
	Foreign Direct Investment	FDI is used to analyse ownership of the asset in a country by foreign companies or individuals as an indication of competitiveness.
	Relative Trade Advantage	It measures the revealed comparative advantage by calculating the importance of relative imports and exports relative advantage
	Revealed Comparative Advantage	The RCA mainly considers the country's exports, as it exclude imports. Therefore, it mainly factors trade intensity.
	Domestic Resource Costs	Used to analysed economic opportunity costs through shadow pricing
	Porter's Diamond model	Uses 6 competitiveness determinants to in order to evaluate competitiveness.
	Business confidence index	It is used to evaluate a business-friendly environment that promotes trade, entrepreneurship, and that enables social changes in a specific country.
	Policy Analysis Matrix	PAM indicators are used to analyse policies that are conducive for trade, and indicators include efficiency and comparative advantage.
	Real Exchange Rate	Used to measure the ratio of tradeable commodity's price index to non-tradeable inputs/ The higher the exchange rate, the more competitive a country is.
	Net Export index (Nxi)	The Nxi takes inter-industry trade, product differentiation, flows of imports, flows of exports and net trade effects into consideration when measuring the comparative advantage of a country

Micro-level	Growth-Share Matrix	It is used to determine the market share and the growth rate of a product from a sector or enterprise.
	Production Function Estimation	It is an econometric estimator of the production function.
	Social Cost-Benefit	Used to measure the ration non-tradeable input costs and the price of the product produced.
	Unit Labour Costs	Used to indicate cost pressures within a sector.
	Production Cost Comparison	It is used to compare the cost of production and gross margins of different enterprises. The lower the costs the relative is competitiveness.
	Gross Margin Analysis	It is used to assess economic efficiency and to compare enterprises with similar traits of production in the value chain

Source: Adapted from Boonzaaier, 2015; Dlikilili, 2018

2.4 Previous studies on agricultural competitiveness

This section focused on the previous studies on the competitive performance of various industries and commodities in South Africa. It highlighted the authors, the title of the works, critical findings made in the study and the way the authors measured competitive performance. In total there were 22 studies reviewed, starting from 1998 to 2018. Which is a testament on the level of interest, competitiveness has received over the years.

Table 2. 3: Description of competitiveness study in South Africa

Authors (year)	Title	Findings	Measuring technique & Framework
Vink, Kleynhans & Street, 1998	“The competitiveness of Western Cape wheat production: An international comparison”.	They concluded that the declining value of the South African currency provides short-term relief and advised that production must be adapted to such.	Agricultural costs of production
Venter and Horsthemke (1999)	“Analysis of the competitive nature of the Southern African sheep-meat value chain”.	Found that the South African meat industry was competitive.	Profitability and cost. Porter diamond as the framework
Esterhuizen and Van Rooyen (1999)	“How competitive is agribusiness in the South African food commodity chain?”	From the 16 selected commodities, only pineapple, maize, wheat, and apples were deemed competitive form the study, while the others were marginal competitive.	RTA and Porter diamond model framework
Hayes (2000)	“Enhancing the competitiveness of the rooibos industry”.	Concluded that the rooibos industry benefited from deregulation as its production and competitiveness increase drastically after deregulation	Supply chain analysis
Van Rooyen, Kirsten, Van Rooyen & Collins, (2001)	“The competitiveness of the South African and Australian flower industries”.	The study found that SA had a competitive advantage in the production of flowers.	RCA, DRC and private cost ratio

Esterhuizen, Van Rooyen and Van Zyl (2001)	The competitiveness of the agricultural input industry in South Africa	The study stated that the machinery and pesticide industry was not competitive, while the agro-food and fibre industries were competitive.	RTA and Trade-related comparisons
Mahlanza, Mendes & Vink, (2003)	The comparative advantage of organic wheat production in the Western Cape	Wheat was found to have a comparative advantage, primarily when grown under organic farming.	PAM (policy analysis matrix), DRC (Domestic resource cost) and Social cost-benefit (SCB)
Mosoma (2004)	Agricultural competitiveness and supply chain integration: South Africa, Argentina and Australia	Mosoma concluded that compare to the Aus. and Arg. commodity industries, SA agricultural commodity chains are marginally competitive.	RTA
Hallatt (2005)	The relative competitiveness of the South African oilseed industry	Hallatt found out that the SA oilseed industry has a comparative disadvantage.	RCA, RTA, net index exports (Nxi)
Esterhuizen and Van Rooyen (2006)	An inquiry into factors impacting on the competitiveness of the South African wine industry	The study concluded that SA wine enjoyed growing competitiveness internationally	RTA
Mashabela (2007)	Competitive performance of global deciduous fruit supply chains: South Africa versus Chile	Mashabela noted that the SA deciduous industry is competitive internationally	RTA
Esterhuizen, Van Rooyen & D'Haese, (2008)	An evaluation of the competitiveness of the agribusiness sector in South Africa	Showed that SA agribusiness has a marginal competitive advantage	Porter diamond model and RTA
Madima (2009)	Competitiveness of the South African deciduous fruit canning industry	Madima mentioned that the SA deciduous industry is only international competitive in the product quality and labour costs	RTA and the Porter Diamond model
Ndou and Obi (2011)	The business environment and international competitiveness of the South African citrus industry	The study showed that the citrus industry is competitive	Porter diamond model
Van Rooyen, Esterhuizen & Stroebel, (2011)	Analysing the competitive performance of the South African wine industry	The SA wine industry has enjoyed increased competitiveness since deregulation.	Porter diamond model and RTA
Van Rooyen and Esterhuizen, (2012)	Measurement and analysis of the trends in competitive performance: South African agribusiness during the 2000s	The study found out that the industry was marginally competitive	Porter diamond model and RTA
Jafta (2014)	Analysing of the competitiveness of the	Jafta found concluded that the country's apple industry was	RCA, RTA and Porter diamond model

	South African apple industry	marginal competitive in the global industry	
Boonzaaier (2015)	An inquiry into the competitiveness of the South African stone fruit industry	The industry was competitive but not more than its competitors in the international market like China	RTA and Porter diamond model
Sihlobo (2016)	An evaluation of the competitiveness of South African maize exports	The SA maize was deemed competitive but fell behind major maize trading nations.	RCA and market attractive index (MAI)
Van der Merwe, Cloete & Van Schalkwyk, (2016)	Factors influencing the competitiveness of the South African wheat industry: A hedonic price model	The study found that price was mainly affected by colour, fall and defects.	Hedonic price model
Davids & Meyer (2017)	Price formation and competitiveness of the South African broiler industry in the global context	The price of chicken in the SA market is elastic compared to the imported chicken.	Univariate time series and qualitative analysis
Dlikilili (2018)	An analysis of the competitive performance of the South African citrus industry	Dlikilili noted that the industry was more competitive when compared with its Southern hemisphere counterparts than with the Northern hemisphere, were Egypt outperform the country's citrus industry	RTA, RCA and Porter diamond model
Sibulali (2018)	Measured the competitive performance of the South African subtropical fruit industry.	Sibulali mentioned that the industry was marginally competitive	RTA, RCA and Porter diamond model
Barr (2019)	An analysis of the factors impacting the competitive performance of the South African Wine industry value chain	Barr concluded that even though the wine sector had a declining competitive performance it was still globally competitive.	RTA and the Diamond Porter model

Adapted from Boonzaaier 2015, Dlikilili, 2018 & own research

2.5 Conclusion

In summary, the typology of the farming system is essential in the context of this study, as it sets the context. Also, it assists in preventing confusion as many scholars use a term such as emerging, smallholder and subsistence farming interchangeably. In this chapter, the definition of the smallholder wool growers was tabled. Also, the definition of competitiveness, the levels and ways of measuring competitive performance. The last section was devoted to reviewing the literature on previous studies on competitiveness. However, most studies had focused more on the macro-level of competitiveness. Therefore, this study seeks to measure the competitiveness of small wool growers, which is at the micro-level.

Chapter 3

Overview of the South African wool industry

3.1 Introduction

This chapter intends to provide an overview of the South Africa wool industry. This objective is addressed by firstly highlighting the global wool industry. Specifically, the world wool production in terms of the number of woollen sheep and global wool production over the years. In terms of trade, the chapter focuses on the export and import market within the global wool value chain. Then attention is given to the South African wool value chain, the producers, buyers, brokers and the regions that produce wool in the country. Also, the chapter looks at the history of the country's wool industry, then after the production trends and trade. Lastly, the threats and opportunities facing the sector and are briefly addressed.

3.2 Global wool market

This section focuses on the world wool industry, specifically the world sheep numbers, production, and trade. On trade, two key issues looked at are the wool exports and wool prices. Nonetheless, experts have noted that the number of sheep has been fluctuating in the past 70 years. This fluctuation has affected productivity negatively. Due to low production and high demand prices have increased significantly.

3.2.1 Global sheep numbers

The number of sheep owned by farmers in the globe has increased to 1 202 430 heads. That is the highest the world has ever seen, for example in 1961 there were just 994 268 736 sheep. The higher population growth, which triggered the high demand for meat is partly responsible for the increment (FAO, 2019). Figure 3.2 illustrates the percentage of sheep available in the world per region or continent. Asia has the highest number of sheep in the world, followed by the African continent. However, with regards to wool production, the number of sheep does not necessarily mean higher wool production. As a significant number of sheep breeds in Asia and Africa are non-woollen.

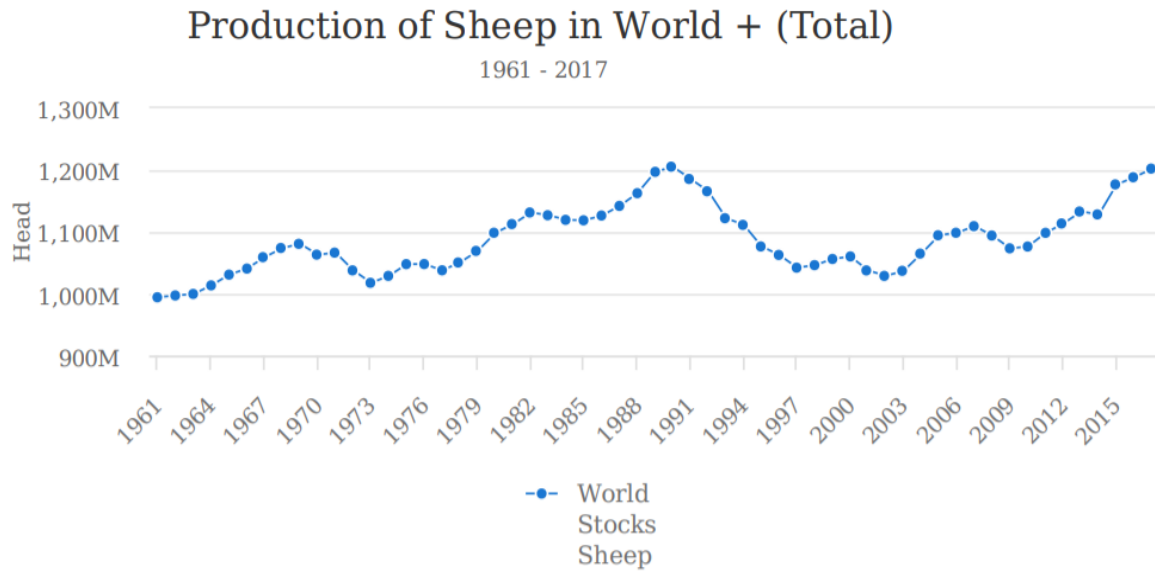


Figure 3. 1: World sheep numbers
Source: FAO, 2019

In Asia, China has the highest number of sheep, with over 137 million sheep, followed by India at 94 million and in the Middle East Iran has 49 million sheep heads. In Africa, the countries with the highest number of sheep are Sudan (both South and North) and Nigeria, with 86 and 31 million respectively. However, a sizeable chunk of the world's sheep is non-woollen, which are grown mainly for mutton rather than wool. Therefore, the increase in sheep numbers does not correlate with wool production increments. For example, Asia has 41% of the world sheep but only produces 22% of the total wool production in 2018 (FAO, 2019).

Production share of Sheep by region

Average 1994 - 2017

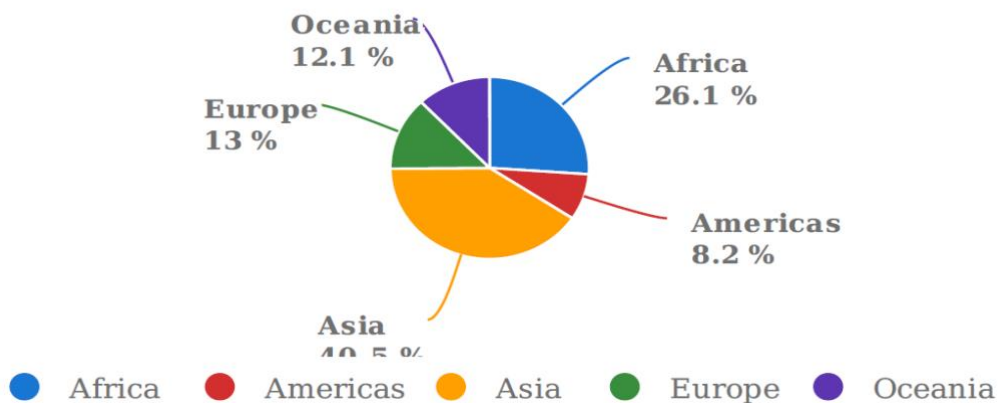


Figure 3. 2: World sheep numbers
Source: FAO, 2019

3.2.2 World wool production

Figure 3.3 illustrates that the Oceania, which includes New Zealand and Australia, has been the most prominent regional wool producers and followed by Asia, since 1961. The two regions are responsible for 60% of world wool production. In Asia, China produced 12 million tonnes, while Australia produced

37 million tonnes in Oceania. Another prominent region, in terms of wool production, was Europe, which produced 20% or 28 million tonnes of wool yearly, since 1961. In Europe, Russia was the biggest wool grower, at 13 million tonnes. Both North and South America have contributed only 12% in global production. Interestingly, as seen in figure 3.4 South Africa has been Africa's biggest wool producer, even though it had only 28 million sheep compared to Nigeria or Sudan whom both have higher sheep stocks (FAO, 2019).

Production share of Wool, greasy by region

Average 1961 - 2017

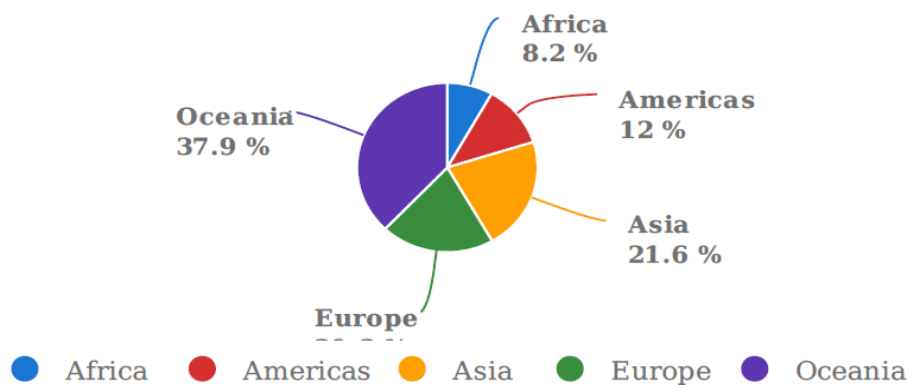


Figure 3. 3: Distribution of wool production by region
Source: FAO, 2019

However, a lot has changed when one focuses more on the past decade instead of starting in 1961. For example, Asia has overtaken Oceania to the first spot with 21.6% of the world’s production. While the Americas have decreased from 12% to 7.3% and Europe followed suit, from 21% to 13%. Africa has moved up to 12% from a low 8%. Per the country, China was the biggest wool grower in the past decade with 44 596 million tonnes since 2009 and Australia has withdrawn to second place. The same trend is followed by South Africa, which was the 6th largest wool produce from 1961 but now at the 11th place (FAO, 2019). Nevertheless, figure 3.4 provides the top 10 most significant contributors since the start of record-keeping in 1961.

Production of Wool, greasy: top 10 producers

Average 1961 - 2017

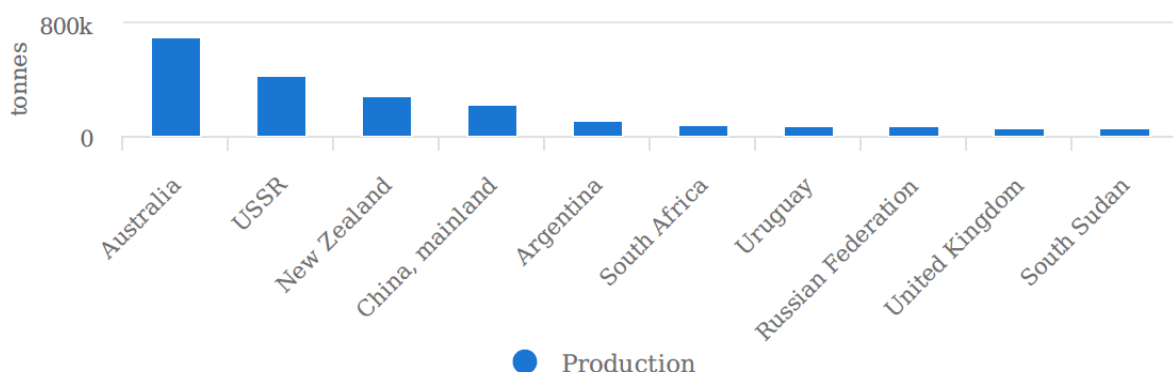


Figure 3. 4: Top 10 wool-producing countries since 1961
Source: FAO, 2019

3.2.3 Global wool trade

More recently, with the increase in demand for apparel wool and the low supply trends have been seen as a blessing in disguise for apparel wool exporting countries like Australia, South Africa, Argentina, and Uruguay. As the low supply and high demand have pushed the apparel wool price in a favourable position. The wool prices are recovering steadily from the 1991 collapse and the credit crunch of 2007, as seen in table 3.1(IWTO, 2017). A weak currency also aided the South African wool industry, which made the clip more favourable to international buyers (De Beer, 2018).

Table 3. 1: Clean wool average prices

Country	2017 price (USC/lb)	2016 price (USC/lb)	% change
Australia	702	495	+42
New Zealand	124	179	-31%
South Africa	502	457	+10%
UK	95	121	-22%

Adapted from: IWTO, 2017

The price increments have had a positive effect on the global wool industry, as illustrated in figure 3.5. The higher than usual demand for apparel, coupled with lower productions has had a positive effect on wool prices. However, it remains to be seen if this positive price rally will continue to the future. Especially with advent of the US versus China trade war or the Corona virus (Cape Wool SA, 2020)

Gross Production Value (current million US\$) - Wool, greasy

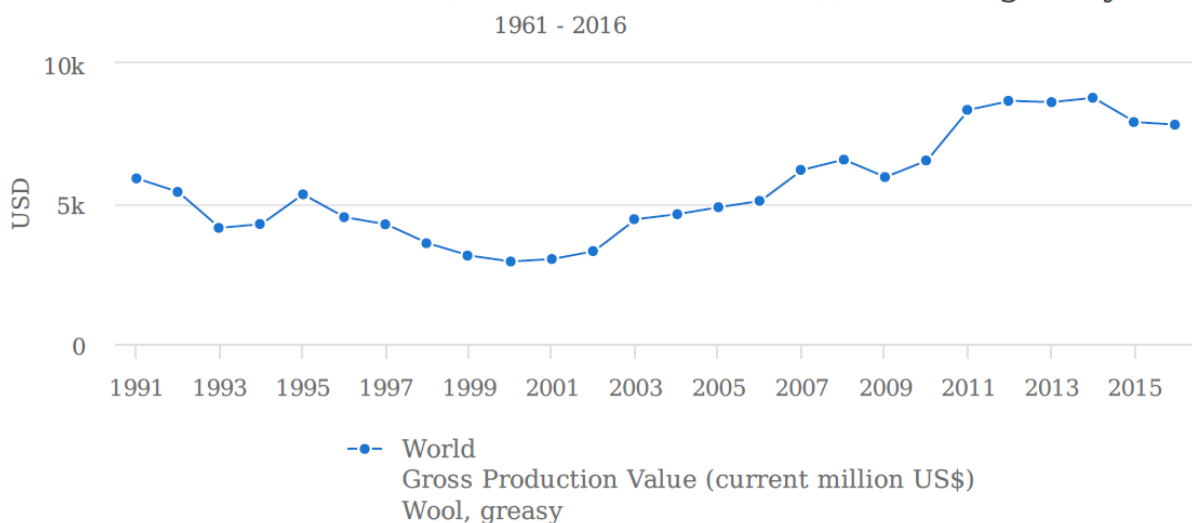


Figure 3. 5: Global wool GPV from 1961 to 2016
Source: FAO, 2019

In figure 3.6, it is evident that the world exports wool more than it imports. That may appear to be strange, as one may expect imports and exports in the global market to be even. However, the phenomenon is because of China, the second-highest wool producer in the world, is also the biggest wool importer (ITC trade map, 2019). Also, because China has a disproportionate dominance of the global apparel manufacturing industry, many countries including South Africa export their clip with no or little value addition. Moreover, due to lower production levels, the value of exports has been decreasing since 2006. Even though the trend of imports has evened out, but it noticeable that they have decreased also.

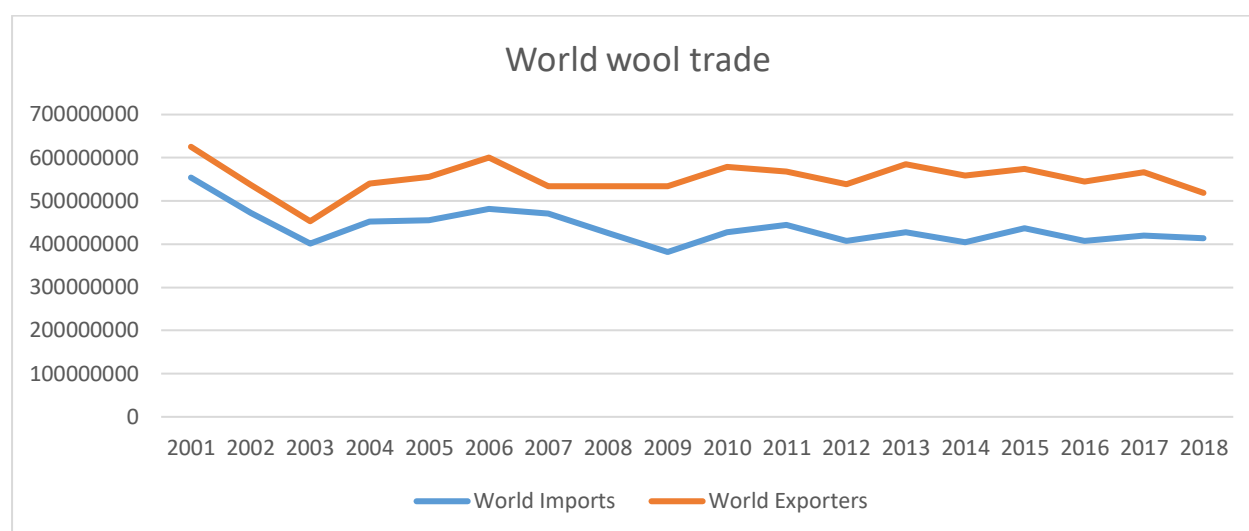


Figure 3. 6: Global wool trade from 2001 to 2018

Source: ITC trade map, 2019

3.2.3.1 Exports

Unsurprisingly, Australia is by far the world's biggest wool exporter, followed by New Zealand and South Africa, as depicted in figure 3.7. However, it is also evident that Australia has decreased its wool clip exports since the highs of 2001, recovered a bit between 2004 and 2006, but dropped again in 2017. There are a variety of reasons for this drop; for example, the Australia wool sector was undergoing a significant change. Flock numbers decreased, and the micron profile has changed from coarse to finer wool clip. Also, the increase in lamb and mutton prices has influenced farmers to diversify away from wool farming to mixed enterprises. Also, Australia and South Africa produce near the same wool profile, the fine wool micron (Gibbon & Nolan, 2011; ITC trade map, 2019).

While New Zealand produces a much more courser profile, which is used to manufacture carpets, rugs, and mats, the nation like its northern neighbour has experienced a withdrawal of flock. For example, in 1980 it had 70 million sheep and in 2010 there were only 32 million. The reasons for withdrawal are similar to Australia and other wool growing nations. Enterprises such as dairy, beef, mutton, and crop production have taken preference (Conforte *et al* 2011). Additionally, the export market for New Zealand's clip is traditionally the European market, and the European textile industry has weaned its

interest in natural fibres like wool. Synthetic fibres have replaced the wool market (Gregory & Miller, 2009). Other notable wool exporters apart from South Africa are Romania, Spain, and Argentina.

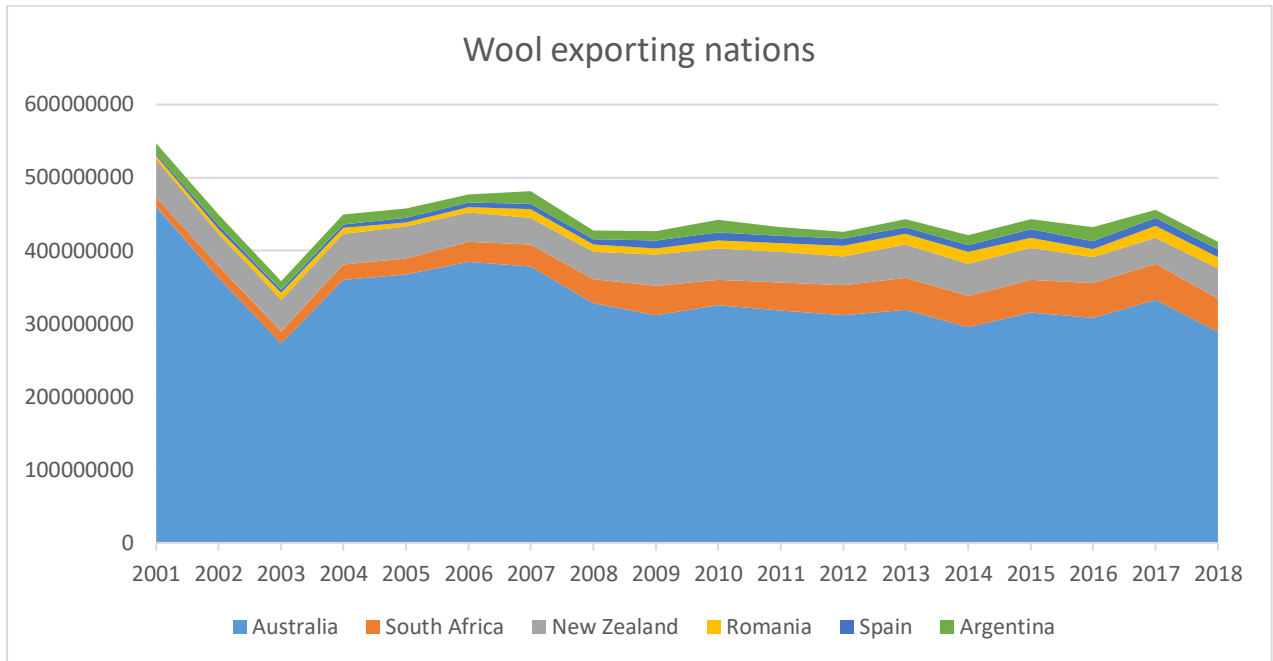


Figure 3. 7: wool exporting nations from 2001 to 2018
Source: ITC trade map, 2019

3.2.3.2 Imports

In the import market, China is the biggest destination for exports, as seen in figure 3.8. The Chinese textile industry has grown leaps and bounds in the past decade and has replaced the U.S and Europe. The raise was spearheaded by the Chinese market liberalization, which both bolstered the nation's textile industry and created a massive market for natural fibres like wool. Due to Chinese competition, European textile giants such as the UK, Italy and the Czech Republic have reduced their wool imports over the past decade. Recently, the Czech Republic and to a lesser degree Italy have increased their imports, due to raising in apparel demand, especially for the niche market of high-end fashion products for both women and men's wear (IWTO, 2018).

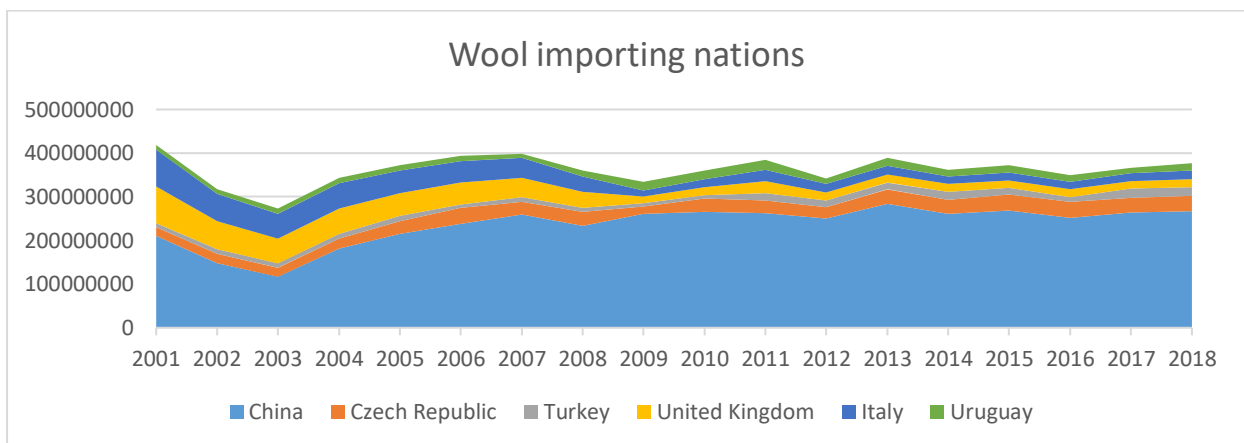


Figure 3. 8: wool importing nations from 2001 to 2018
Source: ITC trade map, 2019

3.3 History of wool farming in South Africa

The history of sheep farming spans a long way before the Dutch East India Company docked in the Cape of Good Hope. Scholars previously believed that sheep farming was brought to Southern Africa by the 'Bantu' speaking people. However, recent research proves that the Khoi people farmed with sheep long before the arrival of 'Bantu' speakers. The Khoi-San and Black African farmers raised two types of sheep. The thin tailed and fat-tailed sheep. These sheep were not woollen as at the time there was no major use for wool, the essential parts apart from milk and meat were the hides. It would be 100 years after the arrival of the Dutch in the Cape were woollen sheep would be introduced (Sadr, 2016). The Cape's first wool export to Holland (Netherlands) was in 1700, it was 129 kg, which is very different from the current export quantity of 48 million kg in 2016/17 season (Cape Wool SA, 2018).

The story of wool is incomplete, without Adriaan van der Stel. He imported sheep from Persia (Iran) in order to improve the local industry. As a result, production increased to 386 kg and the clip was exported to Holland again, sadly it could not sell at a profit. Nevertheless, this only encouraged local woolgrowers. Fortune soon followed after. As in 1789, the King of Spain gifted the Holland monarch a flock of Merino sheep, which were only found in Spain at that time. However, due to climatic conditions, the sheep had to be transferred to Cape where they not only became the backbone of the South African Merino wool industry but also for the world's biggest wool producer Australia (Hanekom, 1959: 25-26).

Other South African wool pioneers include farmers such as the three Van Reenen brothers (1804). That through the systematic crossing of the Merino and other breeds were able to produce 1224 kg on their farm. The Van Reenen's purchased the herd from Colonel Gordons who was tasked to take care of the King's gift but unfortunately passed away just after the King had requested his sheep back. Other pioneers include J.F Reitz and Michael van Breda who in 1812 who bought a large number of crossbreeds from the Van Reenen brothers. They were very successful as they produced 17 000 kg of wool, which was not only the most successful farm on the Cape but the entire colony (Hanekom, 1959: 27).

Wool sheep had become fairly established in the Cape during the 1830s and was making headways in the Eastern Province and the interior. However, the South African war disrupted wool farming activities. Consequently, there was a sharp decline in the number of sheep from 20 million in 1899 to 12 million in 1904. However, after the formation of the Union in 1901 the country's sheep population increased above 30 million, producing more than 55 million kg of wool. In the following 56 years, the number of sheep continued to increase until they reached 38 million. In 1965, the South African wool

industry reached its all-time production level best of 148 million kg. Unfortunately, since then productions and number of sheep have decreased to 50 million kg (Hanekom, 1959; Cape Wool, 2017)

3.4 Overview of South African wool value chain

The wool value chain is one of the most complex and elongated value chains. Wool takes long to run through the pipeline, and it takes an average of 18 months to move from the farmer to the retailer in the Australian wool value chain (Champion & Fearn, 2002). The same happens in South African wool value chain, as seen in figure 3.10. Moreover, wool is produced in all nine provinces. The Lesotho and Namibia clip used to be sold in South Africa and exported as part of the country's clip. However, that has changed. Lesotho has ceased to be part of the deal, and only Namibia is left (Cape Wool SA, 2019). Then the produce is sold to the industry's buyers by the traders, or the farmer can sell it straight to the brokers, who auction the clip to buyers who either export it raw or semi-processed (Van Rooyen et al., 2011:194).

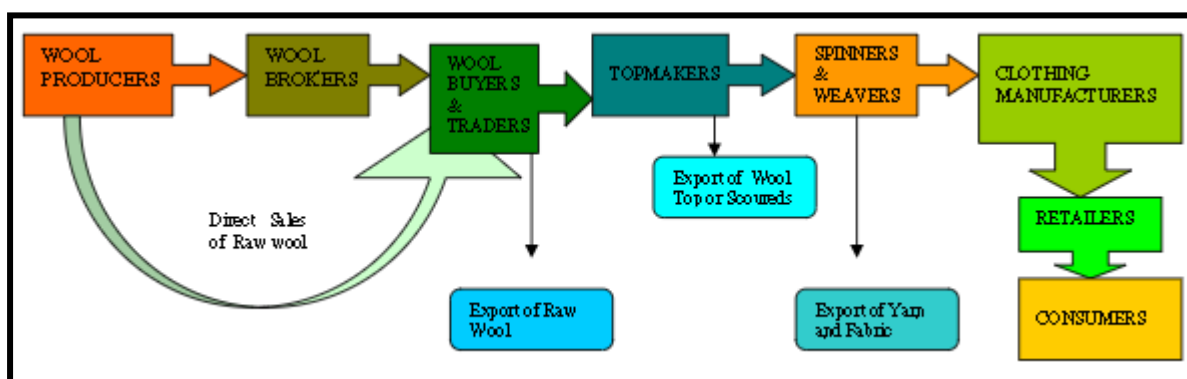


Figure 3. 8: South African value chain
Source: DAFF, 2011

3.4.1 Farmers

It is estimated that there are 9000 commercial farmers and 50 000 emerging or small-scale farmers, according to BKB (2018) in the South African wool industry. These farmers collectively own approximately 23.2 million woollen and non-woollen sheep. Eastern Cape, Northern Cape, and Free State own 74% of the nation's sheep. The dominant wool sheep breeds are the Merino and Karakul, but the Merino is the dominant breed by 74% (DAFF, 2016). Moreover, the majority of sheep are in the Eastern Cape (30%), Northern Cape (25%), Free State (19%) and the Western Cape (12%) as shown in figure 3.10. Nevertheless, the sheep figures have decreased drastically compared to the 1970s and 1990s figures, for example there were 32 million and 30 million sheep roaming the country grazing fields in those several decades. Apart from a drop in production, South African farmers, face many challenges like the outbreak of diseases, drought, stock theft, predators, and high costs of feed and labour (Chiyangwa, 2018).

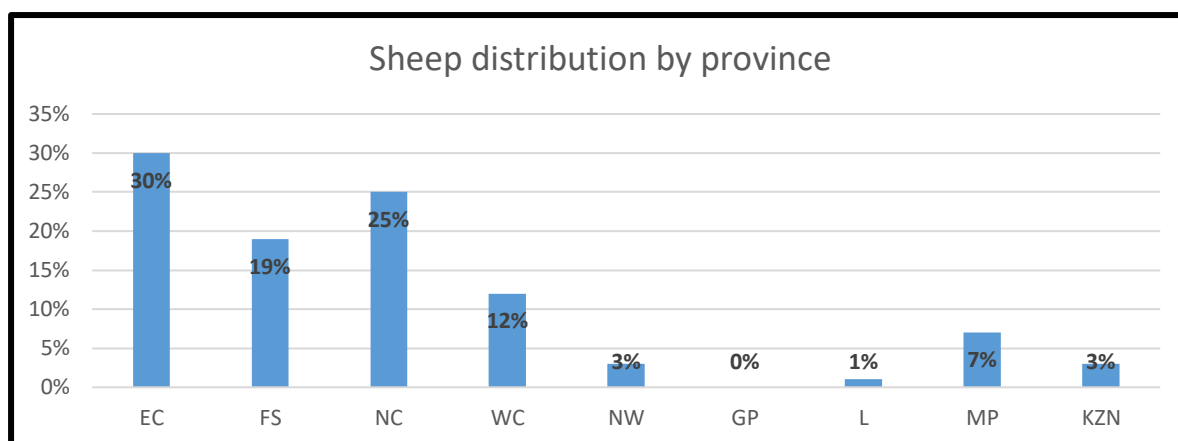


Figure 3. 9: Distribution of sheep in South Africa
Adopted from: DAFF, 2017

3.4.2 Wool brokers and traders

Commercial farmers usually have two choices when it comes to selling their produce. They can trade to auctions through wool brokers or sell directly to the market. Brokers such as BKB limited or Cape Mohair and Mohair (CMW) who are some of the biggest wool brokers in the country. The brokers sell the wool in the auction system, which is organized by SA Wool Exchange. These auctions are usually held in Port Elizabeth, in the Eastern Cape Province throughout the wool season. The responsibility of the brokers is to facilitate sales. The farmers reimburse the brokers through the brokerage fee, which can be per sheep, per kg or bale depending on the agreement (Cloete, et al, 2009). Also, emerging farmers, especially the communal farmers, tend to sell their wool through a trader, who sorts the wool and sells it to the market or through the auction system.

Alternatively, wool farmers sell their produce to smaller wool buyers such as Bruce, Lappersonne & Saunders, Junior Steenkamp Wool & Mohair, Lanata (Pty) Limited Wool & Mohair or Van Lill Wool buyers. That export the produce or organize smaller auctions for buyers. The majority of farmers prefer to sell through the auction system organized by the two big brokers (Cape Wool, 2016).

3.4.3 Wool buyers

The wool brokers usually sell the clip to wool buyers. In South Africa, there are six major wool buyers, as shown in figure 3.12. Which are G. Modiano with a 34% market share, followed by Lempriere SA with 27% and Standard Wool SA that takes 26% of the market. Withal, the smaller wool buyers are Stucken & CO, Segard Masurel SA and New England Wool sharing 6%, 5% and 2% of the market respectively. The majority of the wool buyers' export semi-processed wool, while G. Modiano specializes with greasy wool (DAFF, 2016).

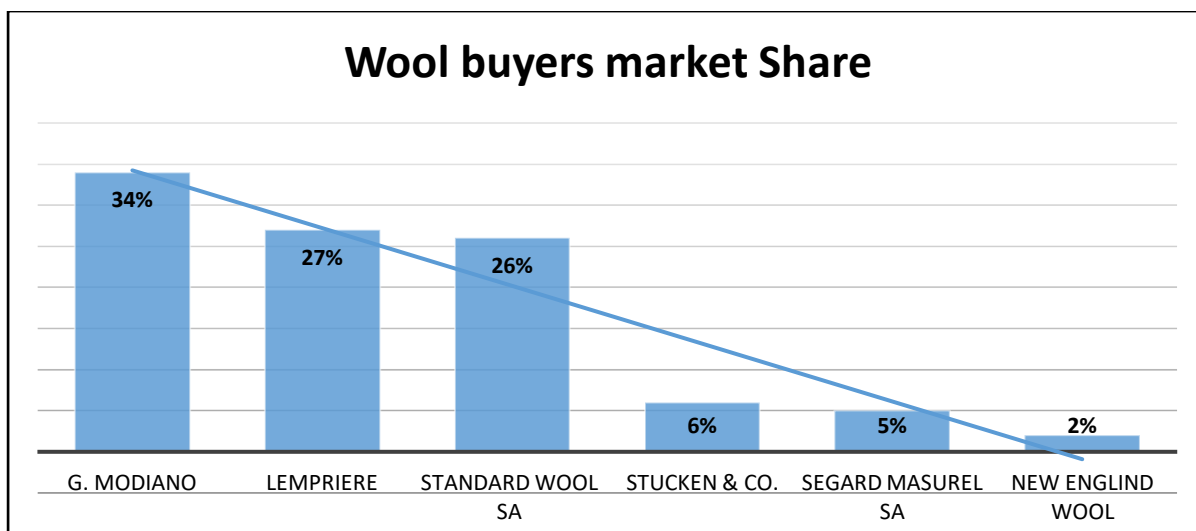


Figure 3. 10: South African wool buyer market share
Source: DAFF, 2016

Since South Africa is only the 11th major wool producer in the global wool market and over 90% of its clip is destined for exportation the nation does not influence the global wool prices as much as China and Australia (Cape Wool, 2015). Additionally, wool buyers process the wool and sell it as clean wool. China is the biggest buyer, followed by the Czech Republic and Italy as illustrated in table 3.2. South African Wool and Mohair Buyers Association (SAWAMBA) helps market the South African wool in the international market (DAFF, 2017).

Table 3. 2: Greasy wool exports and destination in 2017/18

Export country	Value (R)	Quantity (kg)	Percentage
China	R 3 578 845 481	35 268 319	69%
Italy	R 697 243 249	5 325 546	10%
Czech Republic	R 679 221 397	7 564 152	15%
Bulgaria	R 123 266 945	1 188 161	2%
India	R 94 310 559	767 323	2%
Other	R 143 764 037	1 019 575	2%
Total	R5 316 651 668	51 133 076	100%

Adapted from: Cape Wools SA, 2018

3.4.4 Wool processors

South Africa exports mainly greasy wool, while scoured or cleaned wool is also trade but at reduced figures. Greasy wool is sometimes called raw or dirty wool, it is the wool that has just been shorn from a sheep, and it may contain vegetable, grease, and lanolin. Lanolin and grease are a particular type of oil that can be extracted and sold to the pharmaceutical and cosmetic industry (DAFF, 2011). The process is called scouring, where wool is cleaned of the grease using industrial machines and chemicals.

Also, the vegetable matter is removed through the combing process using industrial machines or as simple as with hands (DAFF, 2015). According to DAFF (2017), the country has a competitive processing industry that processes raw wool. Some processors are based in Cape Town, Port Elizabeth and Durban some of those wool processors are:

- ✓ Beier Finance (Pty) Limited,
- ✓ Cape of Good Hope Wool Combers (Pty) Limited,
- ✓ Gubb & Ings Limited and Nouwens Carpets.

3.5 South African wool production

In this section, the study looks at the country's production levels, the number of sheep and wool trade. However, Chiyangwa (2018) noted that even though South Africa is 24 years into the democratic era, it still displays a dual agricultural structure, consisting of mainly white commercial farmers and Black smallholder farmers. Smallholder farmers are found principally in the former homelands such as former Transkei and Ciskei in the Eastern Cape, former Zulu land in KZN, Venda in Limpopo, former Bophuthatswana in the North West and Qwaqwa in the Free State Province. Whereas commercial farmers are found throughout the country.

3.5.1 South African sheep numbers

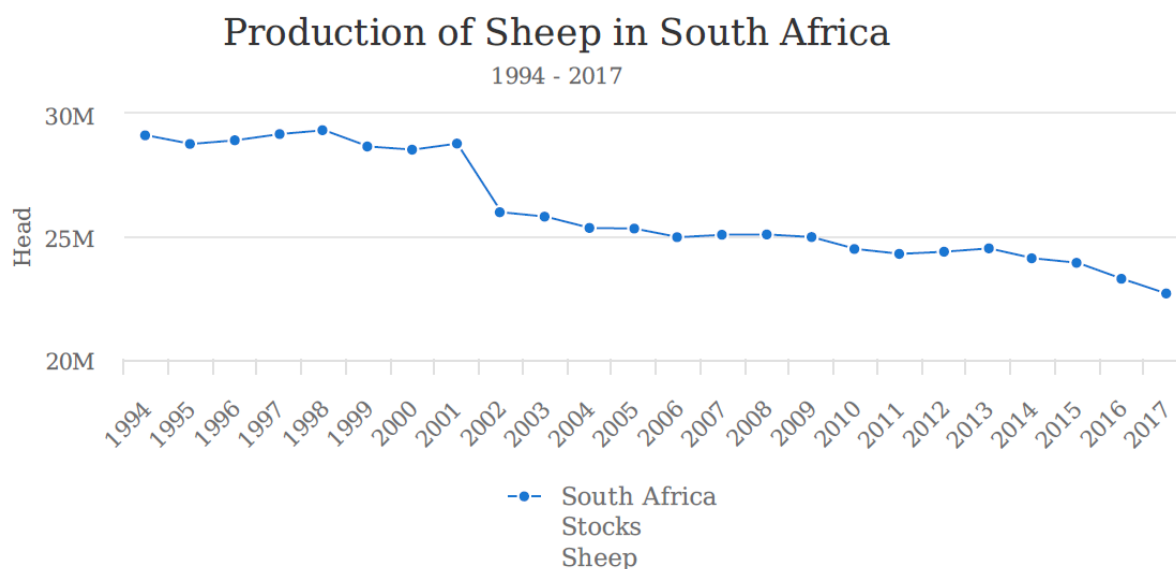


Figure 3. 11: South Africa sheep numbers
Source: FAO, 2019

The number of sheep in South Africa has also decreased, just like its global competitors. The industry has experienced a significant sheep withdrawal. For instance, figure 3.13 illustrates that in 1994 there were 29 133 700 sheep a trend which remained relatively constant until the turn of the millennium. With one season, in 2002, 2.8 million sheep were withdrawn. Ever since the industry has not increased

its sheep figures, in 2017, there were only 22.7 million sheep in the country (FAO, 2019). With the worst drought of the century in the 2017/18 season, experts are anticipating even a further decrease in sheep heads, which will further lower production. Cape Wool SA (2019) Noted that the returns for the 2018/19 season are a meagre 47 000 tonnes. The worst production in many years.

3.5.2. South African wool production

The country's wool industry has decreased in its share to the gross national value of production (GDP) and agricultural GDP as compared to the early years of the when it was a Union. Wool was only second to gold in terms of export and GDP contribution. Nevertheless, both figure 3.14 and 3.15 shows how production has decreased since 1961. The nation used to produce wool of around 125 000 to 150 000 tonnes in the 1960s and 1970s, but the trend has dived ever since. The downward spiral resided in the 1980s only to start again in the 1990s. The past decade has not been different. Also, production is now below 50 000 tones (Abbott, 2013; Cape Wool, 2018).

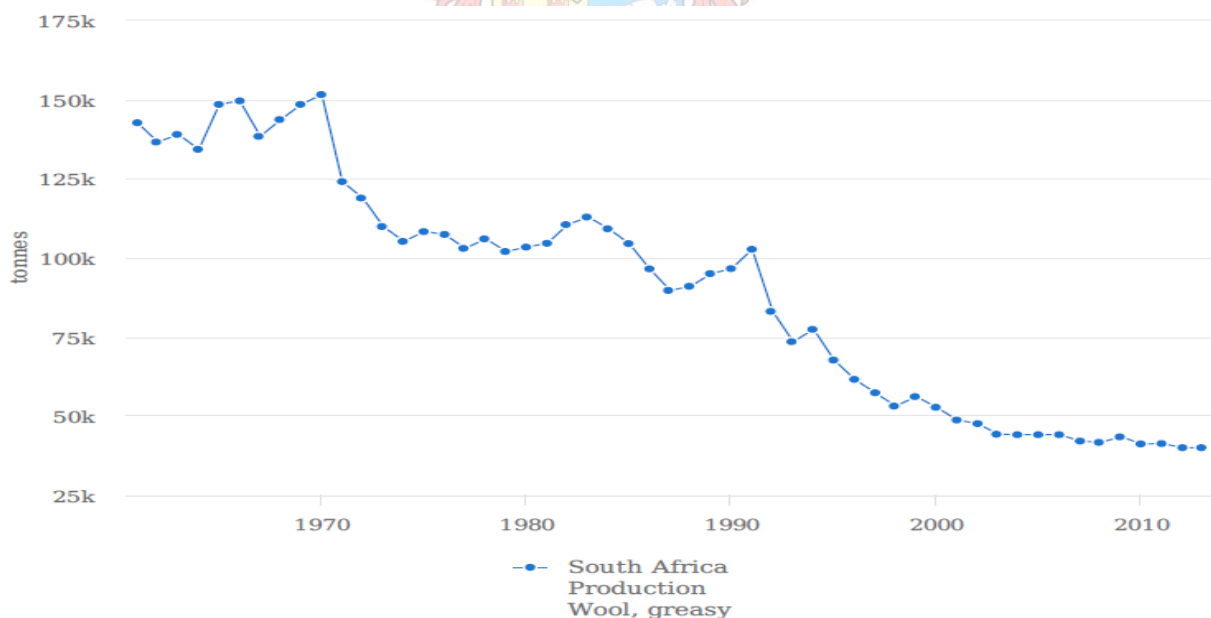


Figure 3. 12: South Africa wool production
Source: FAO, 2019

Moreover, the data for the 2018/19 season issued shows that production has continued to drop below the 50 thousand tonne level. However, the industry just survived the worst drought the nation has ever faced since record-keeping began. Therefore, the production drop was expected, and the industry is expected to go back above 50 thousand tonnes with a season or two (Cape Wool SA, 2019). However, the nation specializes in the apparel wool, where it is only second to Australia in production. Apparel wool is mainly shorn from Merino and Karakul sheep breeds. The composition of wool sheep in South Africa is mainly Merino and Karakul; around 74% of the total wool sheep is from Merino sheep.

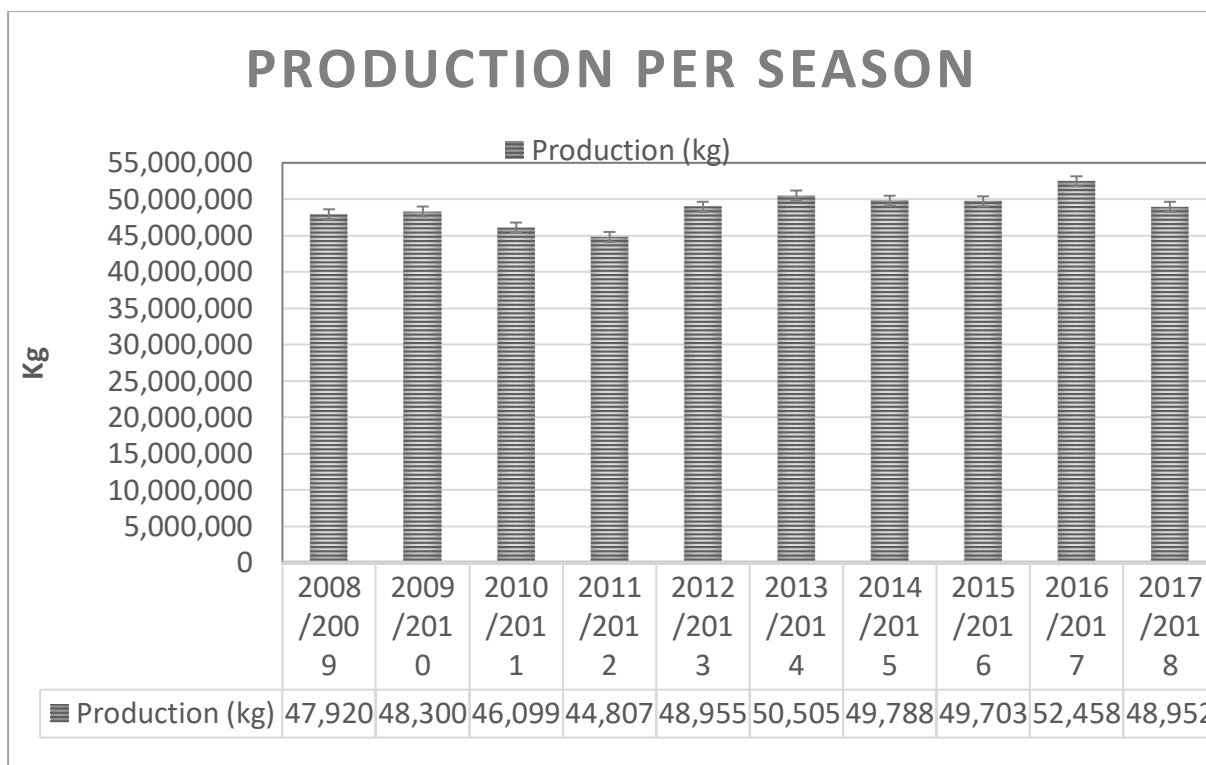


Figure 3. 13: Wool production over the years
Source: Cape Wool SA, 2018

3.5.2.1 Contribution of commercial farmers

The majority of commercial farmers are in the Free State (2557), Eastern Cape (1766) and Western Cape (1461) as illustrated in table 3.3. This is not a surprise, as it is well known that the majority of the country's clip comes from low rainfall areas like the Karroo instead of the high rainfall areas like Limpopo and Gauteng (Cape Wools, 2018; DAFF, 2015). Commercial wool farmers are the backbone of the nation's wool sector, and they produce over 85% of the country's clip (NWGA, 2019).

Table 3. 3: Distribution of commercial farmers by the province in 2017

Province/ country	Number of commercial farmers	Percentage
Eastern Cape	1766	26.1%
Free State	2557	29.9%
Western Cape	1461	17.1%
Northern Cape	856	10.0%
Mpumalanga	673	7.9%
KZN	256	3.0%
North West	338	3.9%

Gauteng	105	1.2%
Limpopo	105	1.2%
Lesotho	290	3.4%
Namibia	1	0.01%
Total	8559	100%

Source: Cape Wools, 2018

3.5.2.2 Contribution of smallholder farmers

Smallholder farmers over the years have gradually increased their contribution to the national clip. However, the quality is yet to reach the desired standards. As shown in table 3.4 between the 1997/8 and 2016/17 seasons, production has increased drastically. Thanks to initiatives from the government, municipalities and support groups such as Cape Wools SA and the Nation Wool Growers Association. Who helped build shearing sheds, introduce rams and upskilled the farmers. As a result, smallholder wool growers have increased their share in the national clip from 9% in 2005 to 11% in 2017 (NWGA, 2018)

Table 3. 4: Contribution of smallholder farmers

Season	Quantity (kg)	Value (R)
1997/8	222 610	1 502 908
1999/00	336 700	1 965 557
2001/02	535 911	6 927 640
2003/04	2 029 5562	17 768 955
2008/09	2 666 933	43 149 706
2009/10	2 807 161	64 676 989
2012/13	3 461 937	131 842 578
2013/14	3 806 993	137 919 368
2014/15	3 582 123	130 849 388
2015/16	4 462 089	233 618 025
2016/17	5 812 641	299 882 008
2017/18	5 422 122	383 607 431

Adapted from: NWGA, 2019

3.5.3 South African wool trade

In terms of trade, South Africa is a net wool exporter, and over 90% of its clip is destined for foreign markets (Cape Wool SA, 2018). Therefore, it has low levels of imports, the highest amount of wool it has ever imported was just over 2000 tonnes, as shown in figure 3.16. Therefore, the country is more important in terms of wool exports than imports Nevertheless, the country exports wool to China, India, the Czech Republic, Italy, the US, and Egypt. In 2018 over 70% of the country's wool was exported to

China, 16.5% to the Czech Republic, 5% to Italy, 2% to India, 1% to Egypt and only 0.25% to the US (ITC trade map, 2019).

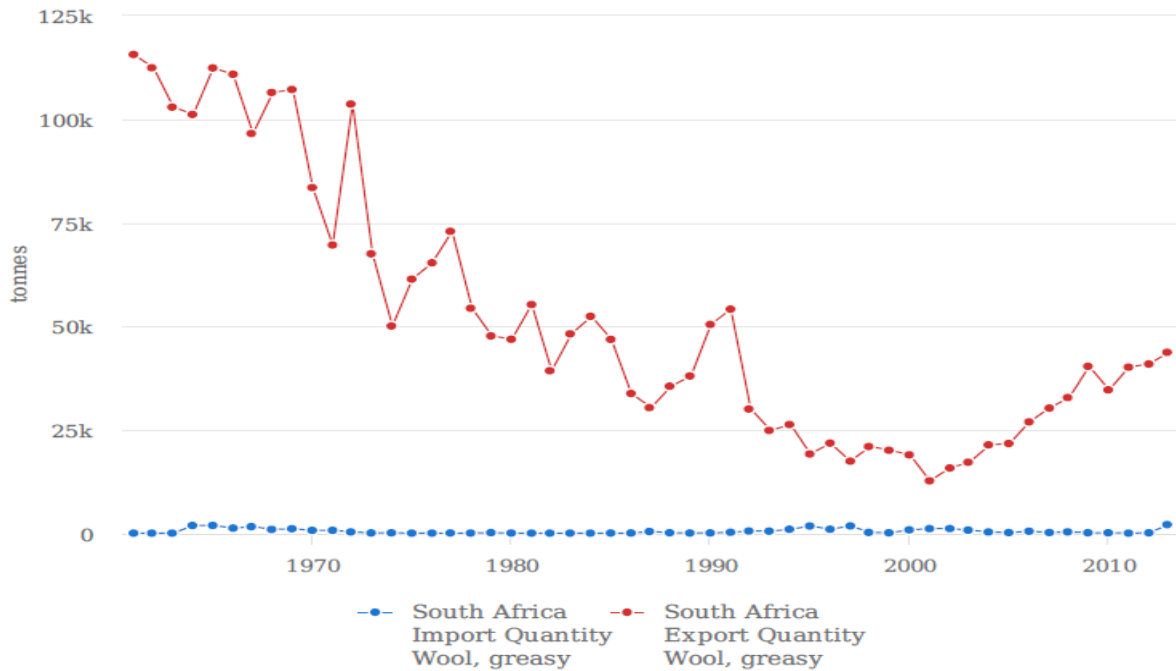


Figure 3. 14: Exports vs imports
Source: FAO, 2019

Even though China is the biggest importer of South African wool. That was not always the case, in 2001 the country sold only 10% of its wool to China, and the bulk went to European countries like Italy, Czech Republic, the UK. Belgium and 50% went to Brazil. As figure 3.17 illustrates, South Africa's export to China only picked in 2005 and dropped after 2009, but now they are in the all-time high. Exports to Italy and the Czech Republic are picking up steadily. However, experts anticipate India to be the next big market for the nation's clip. Especially since the Indian textile industry is maturing, and the demand for apparel clothing is expected to increase due to income growth.

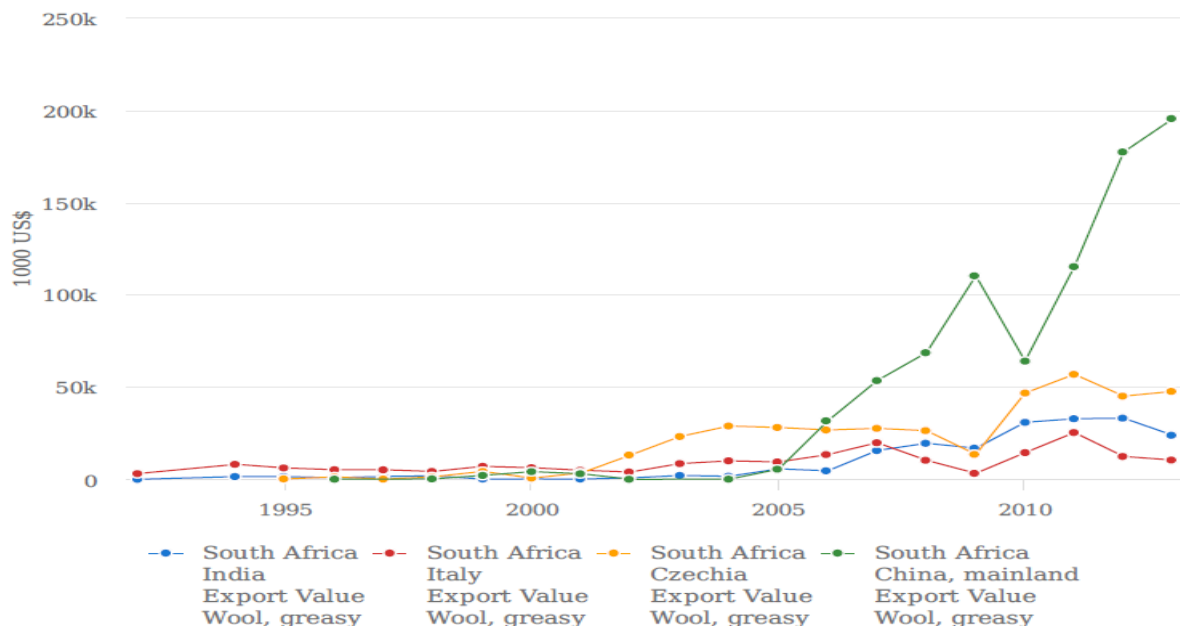


Figure 3. 15: Destination of South Africa's exports
Source: FAO, 2019

3.6 Threats for the South African wool industry

The South African wool industry is in a privileged position currently due to high demand and low supply, which results in favourable prices for the industry. However, analysts and key stakeholders are not sure how long the bullish market conditions will last. Farmers regularly ponder whether to diversify or increase their stock. In this section, threats such as raise in-game farming, policy uncertainty, and economic conditions are discussed. As well as the opportunities such as high demand for apparel wool and the increase of the export market led by the ever-increasing far east middle class. For the industry to realize its 75 million kg annual wool production potential, these threats must be addressed, and the opportunities must be utilized.

3.6.1 Game farming

Wool is mainly produced in semi-arid areas where game farming could be practised, especial springbok. That squares off the wool industry against the game industry as they compete for land use. Game farming is one of the fastest-growing agricultural sub-sectors in terms of land use, with an estimated growth rate of 2-2.5% annually and in the past 15 years; the revenue of the industry has increased by 201.3% (Chiyangwa, 2018). Eastern Cape, Free State and Northern Cape that are one of the wool industry's most productive provinces are also the most popular provinces for game farming. Especially in trophy hunting for the game like springbok, impala, kudu, and blesbok (DAFF, 2018).

In 2012, the Karroo farmers experimented with springbok farming as the wool industry was still recovering from the price collapse of 1991 and the recent stock market crash of 2007. However, profits did not increase as some experts had expected. In order to provide aid to the springbok farmers, it was recommended that the state intervenes with incentives to help convert the Karroo wool growing farms

into springbok enterprises (Van Rooyen, 2012). The current wool farming systems are relatively more profitable than game farming, especially springbok farming but to continue on this trend the South African wool industry must improve its competitiveness order for woolgrowers to cover the operating costs and make a profit (Chiyangwa, 2018).

3.6.2 Policy uncertainty

The National Development Plan identified the agricultural sector as one of growth and job drivers. However, there is a chasm between promise and performance. As Maladministration, corruption, and skills shortage and business-unfriendly bureaucracy (Sihlobo & Nel, 2016) plague state-owned enterprises and departments. South Africa is a resource-endowed country, with great agricultural potential. However, the government and politicians must refrain from the political rhetoric that polarises the nation, especially of the issue of land reform. The NDP has set a target of 20% of agricultural land redistribution by 2030. The private sector, especially in agribusiness, was fully committed to working with the state in accomplishing this objective. However, the recent land expropriation without compensation bill, which was passed by parliament recently, has created much uncertainty in the industry. Nevertheless, ARC (2018) recently reported that despite the policy uncertainty, no drastic price movement is expected in short to medium term.

3.6.3 Smallholder wool grower's low-quality clip

Smallholder wool growers fetch inferior prices in the market for their produce, especially communal wool farmers. There are numerous reasons for this phenomenon, and poor quality is one of the reasons (D'Haese *et al*, 2001). The produce of smallholder farmers is generally characterized by short and dirty produce or the *Basotho or Transkei* character (Kom, 2016). According to D'Haese *et al.* (2003), shortness in length is due to poor nutrition, as many communal farmers do not buy extra feed for their sheep but depend on the natural veld. Also, wool is dirty due to scrub infection, which relates to poor veterinarian services these farmers are getting (Nkonki, 2006). Makapela (2008) added that other reasons for the poor quality of smallholder wool growers are the poor quality of the flock, i.e. rams and ewes.

3.7 Opportunities

Prospects for industry growth are looking good, especially as China and the USA are on the road to recovery after the stock market crash in 2007. A report by one of South Africa's wool brokers BKB (2018) noted that the bullish market conditions underpinned by excess demand are forecasted to last long so long as growth in demand for apparel produced by the South Africa continues.

For South Africa's wool sector to make full use of the advantages offered by high demand for its apparel wool, the following must happen according to Luis de Beer (Cape Wools SA executive chairperson):

- Production must be increased from the current 52 million kg to 75 million kg

- The number of Merino sheep must be increased to 50 million
- Sheep farming must be increased to 1.25 million hectares

If the above recommendations are carried out, the following could happen: 12 500 new jobs will be created, and the contribution of wool to the GDP will increase by R1.5 billion. However, these recommendations must be made while maintaining the competitive advantages the wool industry currently holds, such as high quality and environmentally friendly wool production.

3.8 Contribution of wool to alleviating poverty

The majority of smallholder wool growers come from poor rural areas such as Transkei and Ciskei in the Eastern Cape, which are some of the poorest regions in the country. In these areas, unemployment, underdevelopment and poverty are epidemics. As a result, social grants and remittances are significant sources of income. For example, the Eastern Cape Province is the 3rd biggest province in the country, but it is the highest recipient of social grants. Also, the majority of smallholder farmers are pensioners and take care of grandchildren while the parents are migrant labours in provinces like Gauteng and the Western Cape. Therefore, the extra income attained from wool sales goes a long way in easing financial burdens for the rural poor (D'Haese, 2003; Nkonki, 2006; Makapela, 2008; Nyarai, 2015; Gerwel & Conradie, 2016).

3.9 Conclusion

To conclude, the South African wool industry stems back centuries and is one of the oldest industry in the country. Even though production has decreased drastically compared to the 1960s, it still is one of the cornerstones of the country's economy. However, in the past three years' production has been increasing significantly. The prices have recovered from the collapse of the early 1990s, which was caused by the collapse of price protection schemes. Moreover, production is expected to decrease in global terms as farmers withdraw stock for more lucrative enterprises. It remains to be seen what will happen to the local industry, whether it will follow the global trends or swim against the tide. However, to continue increasing production factors such as drought, policy uncertainty, the land question and competition from the game industry will have to be kept at bay.

Chapter 4

Research Methodology

4.1 Introduction

This chapter builds on from the literature review discussed in chapter two. Nonetheless, the chapter aimed to outline the five-step competitive performance analytical framework. Which was followed in the study. The section highlighted the research design and the analytical framework that was followed. Which showed how the objectives of the study are met and how the research questions are answered. It also highlighted the models used to analyse the data and how the data was collected. Moreover, Boonzaaier (2015) advised that in order to answer the research problem, the research must be designed rationally. The main objective of this chapter is to follow that advice. By designing an appropriate analytical framework, which enables the study to accurately measure the competitiveness of Smallholder Wool Growers (SWGs). In the previous chapter, the typology of smallholder farmers was broadly discussed, various levels of competitiveness were looked at, and the way scholars have defined competitiveness and how it is measured. This chapter builds on that, which assisted the study in developing an analytical framework that is reliable, rational and fit for purpose.

4.2 Stepwise analytical framework

The study used the Porter method that consists of five steps, which have been researched by many scholars such as Esterhuizen (2006), Van Rooyen et al. (2011), Ndou (2012), Jafta (2014), Abei (2017) and Dlikilili (2018) and Barr (2019). As illustrated in figure 4.1. The framework begins by defining competitiveness on step 1, measurement of competitiveness on step 2, identification of factors affecting competitiveness in step 3. Grouping the determinants of the industry's competitiveness in step 4 and step 5, investigate the ways of enhancing the industry's competitiveness. Moreover, in terms of the time dimension, the study used cross-sectional data collection method. Through the use of a structured questionnaire, that was comprised of open-ended, ranking and filling questions (Bless et al, 2013). Due to smaller size of the sample, the study used a Delphi type method of focus group inquiry approach (Barr, 2019). This approach has been followed by Dlikilili (2018), Sibulali (2019) and Barr (2019). However, this approach is not without disadvantage, as a result it needs to be treated with care, as it is not an industry wide study. Thus, the results of this study are not a South African wool value chain wide rather a group focused study. Therefore, analysis tables factors to be considered. Nevertheless, the study focused on smallholder farmers in Mthatha, Butterworth and the King Williams Town, formerly known as Transkei and Ciskei.

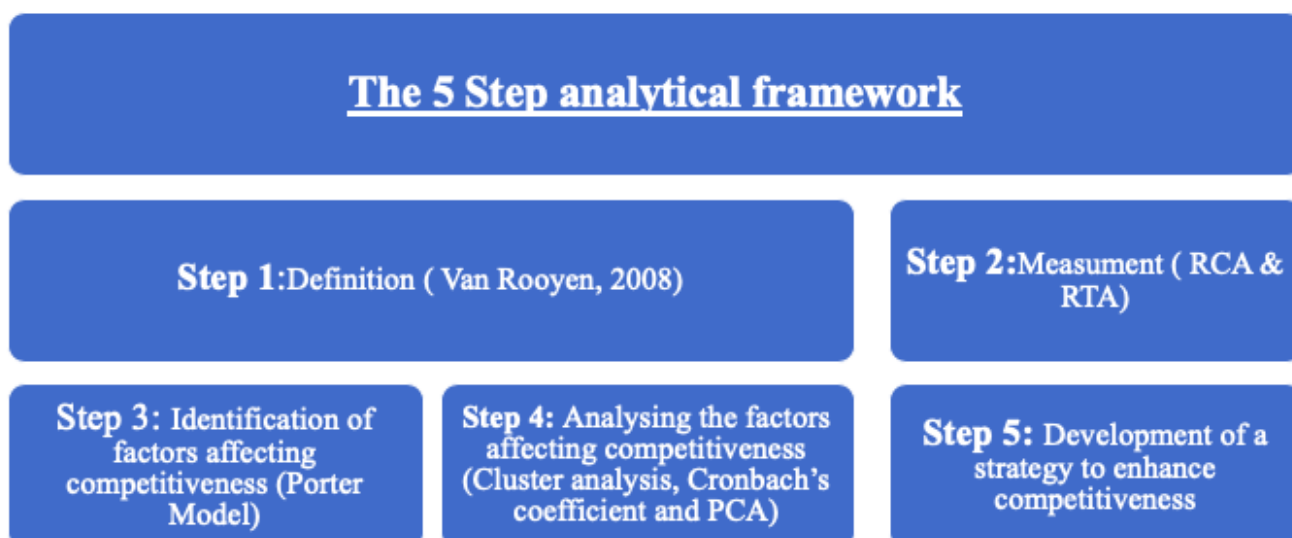


Figure 4. 1: Analytical framework

Source: Adapted from Esterhuizen (2006), Van Rooyen et al. (2011), Van Rooyen and Esterhuizen (2012), Jafta (2014), Angala (2015), Boonzaaier (2015), Boonzaaier & Van Rooyen (2017), Abei (2017), Dlikilili (2018), Sibulali (2018) and Barr (2019).

4.2.1 Step 1: Defining competitiveness

The study used the definition of competitiveness by Van Rooyen (2008:2), who defined competitiveness as "the ability of a sector, industry, firm or farm to compete by trading their products within the global environment while earning at least the opportunity cost of returns on resources employed." In the context of smallholder wool growers, competitiveness is the SWGs' ability to grow and trade wool competitively while remaining profitable, in the current trade conditions.

4.2.2 Step 2: Measuring the competitiveness

According to Van Rooyen and Boonzaaier (2016) from the definition the following factors stand out: four aspects are trade, scarcity, trends, and alternative options. The study used mainly the Balassa's RCA to measure the assess the competitive performance of the SA wool value chain, the SWGs, the nation's different woolen offerings. However, given the fact that South Africa have very low levels of imports, RTA was used mainly to compare the nation's competitive performance with its major rivals as recommended by Galetto (2003), Boonzaaier, (2015) and Dlikilili (2018). However, for SWGs only the RCA measure was used.

Sources of data

The study used both the primary and secondary data; the source of primary data was the questionnaire. The survey collected data on the determinants of competitiveness from the stakeholders of the wool value chain. The secondary data, which was in in form of trade figures and the destination of the South

African wool industry's wool exports and country of origin for imports, from FAOSTAT, ITC trade map databases and Cape Wool SA:

- Food and Agricultural Organization Statistical office (FAOSTAT)- provides agricultural statistics on commodities crops, livestock as well as fertilizer, pesticides, herbicides, agricultural equipment, and land use practices (Jafta, 2014).
- International Trade Centre (ITC) Trade map- provides data on trade values, the quantity of trade, market share and the growth rate of commodities across all sectors (Boonzaaier, 2015).
- Cape Wool SA represent the collective interest of all SA wool value stakeholders, from farmers, buyers, brokers, traders and labor. It is also a member of The International Wool Textile Organization (IWTO) which is the custodian of global wool trade and statistics reporting. Also, Cape Wool SA with help of NWGA have been paying special attention to SWGs or communal farmers, as a result they have been keeping their production and trade records since 1997. These records are recorded and distributed annually (Cape Wool SA, 2020).

4.2.3 Step 3: Identification of factors affecting competitiveness

In this step the study focused on factors affecting the competitive performance of SWGs. This was done through the SWGs survey. The survey however was not only restricted to the SWGs, as other wool value chain stakeholders were consulted. Moreover, in this step, the determinants of the industry's competitiveness identified in step 2 were clustered into the Porter (1990) diamond model, as discussed in the literature review. This method was followed, so the research question of 'how competitive are smallholder wool farmers?' can be answered. The Porter diamond model was used to interpret the primary data gathered through the structured questionnaire. Many scholars have expanded the traditional Porter model, such as Boonzaaier (2015), where the IMD World Competitiveness Yearbook and WEF Global Competitiveness Report were used. Also, Barr (2019) noted that the application of the Porter model in South Africa is hindered but the lack of socio-economic transformation factor. However, for the purposes of this study the traditional Porter model was used. The model has six determinants of competitiveness, namely:

- a) Production factor condition- the industry's position in terms of the availability of the factors of production, such as skilled labor and infrastructure, which are prerequisites for a competitive industry.
- b) Demand condition- is the nature of domestic demand for the commodities and commodities offered by the industry.
- c) Related and supply industry- is the availability of a globally competitive supplier industry.

- d) Firm strategy, structure, and rivalry- is the absence or presence of a business-friendly environment for creation, management of companies and the nature of completion within the industry.
- e) Chance- the events that occur with little or nothing to do with the industry's activities, events such as wars, technological discontinuities or political decisions by an import nation.
- f) Government- the state may be the most important determinant of competitive as it can distort the whole diamond model.

4.2.4 Step 4: Analyzing the factors of competitiveness

The primary data collected from the survey on excel spreadsheets was transferred to the SPSS (Statistical Package for Social Scientists) in order to do the descriptive analysis which was carried out with the following techniques:

I. Cluster analysis

Cluster analysis is a multivariate data reduction method. Used to sort cases, observations or variables into groups. The objective of the measure is to organize data into both homogenous groups within themselves and heterogeneous groups between each other (Yim & Ramdeen, 2015). In the study, non-hierarchical clustering was used to homogenous variables. The study used SPSS to calculate the measure.

II. Principal component analysis (PCA):

Boonzaaier (2015) mentioned that PCA is a descriptive indicator that use mean values. It is also used to identify redundant or highly correlated variables within the data set. Furthermore, Dlikilili (2018) added that the PCA is a type of factor analysis that reduces variables and is best used to highlight covariance within a given sample. The objective of the PCA is to extract relatively more essential variables from the data table and express the extracted data in the form of variables called principal components. Additionally, the research made use of the PCA method in conjunction with the varimax rotation method. Also, the results of the method are interpreted as loading if the factor is above 0.4, and vice versa if the factor is less than 0.4.

Moreover, the PCA has the following objectives (Sibulali, 2018):

- To extract the essential variables in the data set.
- To minimize the size of the data by eliminating the redundant variables.
- Finally, to simplify the data set and analyze the structure of the variables and observations

In this study, the PCA was applied to reduce and differentiate the correlated variables and non-correlated variables in the data set. Concerning the Porters' six determinants of competitive

performance. The PCA was used to identify variables with consensus for each of the determinants. That is to determine variables where respondents had similar or differing views.

III. Cronbach's alpha test

Lee Cronbach invented the test in 1951, and it is widely used to measure internal consistency (Dlikilili, 2018). The Cronbach Alpha test was used to test internal reliability or consistency. Duly, the questionnaire was constructed based on the six Porter determinants of competitiveness, and the alpha test was used to test the questionnaire's internal consistency. The results of the test are read as reliable if the score is above 0.7 and inconsistent if the factor is below 0.7 (Sibulali, 2018).

4.2.5 Step 5: Development of a framework to enhance the competitiveness of SWGs in the South African wool industry

Once the RTA and RCA values were measured. The 6 Porter diamond determinants of competitive performance established and the Clustering, PCA and Cronbach alpha analysis were carried out. Attention then moved to the strategic plan, which aimed to improve the competitive performance of smallholder wool growers. In order to achieve that goal, the Cronbach's alpha analyzed the correlated factors from the PCA. Then these factors made up the core of the strategic plan.

4.3 Conclusion

To conclude, chapter four aimed to outline the analytical framework and research design. That was achieved by adopting the five steps analytical framework. The five-step analytical framework was used in order to calculate the competitiveness of the SWGS. The RTA and RCA were used to measure competitiveness, while the diamond porter model was used to assess factors affecting the competitiveness of SWGs. In chapter 5 and 6, the analytical framework is used, and the results are presented. Finally, the chapter identified the sampling technique used in the research.

Chapter 5:

Analysis, findings, and results

5.1 Introduction

The chapter aimed to analyze the competitiveness of smallholder wool growers in South Africa. Duly, the chapter began by revisiting the first step of the analytical framework, where the definition of competitiveness was tabled. In step two, the chapter focused on the measurement of competitiveness, firstly for the SA value chain, then the SWGs, then after the relative competitiveness of Australia, New Zealand and Argentina using both the RCA and RTA. Also, the RTA and RCA values for different woolen products traded by the SA wool value chain. The chapter only focused on one step of the five-step model, that is Step 2. Chapter 6 deals with the third and fourth steps of the said model.

5.2 Definition (Step 1):

The first step of the five steps analytical method was to define competitiveness. The study used the definition of competitiveness by Van Rooyen (2008:2), who defined competitiveness as "the ability of a sector, industry, firm or farm to compete by trading their products within the global environment while earning at least the opportunity cost of returns on resources employed".

5.3. Measuring of competitiveness (Step 2):

In this section Balassa's RCA was used to calculate the competitive performance of the SWGs, as stipulated in the research methodology section. The underlying reason for choosing the RCA was that the SA wool value chain has a minute import rate (Cape Wool SA, 2019). Therefore, the RCA, which is focused on exports was deemed applicable and appropriate. To bring context, the section began with the SA wool value competitive performance calculations. Where both the RTA and RCA were deployed, as seen in figure 5.1 and 5.2.

5.3.1 The SA wool value chain RTA and RCA calculations

Figures 5.1 and 5.2, show the RTA and RCA values for the South African wool industry, respectively. The competitiveness status of South African wool depends more on exports than imports. As the difference between the RTA and RCA values is marginal as illustrated in figures 5.1 and 5.2. Due to this phenomenon, there is no significant difference whether RTA or RCA is used when calculating competitive performance for either the South African broader wool value or the SWGs. Also, according to Abei (2017), the ITC trade map generally has higher RTA values than FAO Stat when measuring competitiveness. This phenomenon is because ITC Trade Map data takes other export products into consideration. Not just the agriculturally based products as FAO Stat does.

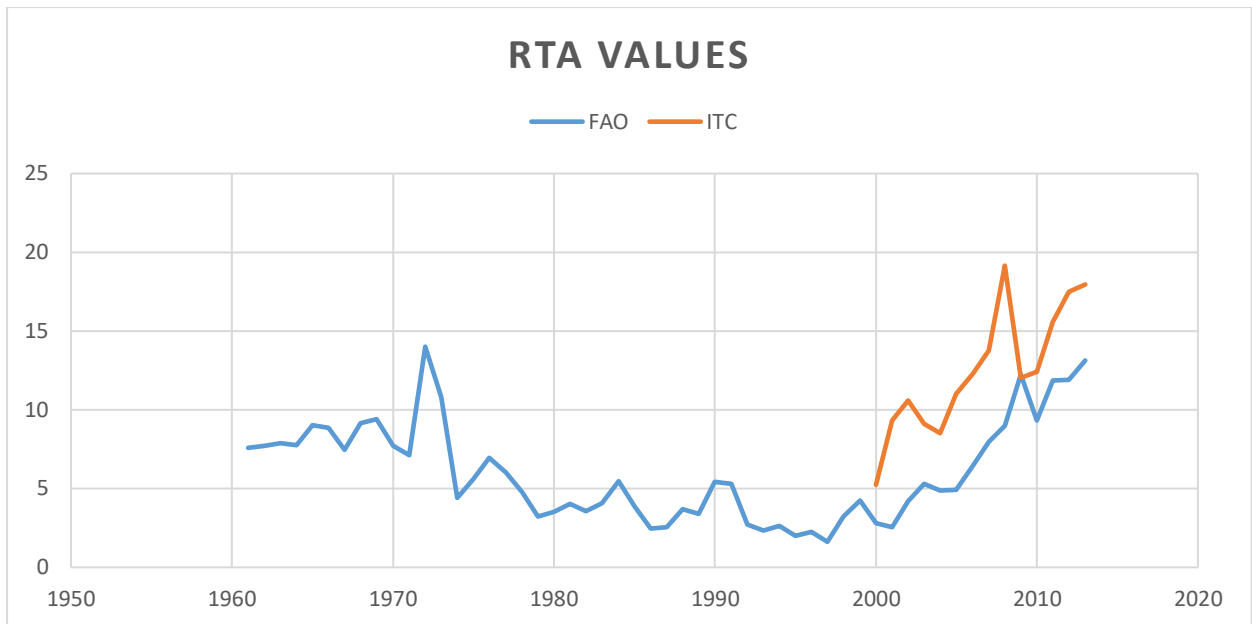


Figure 5. 1: South Africa’s competitiveness status from 1961 to 2016
 Source: Own calculations based on FAO and ITC trade map (2017)

From both figures, it is evident that the competitive status of the wool value chain has recovered from the 1990's lows. There are many underlying factors behind this growth. To mention a few, the exchange rate, the higher demand for fine wool, consumer taste and low production level globally (Geyer & van der Walt, 2013; IWTO, 2016 and BKB, 2018). Also, the industry is quite volatile, as the trend illustrates, this can be attributed to exchange rate fluctuations and the outbreak of small stock diseases.

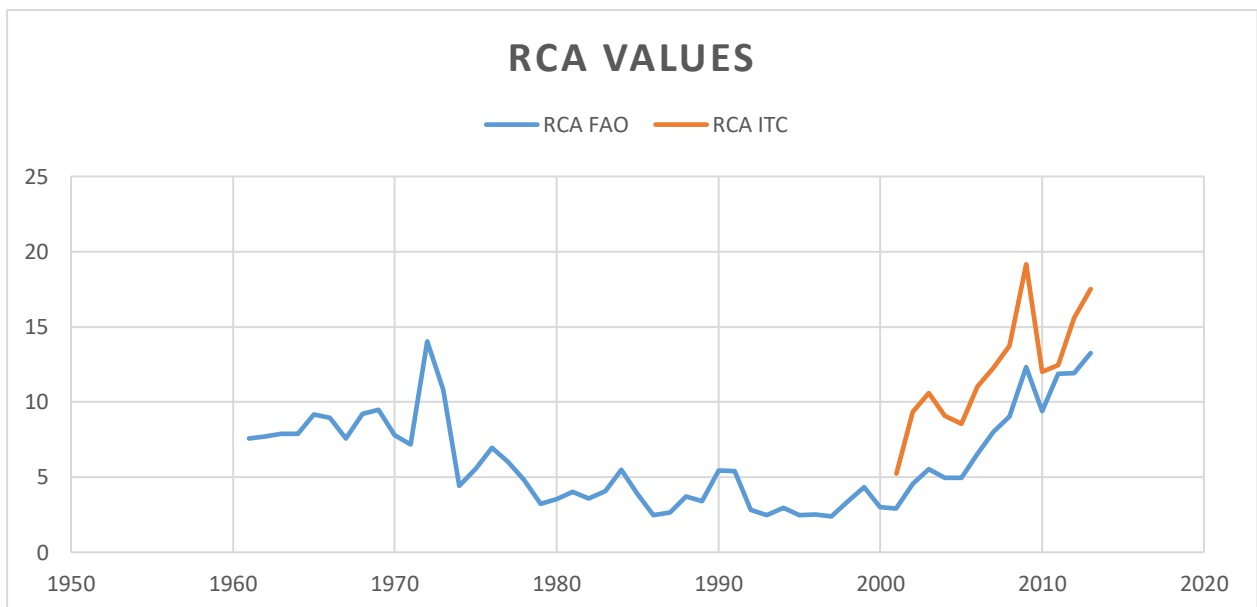


Figure 5. 2: South Africa’s competitiveness status from 1961 to 2016
 Source: Own calculations based on FAO and ITC trade map (2017)

5.3.2 Comparison of competitiveness between the general wool value chain and smallholder wool producers

In this section results for the macro and meso levels are tabled. The calculations were carried out with the data from the ITC trade map and data from Cape Wool SA. That allowed the study to compare the RCA values of SWGs with the rest of the value chain. From figure 5.3 and table 5.1, it is shown that smallholder wool growers have lower competitive performance compared to a general SA wool value chain, as expected. For example, when the South African wool value chain competitiveness was at 5 points in the year 2001. SWGs were competing at 0.03 points, which is marginally competitive. However, to have a clearer picture, one must look at the SWGs competitive status alone, as depicted in figure 5.4. Where it is evident that even though the SWGs wool was marginally competitive, over the past decade, it has increased gradually. The results show that tables started turning in 2016, when the RCA value for SWG's for the first time went above 1.0, signaling the beginning of a new era. Experts claim that the cooperation between the National Wool Growers Association and other stakeholders such as the Government of the Eastern Cape Promise is one of the reasons behind the improvement of the competitive performance of SWGs (NWGA, 2018). That is further confirmed by BKB (2018), who acknowledged that the intake of wool from the former homelands had increased by 28%. Also, given the fact that close to 90% of the country, is destined for exportation, it is safe to assume that all the SWGs clip is also exported (Cape Wool SA, 2019).

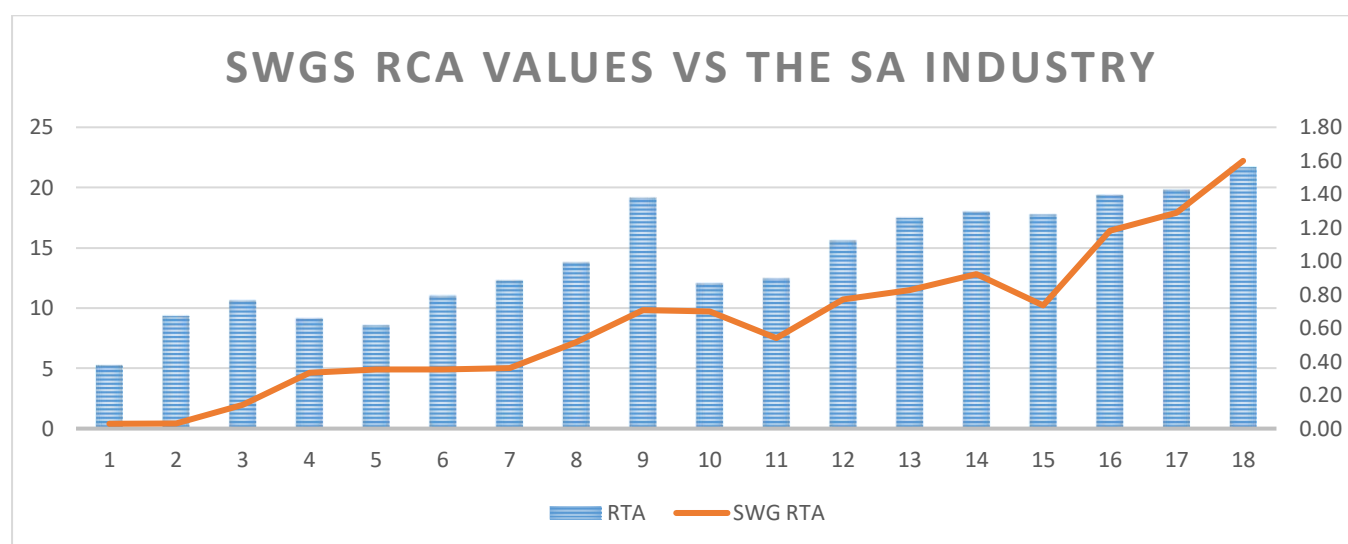


Figure 5.3: Small wool grower's competitiveness levels
Source: Own calculations-based ITC trade map and data from Cape Wool SA (2018)

In order to calculate the RCA values for smallholder wool growers, as indicated in the methodology section, the study made use of the data from Cape Wool SA, which has the exports value of the SWGs clip exported. In the RCA formula this value then replaced the South African industry value i.e. only the SWGs export where captured in x_{ij}/X_{it} in the RCA formula on page 14

Table 5. 1: Commercial wool farmers and small wool growers RCA values

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
ITC RCA	5.09	9.09	10.28	8.81	8.32	10.74	12.06	13.44	18.73
Cape Wool SA RCA	0.03	0.03	0.14	0.34	0.35	0.35	0.36	0.52	0.71
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
ITC RCA	11.85	12.28	15.52	17.49	17.96	17.62	19.19	19.54	21.26
Cape Wool SA RCA	0.70	0.54	0.77	0.83	0.92	0.74	1.18	1.29	1.60

Source: Own calculations based on ITC trade map and data from Cape Wool SA (2018)

5.3.3 Competitive status of SWGs

This section considers the competitiveness of Smallholder wool growers. The calculation was done from the data provided by Cape Wool SA. Which start from 2001 to 2018. Figure 5.4 illustrates the competitive performance of SWs in five different phases.

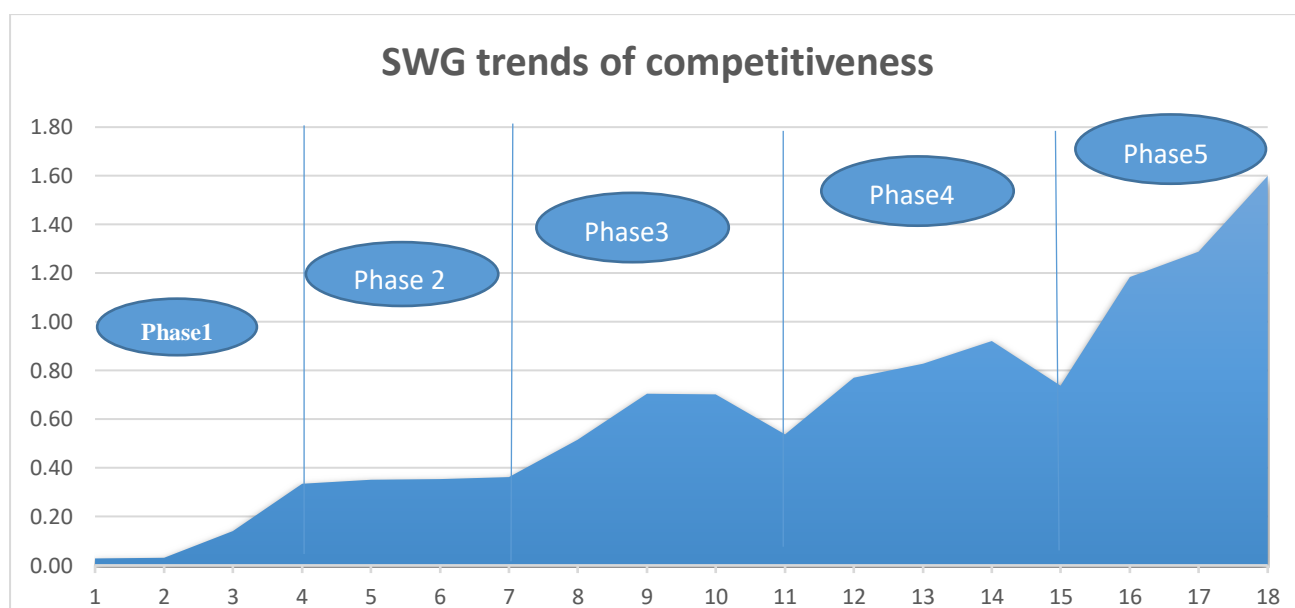


Figure 5. 4: Small wool grower's competitiveness levels

Source: Own calculations based on data from Cape Wool SA (2018)

Phase 1: The intervention era, from 2001 to 2004

After the deregulation era, the wool industry experienced a considerable transformation that was a result of the South African government policy framework, popular known as RDP (Reconstruction and Development Program). Which resulted in Public-Private Partnerships (de Beer, 2018). The multi-stakeholder PPP was spearheaded by NWGA in cooperation with Cape Wools SA to provide much-needed assistance to smallholder wool growers. According to NWGA (2018), the program began in 1997, and it involved the following forces:

- Organizing smallholder wool growers into Wool Growers Associations (WGA)
- Provided training and mentorship
- Prepare farmers for market-related challenges
- Generic improvement of flocks
- And infrastructural development

Given the fact that majority of smallholder wool growers are in the former homeland such as QwaQwa, former Transkei and Ciskei. The project started in the Free State and Eastern Cape Province. Numerous studies have been done to assess the effectiveness of the said project. For example, Van Rooyen *et al.* (2011) noted that after the intervention, there was an 11-fold increment in the production of communal farmers and a 30-fold increase in revenue over the decade. They added that former Transkei and Ciskei's contribution to the national clip grew to 12%.

Moreover, D'Haese and Vink (2003) mentioned that the main factor for the increase in competitiveness of SWGs was access to markets. That is illustrated by the marginal improvement of the RCA value from 0.03 in 2001 to 0.34 points in 2004. Nonetheless, the initiative did not resolve all the challenges that plagued SWGs. In a study done by D'Haese *et al.* (2001), they found that communal wool farmers had relatively poor technical efficiency. This phenomenon hindered the upscaling of their wool enterprises to commercial levels, which is reflected by the marginal competitive status of the sector score during the first phase.

Phase 2: The takeoff era, from 2004 to 2007

Even with such noble intervention, the challenges SWGs faced were enormous. These farmers had been neglected for decades. As a result, interventions took long to bear the desired outcomes. That was the case in the years 2004 to 2007. Where the rural communities were plagued by multiset of challenges, such as HIV and AIDS, rural to urban migration and livestock theft. To compound matters, due to overpopulation and land degradation and carrying capacity of communal land had decreased drastically (Makapela, 2008). Fortunately, the PPP initiative had already taken root, more sheds for shearing and dips were built. Which helped farmers to improve their flocks and wool quality. Production increased from 2 029 556 kg to 2 666 933 kg. Also, farmers started fetching better prices in the market due to improved quality, classing and sorting skills. Revenue rose from R 17 768 955 in 2004 to R43 149 706 in 2007 (NWGA, 2018). Table 5.1 shows that the RCA value increased marginally from 0.34 to 0.36 from 2004 to 2007.

Phase 3: The consolidation era, from 2007 to 2011

The period between 2007 and 2011 was no plain sailing for the wool industry. The year 2007 saw the collapse of major banks in the West (New York and London) this led to the so-called 'credit crunch crisis'. Which affected developing countries like South African severely, as commodity prices tumbled. As a result, some of the gains that were made in phase 2 were reversed as the crisis continued. To compound matters, in South African politics this was the beginning of the so-called '9 lost years under the now-infamous President Zuma.

Additionally, access to the formal market or lack thereof continued to undermine the progress made. As of the 4 million kg SWGs produced only 2.3 million was marketed formally (Eastern Cape Department of Agriculture, 2008). Although farmers fetched improved prices, quality and productivity of the clip undermined these efforts. For example, in 2008, while commercial farmers were making 5 kg per sheep, SWGs were only getting 2 kg (Makapela, 2008).

Even in these testing conditions, the institutions the PPP initiative had set up weathered the prevailing storms. The Wool Growers Associations and mentorship programs proved to be invaluable (NWGA, 2012; Cape Wool SA, 2018). Farmers continued to fetch favorable prices from R 876/kg in 2004 to R 2 370 in 2011 (NWGA, 2018). However, figure 5.4 *phase 3*, shows that these high prices were not enough to evade the marginal competitive performance crisis levels only marginally improved 0.36 in 2007 to 0.54 2011.

Phase 4: The maturity era, from 2011 to 2015

The phase between 2011 and 2015 is termed '*the maturity era*' because it is after a challenging period for the agri-business and SWGs sector. As expected, things gradually started to improve after the stock market crash, the US economy started to grow, followed by major economies such as China, the largest importer of South African wool. As a result, prices increased steadily. This recovery was underpinned by increased investment to SWG's as R1.85 million was used to construct sheds, 3000 rams were introduced to the rural communities annually, and over 236 communities benefited from this investment (Wool Trust Fund, 2012). The introduction of new rams also assisted in increasing production, as the range ownership of sheep increased to 70-113 from 20-30 (De Beer, 2018).

There was a gradual reduction in global wool production as many farmers moved away from wool enterprises, during this phase. Nevertheless, in South Africa, it was a different trend, farmers were increasing the number of their livestock, and SWGs took advantage of the resources in their disposal and increased production drastically. Production increased from 3 027 276 to 3 582 123 kgs in 2011 and 2015 respectively. While revenue from grew from R71 749 104 to a staggering R137 919 368 before it retreated to R130 849 388. Underpinning this growth was the favorable wool prices and improved clip from communal farmers (NWGA, 2019).

Phase 5: The cruise era, 2015 to 2018

The investments made by the Private Public Partnership began to bear fruit; the present era is the greatest in the history of wool farming for the smallholder wool growers. However, there are still structural challenges that need to be dealt with before SWGs can fully reach their true potential. For example, in our SWGs survey most farmers, brokers, traders, and wool buyers mentioned communal tenure as one of these structural issues that impede productivity and competitiveness (SWGs survey, 2019). Nevertheless, productivity has shifted to 5 422 122 kg in 2018 from 3 582 123 kg in 2015 (NWGA, 2019). This period has seen a drastic improvement in competitiveness levels from meagre 0.54 to all-time best 1.60 RCA value.

Admittedly the SWGs started from a low competitiveness base, but the gap between them and the commercial growers as gigantic as it may be, is slowly narrowing. Although they have improved over the 5 phases mentioned above, they still have a lot to do in order to catch up. Even though half of the sheep in the Eastern Cape, the biggest wool-producing province, are owned by SWG's., yet their competitive levels are still marginal. For instance, in 2018, while the RCA value for SWG's was 1.60, for commercial farmers it was 21.26, and the difference between prices fetched was close to R3000/kg (Cape Wool SA, 2019), as illustrated in table 5.1.

5.3.4 Comparison of different woolen products

In this section, the RTA and RCA values of different wool products or are categories are tabled. Moreover, in the South African wool value chain, minimal value addition is done. According to Cape Wool SA (2017), the majority of South Africa's clip is sold as greasy (86%), scoured (3%) and scoured (8%). Moreover, figure 5.5 shows the competitive performance of various woolen products from 2001 to 2015. Accordingly, the category with the highest competitive performance is greasy wool, followed by carbonized wool. The rest are either marginal competitive or not competitive at all. Indeed, this indicates low levels of processing, according to De Beer (2018) this is due to poor competitiveness performance of the South African textile industry compared to competitors, which is attributed to lack of capacity, infrastructure and labor costs.

If the industry is going to break it is overexposure to China, its leading export destination, the trends will have to be reversed. For example, the recent trade war between China and the US has had devastating effects on the industry (DAFF, 2019). If such conflicts continue in the future, the industry will suffer much. According to De Beer (2018), there is a potential for value addition even at the farm level, and another strategy may be to capacitate the processing arm of the value chain. To offer the nation's clip to a diverse market such as India, Italy and the Czech Republic who are significant importers of processed wool. However, for such to happen, factors constraining the competitive performance of processed wool will have to be solved.

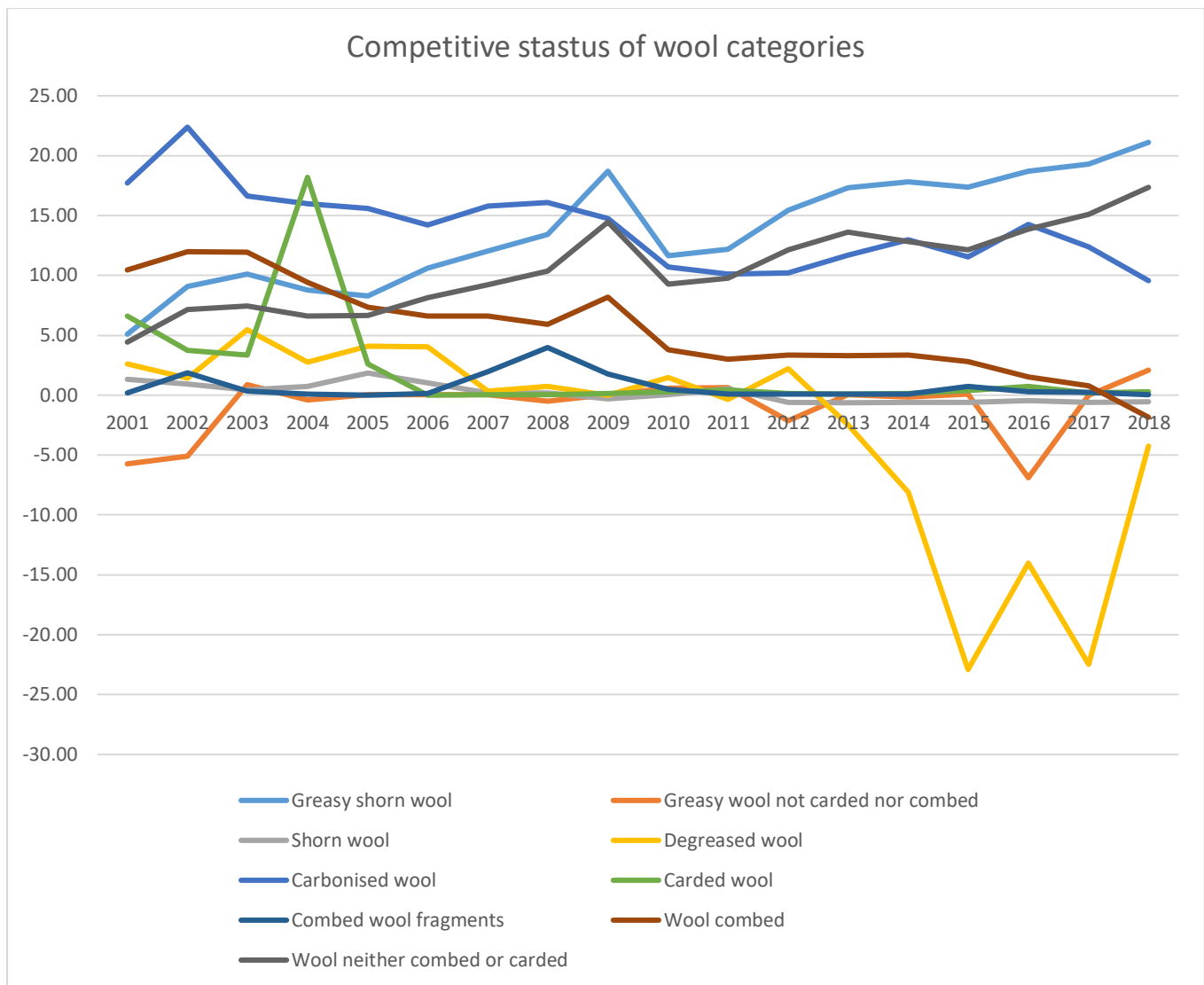


Figure 5. 5: Competitive performance of different wool categories
Source: Own calculation based on ITC trade map (2019)

5.3.5 Comparison of South African wool industry RTA and RCA value with global players

Heyden et al (2013) defined worked on relative competitive performance, they make a clear distinction between an economy or a sector competitiveness. Where a nations' competitiveness maybe be measure through all the services and goods trade, relative competitiveness focuses more on single good or services. Moreover, greasy wool is the most traded wool category. Australia, South Africa, New Zealand, and Argentina are the world's biggest exporters of greasy wool. Besides, Australia is both the world's biggest producer and exporter of greasy wool with over 70% worth of global export share, followed by South Africa (10%), New Zealand (5%) and Argentina (2%). Therefore, these countries are collectively responsible for 91% of world greasy wool exports (ITC, 2019). The dominance of these nations is not recent, as far as in 1961 they accounted for 83% of the then total world exports (Leishman at el, undated).

Table 5. 2: Comparison of SA RCA and RTA values with global major wool growers

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Aus. RCA	79.02	79.43	80.09	80.56	73.49	71.43	73.62	62.72	56.64	50.08	47.68	50.51	52.10	51.30	59.79	59.75	58.22	55.91
AUS RTA	78.89	79.26	79.78	80.43	73.48	71.42	73.61	62.71	56.63	50.07	47.67	50.50	52.10	51.30	59.79	59.75	58.22	55.91
SA RCA	5.09	9.09	10.28	8.81	8.32	10.74	12.06	13.44	18.73	11.85	12.28	15.52	17.49	17.96	17.62	19.19	19.54	21.26
SA RTA	5.09	9.05	10.10	8.77	8.28	10.60	12.03	13.40	18.69	11.65	12.17	15.44	17.32	17.82	17.39	18.70	19.31	21.11
NZ RCA	34.87	34.17	36.53	31.01	32.86	33.85	25.82	28.72	33.51	31.62	29.30	29.93	30.49	36.09	32.99	26.43	21.38	24.48
NZ RTA	34.72	34.14	36.44	30.91	32.79	33.76	25.73	28.53	33.45	31.48	29.06	29.79	30.39	36.01	32.84	26.30	21.29	24.43
ARG RCA	4.81	5.24	5.70	5.83	4.75	3.92	5.53	4.27	3.82	4.99	3.14	2.82	3.20	4.87	4.34	8.57	5.01	6.92
ARG RTA	4.66	4.88	5.20	5.21	4.47	3.32	4.80	3.96	3.47	4.79	3.00	2.77	3.10	4.79	4.31	8.54	5.01	6.92

Source: Own calculations based on ITC Trade map, 2019

Consequently, Australia has the highest RTA and RCA values, but it has decreased steadily since the turn of the millennium, from 78 to 55 points. This change is attributed to a harsher climate, farmer diversifying their wool production and higher costs of production (Longworth et al, 2005). The type of wool Australia produces is mainly used for apparel production due to its fine micron. For example, in 2003, 85% of the country's flock was made up of the Merino sheep, but the nation's clip was only produced by 40% of its farmers. Signalling, an over-concentration which can affect the industry severely if these farmers can be affected by adverse weather due to factors such as climate change (Verikios, 2006). Another threat to the country's wool value chain is its over-reliance on the Chinese economy, which is also the second producer of wool.

On the contrary, the two countries produce two different types of wool as China's clip is coarse while Australia produce is fine. Therefore, Australia complements the Chinese wool value chain than competing with it (Longworth, Brown & Waldron, 2005).

New Zealand, Australia's closest neighbour geographically produces a coarser wool type, which is derived from crossbreeds. This form of wool is usually used to produce carpets instead of clothing

apparel. South Africa produces relatively more excellent wool than New Zealand (Abbott, 2013). Argentina, on the other hand, is the smallest wool producer out of the dominant four. Its competitive performance has always ranged from 4 to 6 points (ITC, 2019).

Similarly, South Africa wool growers fine, high-quality wool and is the second biggest exporter of fine apparel wool, as illustrated in table 5.3, the country has a competitive advantage in this category. Therefore, it is evident that South Africa's main competitor is Australia. South Africa has a slight advantage over its counterpart, however, and that is labour cost. A study done by Cloete, et al (2009), found out that labour cost for the country is 25% lower than in Australia. Nevertheless, Australia has a geographical advantage, being the closest to China and economies of scale as the country produces over 25% of the total world wool production (De Beer, 2018).

5.4 Conclusion

In summary, this chapter aimed at measuring the competitiveness of smallholder wool growers in the context of the South African wool industry. That was done by first revisiting the definition of competitiveness (Step 1) used in the study, then followed by the ways of measuring competitive performance for smallholder wool growers (Step 2). The calculation of competitiveness (Step 3) was carried out through the RTA and the RCA to measure the competitiveness of the South African industries, the SWGs and the industries competitors such as Australia, New Zealand, and Argentina. From the chapter, it was evident that both SWGs and the broader South African wool value chain have a definite competitive performance. Also, the competitive performance of various woollen products was tabled. The next chapter looks into the factors affecting the competitive performance of smallholder wool growers.

Chapter 6

Factors affecting competitive performance

6.1 Introduction

This chapter aimed to describe and highlight factors affecting the competitive performance of smallholder wool growers in South Africa. The chapter first tabled the descriptive analysis of the respondents in the SWG's survey. Then the cluster analysis was highlighted. After each of the six Porter determinants were discussed, and the PCA for each factor were provided. The last part of the chapter focused on the Cronbach's alpha analysis, which determined which factors were included in the strategic plan in chapter 7.

6.2. Factors affecting competitiveness (Step 3)

The study in this section considered the findings and the results of the Smallholder Wool Growers and value chain survey. Then both cluster analysis and principal component of analysis are briefly touched.

6.2.1 Descriptive analysis

Table 6. 1: Description based on role in the wool value chain

Value Chain Position	Number of respondents	Share of respondents
Producers	23	51%
Producers in sheds	5	11%
Buyers	6	13%
Brokers	4	8%
Supporting and extension services	7	16%
Total	45	100

Location of the producer	Number of producers	Share of producers
Mthatha	10	43%
Butterworth	8	35%
King William Town	5	22%
Total	23	100%

Location of the shed producer	Number of shed producers	Share of shed producers
Region 20	1	10%
Region 21	1	10%
Region 23	1	10%
Region 24	1	10%
Region 25	1	10%
Total	5	100%

Area of the extension officer*	Number of extension officers	Share of extension officer
Eastern Cape	2	20%

Mthatha	2	10%
Butterworth	1	10%
King Williams Town	1	10%
Port Elizabeth	1	10%
Total	7	100%

Source: Own calculations based on the SWG survey (2019)

*Extension officers include supporting services

Table 6.1 depicts the survey respondents from the wool producer, traders, buyers, brokers, extension officers, and to the supporting services. The table shows that the number of SWG's interviewed was 23; they are from both the former Transkei and former Ciskei. Specifically, eight from Butterworth, five from King Williams Town and ten from Umtata. Moreover, five shed leaders interviewed are the shed leaders are in the formers Transkei. Also, the table shows that the extension officers are evenly distributed across the province. That is good, especially when comparing the views of broader clusters, as will be discussed in the following sections.

Nevertheless, the highest represented group on the survey were the farmers (51%), followed by supporting and extension officers (16%). While wool buyers (13%) and brokers (8%) and shed leaders (11%) were significantly represented in the survey group. Lastly, due to time and resource constraints, only 45 wool value chain stakeholders could be included in the survey. The following section discusses the cluster analysis and delves into the Porter determinants of competitiveness further.

6.2.2 Cluster analysis

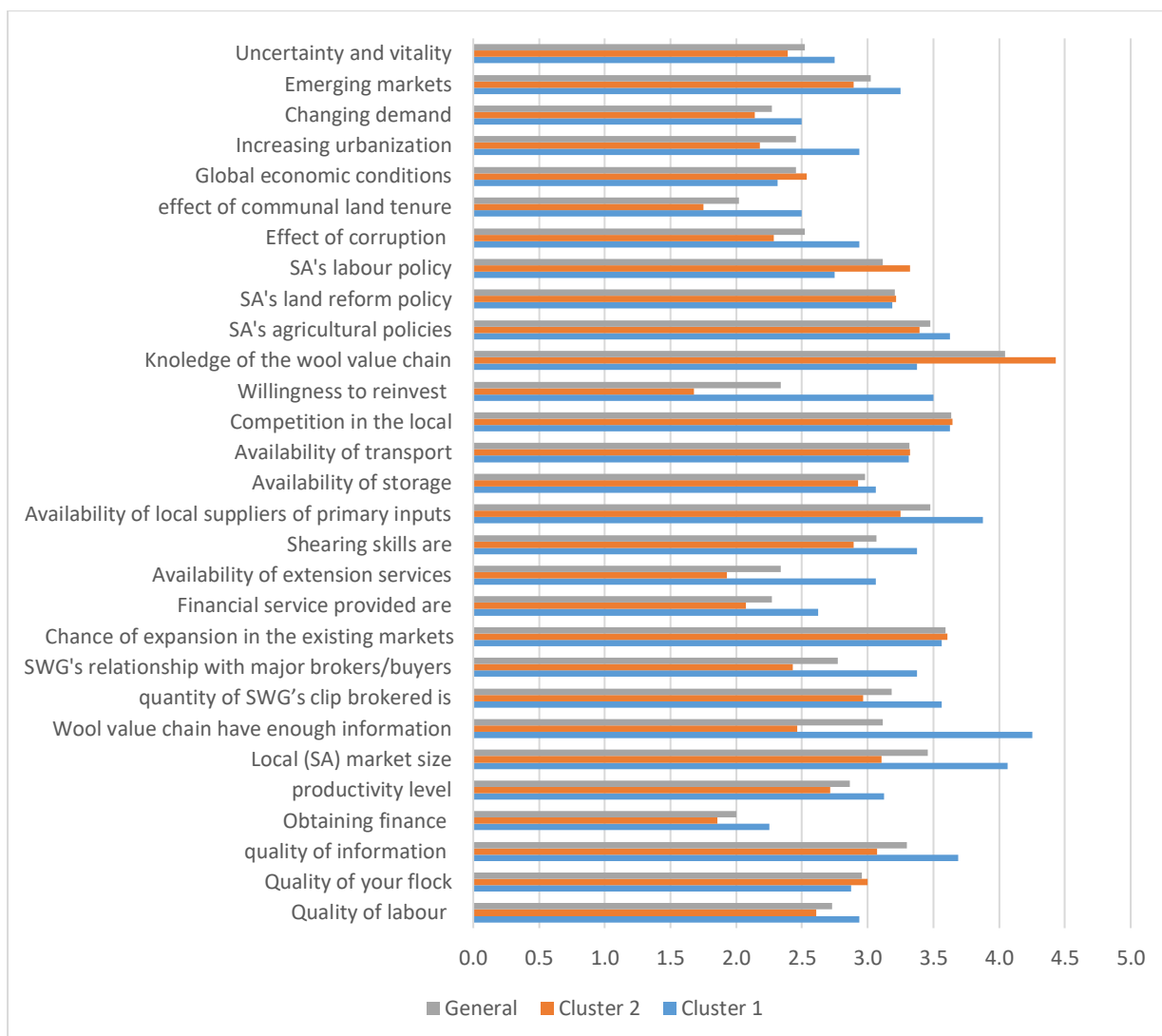


Figure 6. 1 Factors impacting competitiveness
 Source: Own calculation-based SPSS (2019); SWG (2019)

Figure 6.1 illustrates the views of the respondents based on the classification. From the figure, it is evident that there was a consensus on many issues, even though the respondents were from different regions, or played different roles in the value chain. That is also shown in table 6.2, where it is indicated that cluster 1 had reported 86% on factors that enhance the competitive performance of smallholder wool farmers. While their counterparts registered 59%. This phenomenon will be deliberated in the Cronbach's reliability test and Principal Coefficient of Analysis. Moreover, from the impact factor ranking, knowledge of the wool value was reported by most of the respondents as the most important in determining competitive performance. While unsurprisingly corruption was elected to be the biggest stumbling block.

Figure 6.2 illustrates the response of the respondents when clustered into the 6 Porter competitiveness determinants., while figure 6.1 shows the impact rating of all the factors, also showing the most constraining factors and the most enhancing factors. Respondent's responses are further broken down

into 3 clusters in Figures 6.2 and 6.1. Smallholder wool growers constitute cluster 1, and the second cluster is made up of the extension officers, production advisors, wool brokers, and wool buyers. Also, the general industry is classified into a distinct cluster, which is made up of all the wool value chain members in South Africa. The rationale behind the classification system is to check if the opinions and experiences of the respondents differ based on the roles, they play within the value chain system (Abei, 2017). Indeed, as demonstrated in figure 6.2, there is slight variation in opinion. For example, in the demand factor condition, cluster 1 has a higher mean average compared to cluster 2. This difference in opinion, as minute as it may be but demonstrate the difference in aspiration, views and experiences between producers and buyers or brokers. The classification system is dealt with in detail in section 6.3.

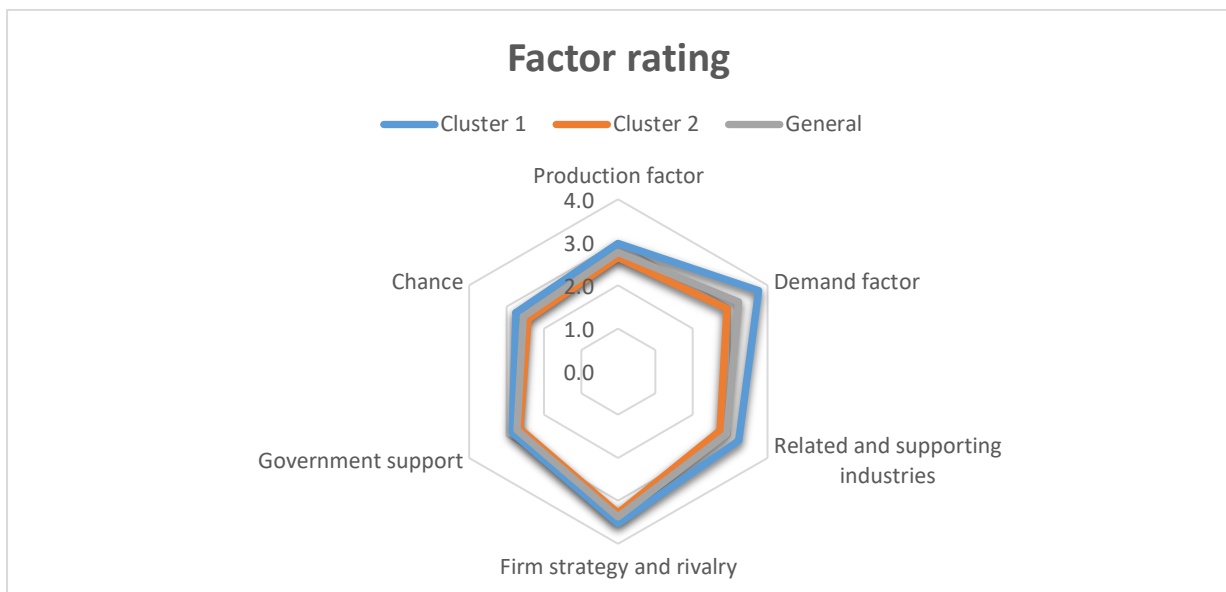


Figure 6. 2 The distribution of determinants by clusters
 Source: Own calculations based on the SWG survey (2019)

Table 6. 2 Impact rating of each cluster

Rating the factors	Cluster 1	Cluster 2	General industry
Factors above 2.5	86%	59%	65%
Factors at 2.5	7%	2%	7%
Factors below 2.5	7%	39%	28%

Source: Own calculations based on SWG survey (2019)

6.2.3 Principal component analysis

The PCA was used in the study to measure correlated factors from the data set, as explained in the methodology section. The method was used in conjunction with the Cronbach's alpha test. Where highly correlated factors were identified and further analyzed, utilizing the alpha test to evaluate internal

consistency. The PCA was carried out in two ways; first, for each competitiveness determinant and for the whole data set as illustrated in appendix B. Detailed results for each determinant are discussed in section 6.3.

6.3 The Porter Competitiveness Diamond Framework (Step 4)

Broadly, the respondents cited government support and policies as the most constraining of the six determinants. Even when one separates the respondents into the 3 clusters, as mentioned earlier, there is the consensus. That is hardly a surprise. As, during data gathering, many respondents did not hide their discontent with the state policies or lack thereof. However, this determinant is discussed separated in the following sections. Also, the Principal Coefficient Analysis (PCA) and cluster analysis are calculated for each determinant to measure the correlation between the variables.

Table 6. 3 Overall factor conditions impact rating

Determinant	Cluster 1	Cluster 2	General industry
Production factor	3.0	2.7	2.8
Demand factor	3.8	2.9	3.2
Related and supporting industries	3.2	2.7	2.9
Firm strategy	3.5	3.3	3.4
Government support and policies	2.8	2.6	2.7
Chance factor	2.8	2.4	2.5

Source: Own calculations based on the SWG survey (2019)

6.3.1 The production factor conditions

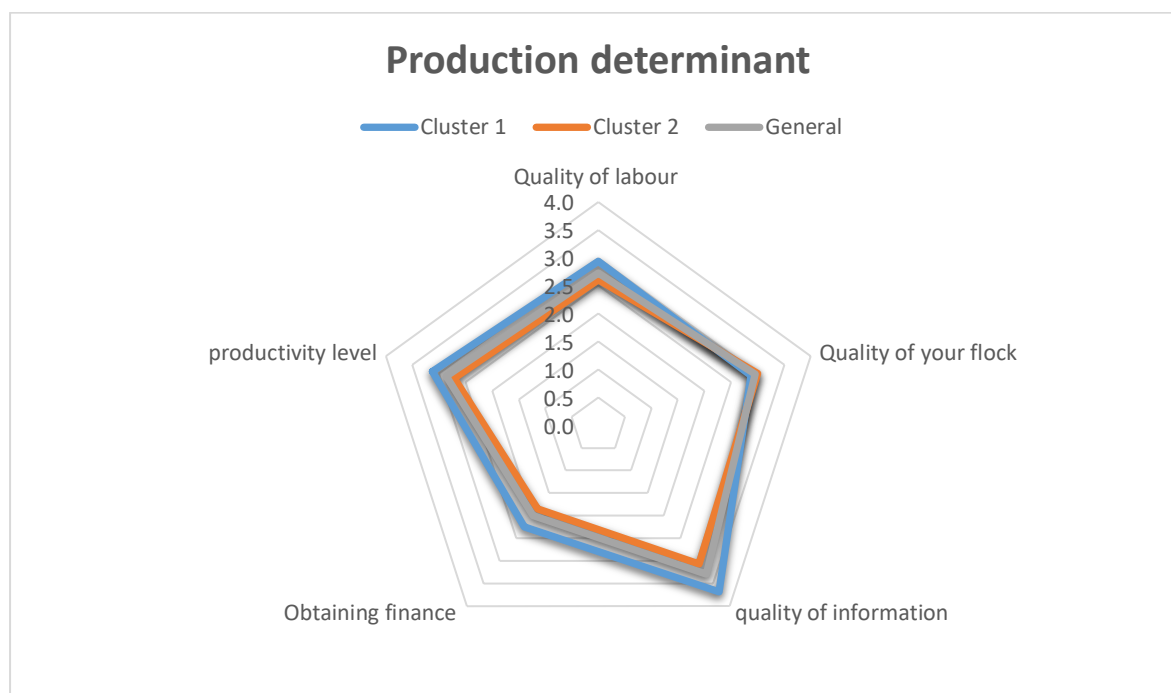


Figure 6. 1 Cluster comparison of production factors
Source: Own calculations based on the SWG survey (2019)

Brown-Luthango (2007) in a study on the impact of skills and quality done in the wine sector, concluded that there was a consensus within the wine industry that to maintain competitiveness and continue competing in the global market it must upskill its labor force. The author recommended that given the weak education system the country has; it is of paramount importance that the agricultural sector train and upskill its labor force to catch up with its competitors. These recommendations are not only valid in the wine industry but also in the wool value chain. As figure 6.3 shows, the quality of labor is a major constrainer of competitive wool performance. Another factor that respondents noted that affects the quality of labor was urban migration. Most of the respondents in Cluster 1, were pensioners who had spent their most productive years in urban areas. Their children are following in their footsteps. Instead, they must rely on relatively older people who may not be as productive as the younger ones.

However, it is only second to the ease of obtaining finance factor, and this is not surprising given that communal farms cannot use their farms or land as collateral when applying for financial assistance. All the clusters listed the factor as the biggest challenge to the progress of smallholder farmers. Another factor that both clusters noted as a major constrainer was productivity. Makapela (2008) noted that the average wool shorn per sheep was only 2 kg for SWG, while commercial farmers harvested 3 kg more.

Furthermore, the analysis showed that within this determinant, respondents picked the quality of information about the wool value chain as the most enhancing deterrent. On the interviews, the stakeholders were also asked the mode they consumed information, the vast majority replied that it was through radio and television. Therefore, the best way of communicating within an individual in the

value maybe through these modes of communication. The quality of flock was viewed as the second most competitiveness promoting factors. When queried on how can SWGs be assisted to improve competitiveness, and many responded that the state or stakeholders must help farmers with rams to improve flock.

Principal Coefficient of Analysis

Table 6. 4 PCA results for the production determinant

Rotated Component Matrix^a		
	Component	
	1	2
Quality of flock	.898	-.140
Productivity level	.806	.208
Quality of information	.000	.820
Quality of labour	.050	.709
Obtaining finance	.441	.464
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. ^a		
a. Rotation converged in 3 iterations.		

Source: Own calculation-based SPSS (2019); SWG survey (2019)

The PCA was applied to the production factor determinant, as illustrated in table 6.4. The objective was to identify factors where the respondents held a consensus on, and the factors were the respondent's opinion differed. This measure was done to satisfy PCA theory (Boonzaaier, 2015) which states that uncorrelated variables must be eliminated from the data set as they may render the data redundant. The elimination of redundant variables helped in the formulation of the strategic plan, which will be tabled in the next chapter.

The non-consensus variables were Quality of information, followed by the quality of labor and the ease of obtaining finance. While on the quality of the flock and productivity level, respondents had a consensus. These variables explain 62% of the variables within the production determinant factor, as shown in appendix B. The non-redundant factors were thus not included in the Cronbach's alpha analysis, which means they are not in the strategic plan. However, it is essential to note that the non-correlated factors are by no means not necessary. As shown in the cluster analysis, these differences in opinion may be due to the role the respondent is playing in the value chain or the preferences. Sibulali (2018) mentioned that variation does not necessarily mean uncorrelated.

6.3.2 The demand factor conditions

The results for the demand factor condition in figure 6.4 and Table 6.3 indicate that for cluster 1 this was the most enhancing factor, while for cluster 2 and the general industry it was second only to the

firm strategy determinant. This phenomenon may be due to a variety of reasons. Which will be investigated in the PCA and Cronbach alpha analysis. Nevertheless, for cluster 1, the most enhancing factor was the information the broader wool value chain has about the SWGs. Still, the second cluster does not back this as they reported the factor as the second least enhancing. Furthermore, the analysis revealed that the second cluster viewed the relationship between them and small wool growers as the most constraining factor for better competitive performance. The farmers also reported the factor as the least enhancing. This may be a result of many factors, however, on the survey when we asked respondents why they had given the responses they had given, some producers (Cluster 1) noted that there appeared to be mistrust on the side of the brokers or traders as their clip fetched lower prices in the market and is referred to have the 'Transkei/Lesotho' elements. However, some farmers noted that this lower price was due to poor quality.

On the chances of expansion, the figure shows that the farmers and buyers agree that there is space for more products to be marketed formally and for production to increase. One of the causes for contention usually in wool marketing is price setting, especially for farmers who sell through traders. They noted that the traders cheat them because they are uneducated. However, this may be due to price volatility. National Agricultural Marketing Council (2012) noted wool prices are the most volatile in the livestock sector and this was due to international markets. Also, De Beer (2018) noted that the South Africa wool market was large enough to accommodate new farmers and increase productivity without negatively affecting the price, therefore there is a chance for expansion.

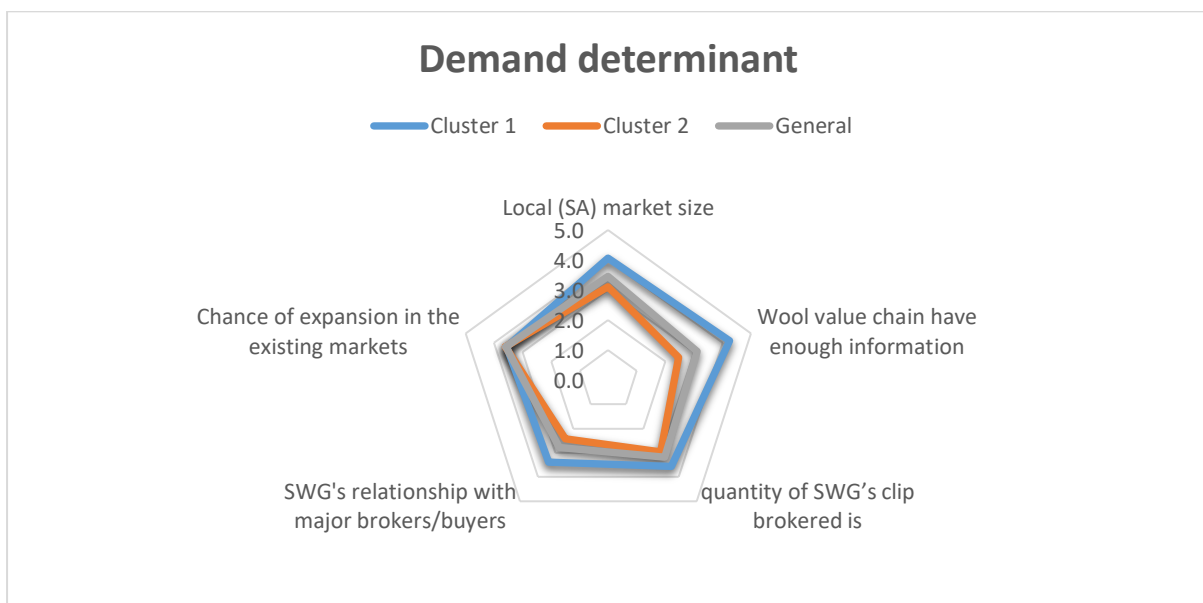


Figure 6. 2 Cluster comparison of demand factors
Source: Own calculations based on the SWG survey (2019)

Principal Coefficient of Analysis

Similarly, to the production factor, PCA, was calculated for the demand factor determinant. The results illustrated that the least correlated factors on component 1 was the chance for expansion, the

Smallholder Wool Grower's relationship with the rest of the wool value chain. While the correlated factors included the local market size, the wool value chain information and the quantity of wool brokered or sold in the formal market from the SWG's. However, due to the 1 Eugen value rule, only the first two components are included in the final plan even though loaded more than 0.4. Moreover, Figure 6.4 indicates that Cluster 1 is more optimistic about this determinant than Cluster 2 or the rest of the value chain. That is evident in the relationship variable where they indicated that it is enhancing competitive performance, while Cluster 2, which is made up of brokers, buyers, extension officers, and production advisors reported that it was constraining competitiveness. That may explain why in the PCA results, it is not correlated at the views that were not in synch.

Table 6. 5 PCA for demand factor analysis

Rotated Component Matrix ^a		
	Component	
	1	2
Local (SA) market size	.730	-.234
Wool value chain have enough information	.811	.107
quantity of SWG's clip brokered is	.776	.310
SWG's relationship with brokers/buyers	.153	.759
Chance of expansion in the existing markets	-.060	.770
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. ^a		
a. Rotation converged in 3 iterations.		

Source: Own calculation-based SPSS (2019); SWG (2019)

6.3.3 The Related and supporting industries condition

The related and supporting industries factor conditions in the study had six questions that were posed to the respondents, as shown in figure 6.5. Across the 3 clusters, the highest score across the table was 3.9 for the availability of inputs factor and lowest was 2.1, which was the quality of the financial services provided. The mean average for the three clusters was 3.2, 2.7 and 2.9, respectively. Figure 6.5 shows that for the first Cluster, the most constraining factor was the financial service factor. That is hardly a surprise, as many smallholder farmers have little or no access to credit (Tshoni, 2015). For the second cluster, the most constraining factor is the availability of extension officers; this is telling as the cluster include production officers and extension officers.

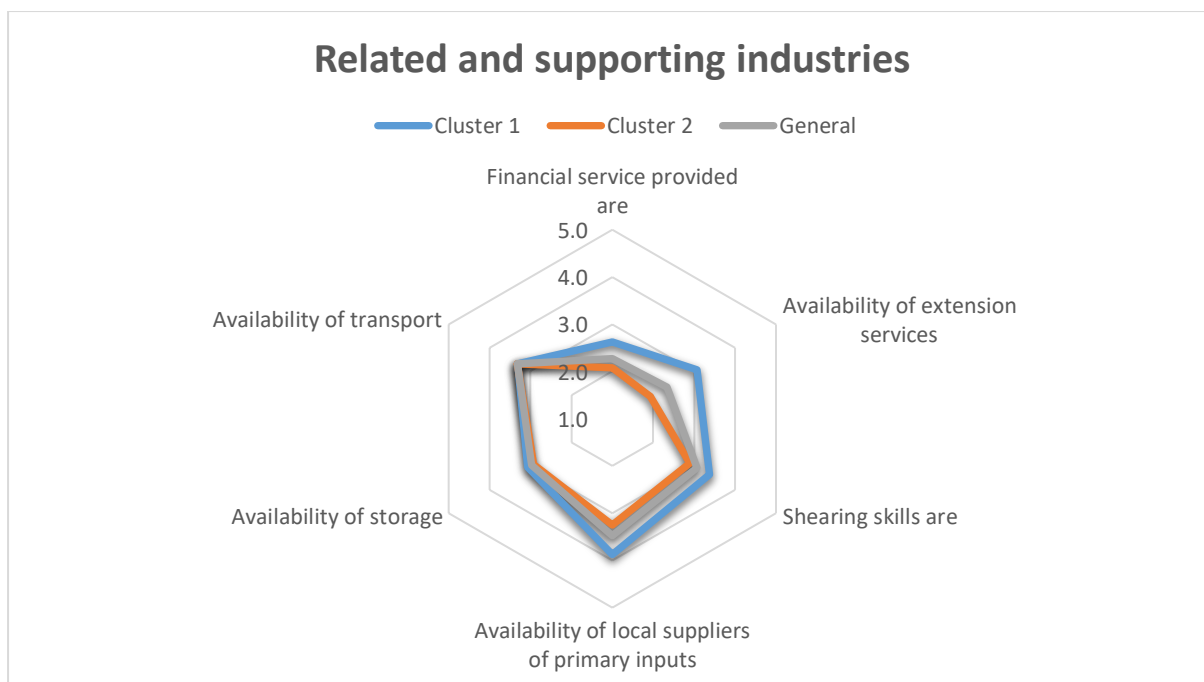


Figure 6. 3 Cluster comparison of related and supporting industries conditions
 Source: Own calculations based on the SWG survey (2019)

On the other hand, the farmers mentioned that the shearing skills as the most a major promoter of competitive performance. That may be due to the impact of a program by organizations such as NWGA (2018) who reported that they were providing shearing and animal handling skills to communal farmers, which has been a great success. Cluster 2 reported the availability of transport as the most promoting factor of competitiveness in the determinant. The buyers in this cluster such as BKB, Standard wool, and Cape wool and Mohair, provide transportation for the communal farmers. Hence, their view that transport is a promoter instead of a constrainer of competitiveness. Lastly, the general industry affirms the cluster 1 response that the financial services are holding the smallholder farmers backwards.

Principal Coefficient of Analysis

Table 6. 6 PCA results for related and supporting industries

Rotated Component Matrix ^a		
	Component	
	1	2
Financial service provided are	.009	.835
Availability of extension services	.436	.649
Shearing skills are	.715	.293
Availability of local suppliers of primary inputs	.179	.782
Availability of storage	.891	-.099
Availability of transport	.732	.381

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 3 iterations.

Source: Own calculation-based SPSS (2019); SWG survey (2019)

Firstly, it is worth mentioning that while only two factors from this determined are correlated, it is probably because of diversity in views or responses of the two classes. For example, while cluster 2 noted that availability or rather unavailability of extension of officers was a constraining factor by 2.1 points. The farmers in cluster 1 reported that it was an enhancing factor with 3.1 points. It is therefore not surprising that it scored a loading point of 0.436. Nevertheless, other non-consensus factors were the lack of financial services. Also, the unavailability of local suppliers for primary inputs.

6.3.4 The Firm strategy and rivalry conditions

The firm strategy and rivalry factor condition are described by Porter (1990) as one of the drivers of innovation. The more competitive the industry is, the more innovative it will be, and figure 6.6 indicates that the study's respondents believe that there is competition within the sub-sector. In the general industry, the most enhancing determinant was reported to be the knowledge of the wool value chain; this can be interpreted in a variety of ways. That may mean that the respondents note that to succeed within the value chain, one needs to be knowledgeable. The other way may be that the respondents think the SWGs have enough information about the value chain. Fortunately, in the survey, the question was asked in more than one way. Which was, do respondents consume agricultural/ wool farming related news or information, if yes how? The overwhelming majority noted that they do and they most utilized mode of consumption was radio and television. It is worth noting also that overall, this determinant was reported as the most competitive enhancing determinant throughout the study by respondents.

In a similar study conducted by De Beer and Terblanche (2015) they noted that the majority of the SWGs in the former homelands could read and write, also indicated that they had a form of formal education. However, noted that extension officers need to take extra caution when dealing with the farmers mentioned above as the majority only managed to finish the 7th grade. Thus, the effectiveness of the extension officer or production advisor may be limited by the ability of the farmers to grasp the content of the study. However, most of the farmers interviewed indicated they had an interest in learning more about the wool value chain, especially the marketing aspect. Also, they already have indigenous knowledge of wool farming, which can be combined with modern knowledge to upskill these farmers.

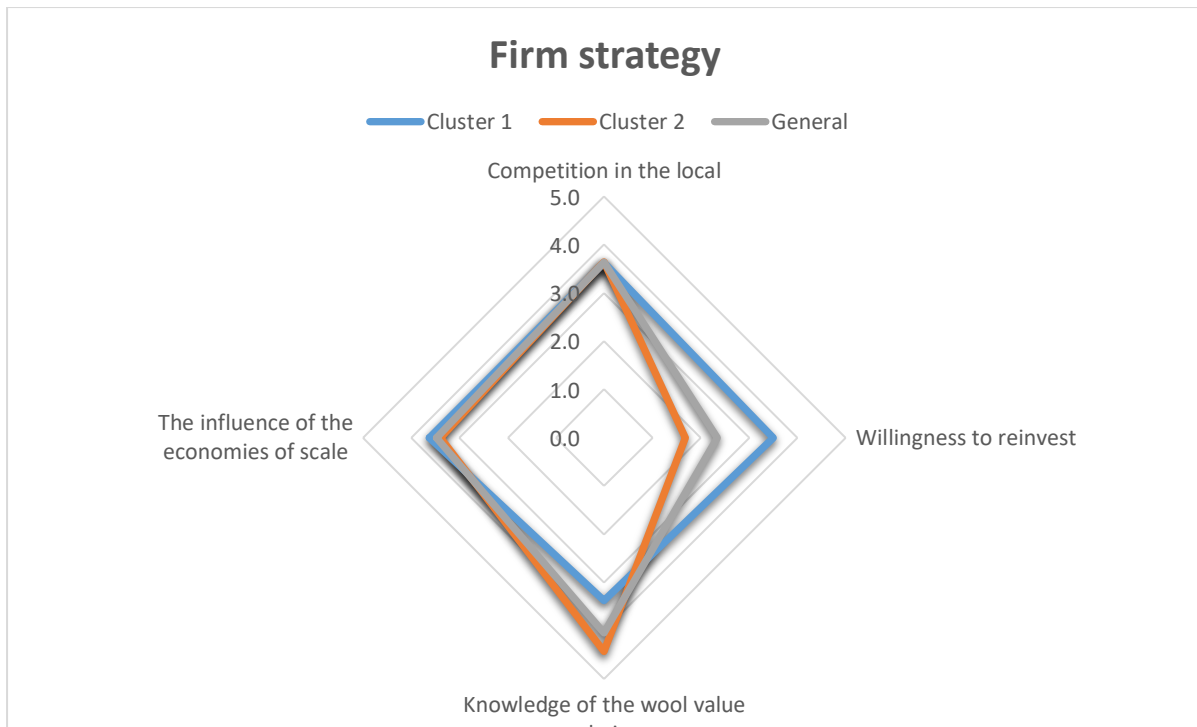


Figure 6. 4 Cluster comparison of Firm strategy and rivalry conditions
Source: Own calculations based on the SWG survey (2019)

In the general industry, this determinant is viewed as the most enhancing determinant of all six Porter determinants. Figure 6.6 shows that; all three clusters agree but at different levels. For instance, on the willingness to invest factor, cluster 1 reported a 3.5 mean average, while cluster 2 had a 1.7 mean. Take the influence of the economies of the scale factor, where the mean is 3.5 and 3.3, respectively. Even on the PCA analysis, these factors have a higher than 0.4 loading value or factor.

Principal Coefficient of Analysis

In the firm strategy determinant, the PCA results conducted showed that of the four variables analyzed only two had a consensus. Which are: competition in the local market and SWG's knowledge of the wool value chain. Conversely, the willingness to invest had a lower loading factor. However, only the first variable was taken to the strategic plan because it was the only 1 that had a Eugen value higher than 1. Which, according to Boonzaaier (2015) means such variables cannot be included in the plan.

Table 6. 7 PCA results for the firm strategy and rivalry determinant

Rotated Component Matrix ^a		
	Component	
	1	2
Competition in the local	.808	.329
Willingness to reinvest	.099	-.586
Knowledge of the wool value chain	.775	-.383
To what extent does economies of scale	.135	.784

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Source: Own calculation-based SPSS (2019); SWG survey (2019)

6.3.5 The Government policies and support

The government policy and support factor conditions were reported to be one of the most constraining determinants throughout the study. The first factor to be analyzed was South Africa's land reform policy, nearly all clusters, as shown in figure 6.7, rated the factor above 3.2. It is important to note that the respondents responded to the survey before the expropriation without compensation bill. That may indicate that they approved of the land reform in principle, but the study did not test the bill as mentioned above to the respondents. Also, Agri-Seta (2010) reported that land reform was creating new farming opportunities for emerging black farmers throughout the country. The report also noted that the objective of land reform was to transfer 30% of agricultural land to black farmers by 2025 (which was initially 2014). In 2009 only 6.9% was already transferred, and most of that land is either unoccupied or not productive because of the lack of capital, infrastructure or technical support.

Nonetheless, the lowest rated factor by all clusters was the effect of communal land tenure on smallholder wool growers. That may appear to be paradoxically, how can the wool value chain role players in both clusters endorse land reform policies but reject communal land tenure? However, it is essential to look at how the question was structured in the questionnaire and how the respondents answered. The question asked the respondents to rank from a scale of 1 to 5 how the South African land reform is was influencing the competitive performance of smallholder wool growers. Then, on the general questions, many respondents narrated they do support the policy of land reform, so long as it is done constitutionally, and the right people got the land. Now, on the effect of communal tenure, both classes noted that this policy is not assisting farmers.

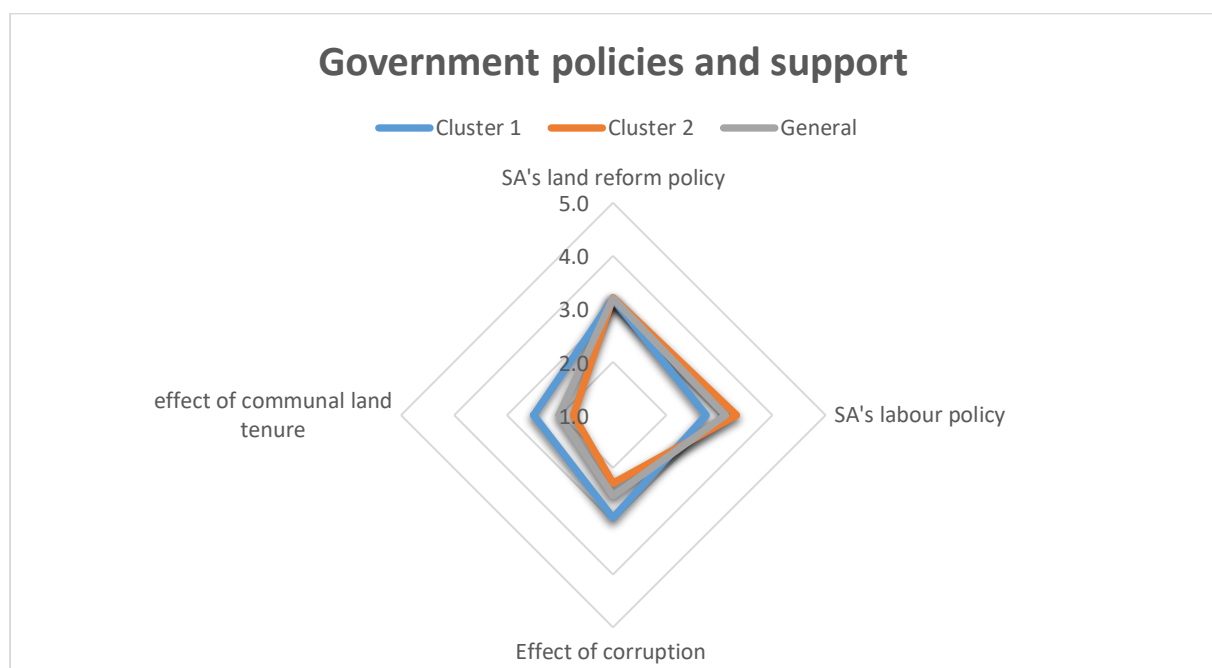


Figure 6. 5 Cluster comparison of government policies and support determinant
Source: Own calculations based on the SWG survey (2019)

Principal Coefficient of Analysis

Table 6. 8 PCA for government policies and support

Rotated Component Matrix^a		
	Component	
	1	2
SA agriculture policies	.852	-.083
SA's land reform policy	.829	-.058
SA's labour policy	.591	.465
Effect of corruption	-.155	.840
effect of communal land tenure	-.053	-.499
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. ^a		
a. Rotation converged in 3 iterations.		

Source: Own calculation-based SPSS (2019); SWG survey (2019)

Table 6.8 shows the results of the PCA for government policies and support determinant. Firstly, the commonalities table (Appendix B) showed that the factors analyzed had high extraction rates. While the first two components only explained 59% of the components and the said components had Eigenvalues higher than 1. The rotated component matrix shows that three components had a loading value higher than 0.4. However, because the third component has an Eigenvalue lower than one, it will not be considered for the strategic plan. The factors taken to the strategic plan are South African agricultural policies and the land reform policy.

6.3.6 The chance factor condition

The chance factor condition and the government policies and support are noted to be outside the firm or farm's immediate control (Porter,1990). However, for a farm to be competitive, these two factors must converge at a favorable point. Chance then can be viewed as favorable circumstances or events that benefit the farmers or wool value chain but are beyond the direct control of the wool stakeholders. These may include global economic conditions, migrations, change in demand or the economic performance of emerging markets.

The results indicate that the general industry was neutral on the influence of the determinant on the competitive performance of smallholder farmers. Even though the first cluster posted the overall mean average of 2.8, which is slightly above neutral (2.5). The second cluster, however, was relatively more skeptical, as its mean was 2.4. As, noted before the second cluster is made up of brokers, buyers, and exporters. The effect of factors such as global economic conditions, changing demand, emerging

markets, and uncertainty are likely to be felt by this cluster before it reaches the farmers. For example, Cape Wool SA (2019) reported that the biggest importer of SA wool had halted trade with the industry. Which was due to the outbreak of the foot and mouth disease in Limpopo. At the time, farmers had already sold their clip to brokers and buyers. Therefore, the farmers did not feel the pinch immediately while exporters felt it immediately.

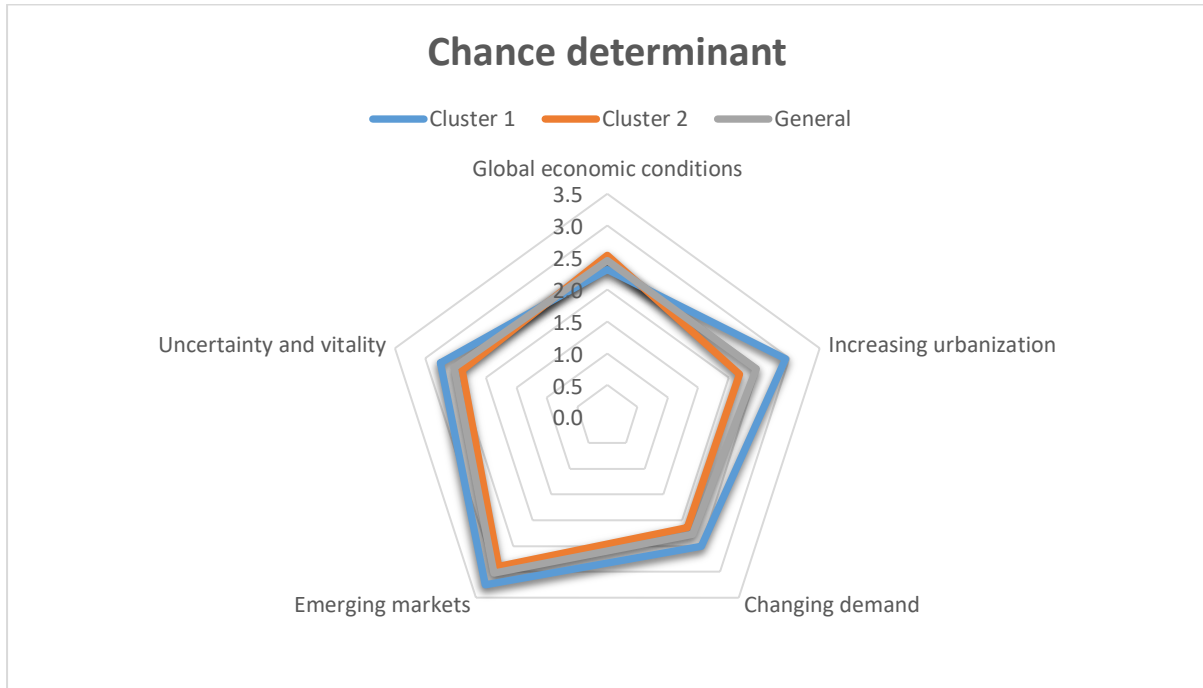


Figure 6. 6 Cluster comparison of production factors
Source: Own calculations based on the SWG survey (2019)

Another chance factor not included in the survey, but respondents highlighted was the effect of climate change on the long-term competitiveness and viability of the wool value chain. The past few seasons, drought has plagued the industry. This climatic condition which is predicted to be more common in the future due to climate change has a knock-on effect. For, example Cape Wool SA (2017) reported that drought leads to higher maize prices, which is used in wool production as the main feeding component. For small wool growers, the impact is much more severe, as they depend mainly on extensive production, lack of rain means a lack of grazing pastures and lower yields. Chiyangwa (2018) noted that many wool farmers are considering venturing to game farming more so now than before due to the adverse climatic conditions.

Principal Coefficient Analysis

Similarly, to other factors of competitiveness in the study, the PCA was calculated for the chance factor. Five factors were measured, and the commonalities table showed that all the factors had an extraction rate higher than 0.4. Also, the first two factors explain 60% of the components in the measure. While only two components had an Eigenvalue higher than the recommended 1 Eigenvalue. That means no matter what the rotated extraction matrix show, only these two will be considered for the strategic plan. Nevertheless, the following components loaded more than the required 0.4 factor. Namely: Global

economic condition, increasing urbanization, changing demand, uncertainty and vitality and increase in long term contracts.

Table 6. 9 PCA results chance factor determinant

Rotated Component Matrix		
	Component	
	1	2
Global economic conditions	-.202	.831
Increasing urbanization	.847	.080
Changing demand	.697	-.170
Emerging markets	.784	-.020
Uncertainty and vitality	.587	.349
Increase of long-term contracts	.495	.567

Source: Own calculation-based SPSS (2019); SWG (2019)

6.4 Reliability test: The Cronbach Alpha test results

Table 6. 10 Cronbach's alpha reliability scores

Item	Cronbach's alpha coefficient	Interpretation
Production factor conditions	0.6	Acceptable internal consistency
Demand factor conditions	0.7	Acceptable internal consistency
Related, supporting industries	0.7	Good internal consistency
Firm strategy and rivalry	0.8	Good internal consistency
Government support and polices	0.8	Questionable but accepted
Chance factor	0.7	Good internal consistency
The whole questionnaire	0.7	Good internal consistency

Source: Own calculation-based SPSS (2019); SWG survey (2019)

According to Dlikilili (2018), Cronbach's reliability test is carried out to test the consistency of the respondent's opinion. With that in mind, the Cronbach's reliability was calculated on each of the Porter competitiveness determinants. Sibulali (2018) added that the test is expressed in a numerical and ranges between 0 and 1. Table 6.10 shows that for Production factors the score is 0.6, which is interpreted as 'acceptable internal consistency, demand condition is also with that range, so is related and supporting industries. A 'good internal consistency' is achieved in the firm strategy condition, government support condition and policies. Overall the whole questionnaire attained a Cronbach Alpha coefficient of 0.7. This demonstrates that the questionnaire is consistent, and thus, its finding is reliable. Sibulali cautioned that a higher alpha coefficient does not always guarantee high internal consistency.

Nevertheless, the factors identified in the PCA analysis, that the correlated factors were further analyzed in the Cronbach's Alpha analyzed as illustrated in table 5.16. This was done to check the

internal reliability of the questionnaire and subsequently, the results of the data set. However, before the alpha test was done, the following variables had to be removed. Namely: quality of labor (Q1), quality of your flock (Q2), quality of information (Q3), obtaining finance (Q4), local market size (Q6), Chance of expansion in the existing markets (Q10), shearing skills are (Q13), willingness to reinvest (Q18), knowledge of the wool value chain (Q19), the influence of economies of scale (Q20), SA's labour policy (Q22), changing demand (Q38) and emerging markets (Q39).

Moreover, the removed factors were not used in the strategy of improving the Smallholder Growers in step 5 in the following structure. Cronbach's alpha test results illustrate that the data set has an internal consistency score of 0.725. That shows that the questionnaire had a high internal reliability level. Table 6.12 contains the factors that are included in step 5, the strategic plan of improving the competitive performance of smallholder wool growers.

Table 6. 11 Cronbach's alpha of correlated factors

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.725	.727	16

Item-Total Statistics						
		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q3	Quality of information	42.75	65.448	.438	.528	.699
Q4	Obtaining finance	44.05	67.672	.396	.720	.705
Q7	Wool value chain have enough information	42.93	64.298	.390	.542	.704
Q8	Quantity of SWG's clip brokered is	42.86	68.074	.320	.425	.712
Q9	SWG's relationship with major brokers/buyers	43.27	64.575	.532	.629	.690
Q11	Financial service provided are	43.77	66.459	.413	.738	.702
Q12	Availability of extension services	43.70	60.818	.661	.681	.673

Q14	Availability of local suppliers of primary inputs	42.57	65.367	.434	.621	.699
Q15	Availability of storage	43.07	72.809	.079	.689	.736
Q16	Availability of transport	42.73	66.901	.385	.497	.705
Q17	Competition in the local	42.41	74.619	.014	.542	.739
Q21	SA's land reform policy	42.84	71.951	.128	.552	.731
Q23	Effect of corruption	43.52	64.534	.654	.629	.684
Q36	Global economic conditions	43.59	74.294	.022	.520	.739
Q37	Increasing urbanization	43.59	70.015	.177	.425	.728
Q39	Emerging markets	43.02	71.139	.155	.532	.729

Source: Own calculation-based SPSS (2019); SWG survey (2019)

6.5 Summary of constraining and enhancing determinants

Table 6. 12 Constraining and enhancing factors

Constraining factors				
Production factor	Factors	Cluster 1	Cluster 2	General industry
	Obtaining finance	2.3	1.9	2.0
Demand factor				
	SWG's relationship with major brokers/buyers	3.4	2.4	2.8
Related & supporting industry				
	Financial service provided are	2.6	2.1	2.3
	Availability of extension services	3.1	1.9	2.3
Firm strategy				
	Willingness to reinvest	3.5	1.7	2.3
Government factor				
	Effect of corruption	2.9	2.3	2.5
	Effect of communal land tenure	2.5	1.8	2.0
Chance factor				
	Global economic conditions	2.3	2.5	2.5
	Increasing urbanization	2.9	2.2	2.5
	Changing demand	2.5	2.1	2.3

	Uncertainty and vitality	2.8	2.4	2.5
Enhancing factors				
Production factor	Factors	Cluster 1	Cluster 2	General industry
	Quality of labour	2.9	2.6	2.7
	Quality of flock	2.9	3.0	3.0
	Quality of information	3.7	3.1	3.3
	productivity level	3.1	2.7	2.9
Demand factor				
	Local (SA) market size	4.1	3.1	3.5
	Wool value chain have enough information	4.3	2.5	3.1
	quantity of SWG's clip brokered is	3.6	3.0	3.2
	SWG's relationship with major brokers/buyers	3.4	2.4	2.8
	Chance of expansion in the existing markets	3.6	3.6	3.6
Related & supporting industry				
	Shearing skills are	3.4	2.9	3.1
	Availability of local suppliers of primary inputs	3.9	3.3	3.5
	Availability of storage	3.1	2.9	3.0
	Availability of transport	3.3	3.3	3.3
Firm strategy				
	Competition in the local	3.6	3.6	3.6
	Knowledge of the wool value chain	3.4	4.4	4.0
	The influence of the economies of scale	3.6	3.4	3.5
Government factor				
	SA's land reform policy	3.2	3.2	3.2
	SA's labour policy	2.8	3.3	3.1
Chance factor				
	Emerging markets	3.3	2.9	3.0

Source: Own calculations based on the SWG survey, 2019

Table 6.12 illustrates the summary of the six determinants which are divided into constraining and enhancing factors, for all three clusters. This table leads to step 5 of the competitive framework. Where a strategic plan is tabled. The plan is based on the table, as well as the Cronbach Alpha results. Therefore, the following factors are part of the strategic plan:

- Quality of information
- Obtaining finance
- Wool value chain has enough information
- quantity of SWG's clip brokered is
- SWG's relationship with major brokers/buyers
- Financial service provided are
- Availability of extension services

- Availability of local suppliers of primary inputs
- Availability of storage
- Availability of transport
- Competition in the local
- SA's land reform policy
- Effect of corruption
- Global economic conditions
- Increasing urbanization
- Emerging markets

6.6 Conclusion

To conclude, the chapter looked into the factors affecting the competitiveness of smallholder wool growers. In order to achieve that, the chapter looked into each of the six Porter competitiveness determinants. First, with the cluster analysis that divided the respondents into 3 clusters. Namely, Cluster 1 made up of farmers, cluster 2 constituted by buyers, brokers, extension officers, and production advisors. Then each of the six Porter determinants were discussed. After, the Principal Component Analysis and Cronbach's alpha coefficient were calculated and discussed. Step 5 of the study is tabled in the following chapter.

Chapter 7

Summary, conclusion, and recommendations

7.1 Introduction

Chapter seven aimed to highlight the key findings made in the study, also to develop a strategic framework to improve SWGs competitive performance. The chapter started with a re-visitation of the key factors outlined in the analyses chapter. Then the summary of major findings. While chapter five and six, discussed two of the five-step analytical framework, chapter seven provided the last step of the framework., i.e. step 5. Additionally, this chapter aimed to validate the study's hypothesis, to draw a strategic plan and to provide the authors' conclusive remark.

7.2 Summary of analyses and major findings

The study adopted the five-step analytical framework to measure competitive performance. It was Esterhuizen (2006) who popularised this framework. Later more scholars adopted it, including Jafta (2014), Boonzaaier (2015), Angela (2015), Dlikilili (2018), Sibulali (2018) and Barr (2019). **The first step** of the framework was to define competitiveness. That was done by taking the definition popularized by Van Rooyen (2008:2), who described competitiveness as “the ability of a sector, industry, firm or farm to compete by trading their products within the global environment while earning at least the opportunity cost of returns on resources employed.” In the context of smallholder wool growers in the South African wool industry, competitiveness is the wool industry’s ability to grow and trade wool competitively while remaining profitable in the current trade conditions.

The RTA and RCA were used in **step two**, to calculate competitiveness. The study used both primary and secondary data. SWGs survey provided the study with primary data, and FAO stat and ITC trade provided the secondary data. The first database has information dating back from 1961 to 2013, while ITC trade map has data from 2001 till 2018. The other source of data was Cape Wool SA, which started keeping separate records of smallholder wool growers from 1997. That meant that the competitive performance of smallholder wool growers could only be calculated from 2001 to 2018.

In summary, the competitiveness results from the mentioned above sources showed that South African wool industry has a positive competitiveness status. Even though the industry has undergone many reforms, it has maintained positive competitiveness from 1961 till 2013 based on the FAO data and until 2018 in ITC trade map data. Moreover, **step 3** showed that small wool growers also have a marginal competitive advantage, and it is improving as the industry matures. Underpinning this growth is the Private Public Partnership led by NWGA, Cape Wools SA, and DAFF. However, the comparison between SWG and more established wool growers shows that they are still trailing behind.

The South African value chain fairs well when compared to competitors such as Australia, New Zealand, and Argentina. The nation has the second-highest competitive status in the group after Australia. Nevertheless, South Africa only does well on greasy wool, on the more processed forms it has either marginal or negative competitiveness status. That has resulted in the industry exporting 82% of its produce raw.

Step 4 considered factors that affect competitive performance. Firstly, the wool value chain sample was described. It consisted of 23 smallholder wool growers, five shed leaders, six wool buyers, four brokers, and seven extension officers and production advisors. The farmers were from both the former Transkei and Ciskei regions, so were the extension officers and production advisors. While the wool buyers and brokers mainly came from Port Elizabeth, the capital of the South African wool industry.

Furthermore, the respondents were divided into 3 Clusters, Cluster 1 was made up of the farmers, while the buyers constituted the second Cluster, broker and extension officers and the third Cluster was the general industry average. Subsequently, on the six Porter determinants, the results showed that the first Cluster registered 86% of the variables as enhancing competitiveness, Cluster 2 had only 59%, and the industry average was 65%. Also, Cluster 1 reported that both the Chance factor and the government policies and support factors as the most constraining determinants. On the other hand, the said Cluster cited the Demand factor condition as the most enhancing. While the Cluster 2 reported the Chance factor and firm strategy as the most constraining and enhancing respectively.

Within the 4th Step, Principal Component Analysis was carried out to highlight variables that had a lower correlation. After, the Cronbach's alpha test was administered to test internal consistency. The Cronbach's alpha score was .725, which meant the questionnaire had high internal reliability. Finally, the 16 variables identified from both Cronbach and PCA test were taken to step 5 of the competitiveness framework.

7.3 Setting strategic planning to improve the competitiveness of Small Wool Growers

The results of step 4 showed that Small Wool Growers have marginal but increasing competitiveness. Thus, the point of departure for the study was to recommend ways in which this phenomenon can be approved. This section proposes a value chain-wide strategy, to maintain competitive performance trends and then improve it further.

Production factor condition

In the production factor determinant, two factors were selected to be part of the strategic plan. Namely, the quality of information and ease of obtaining finance. Before going to the plan, it is essential to mention that the first factor was reported as constraining the competitive performance of farmers and the second factor was an enhancer.

Quality of information:

Today's world is highly competitive, and information is critical in staying on top of the game. However, the wool value chain is highly segmented, making it very hard for information from the consumer to flow efficiently back to the producer (Henderson, 2013). In order to improve competitive performance and take advantage of the available opportunities, this system must be reorganized. Fortunately, technology has improved communication greatly in the past few decades. Therefore, smallholder holder farmers can be given access to the recent cutting-edge breeding, handling, packaging, and sorting techniques. That can be done through the applications (apps) that are user-friendly and are written in a common language. East Africa is already reaping the rewards from this technology.

Obtaining finance:

According to Porter (1990), one of the attributes of competitiveness is innovation. That is what is needed in the wool sector. As accessing finance is a tough act for smallholder farmers. That is because a variety of issues, such as a lack of assets to form collateral and policy inconsistency. Therefore, to tackle this challenge, a myriad of innovative solutions is required. One of them is clustering smallholder wool growers into groups and providing financial products that are not only backed by the individual farmer but by the broader group. This strategy worked in Sri Lanka, and the Capitec Bank was founded on this principle. However, the more sustainable solution is correcting the communal land tenure policy to allow farmers to own the land they are farming.

Demand factor

In the demand factor condition, three factors passed the rigorous tests that each factor was subjected to be part of the strategic plan. These factors are both constrainers and enhancers of competitive performance.

Does the wool value chain have enough information about SWGs?

Similarly, to the first factor discussed in the strategic plan, this factor has to do with the flow of information. However, this one has more do to with down to up information movement. During the data collection phase, some smallholder wool growers reported that they are of the view that the upstream wool value chain role players did not understand them. This view was shared by Cluster 2 in the analysis, where they ranked it as a constrainer to competitive performance. In order to improve the two-way flow of information, the industry will have to implement innovative approaches. For example, the use of technology like a smartphone, block chain management and face to face meetings may be some of the solutions. Failure to address this challenge may lead to inefficiency. Moreover, the most sustainable solution involves

training of competent and hardworking extension officers, production advisors and technicians who in turn will meet face to face with producers to introduce new technology.

Is the quantity of SWG's clip brokered/ sold/ auctioned is enough?

Louis de Beer (Cape Wool SA, 2018) noted that production must be increased from the current 52 million kg to 75 million kg, the number of Merino sheep must be increased to 50 million and sheep farming must be increased to 1.25 million hectares, in order to grow the economy. For that to happen, the quantity of wool sold by the smallholder growers marketed in the formal market has to increase significantly. That necessitate a change in mind-set from the side of smallholder wool growers, and they must be convinced that farming woollen sheep for wool production is much more profitable than farming just for slaughtering or meat. Then access to the formal market must be eased through collective shearing sheds. Moreover, NWGA is already pioneering this approach in the former homelands, where they help build sheds, introduce new rams and teach better shearing and sorting skills. Such projects must be expanded to affect all smallholder wool growers.

SWG's relationship with brokers/buyers:

The relationship between the wool value chain players and the SWGs is suitable according to the analysis, as it was reported by the farmers to be enhancing competitiveness (above 2.5). However, the second Cluster was less optimistic, acknowledging that it needs improvement. It is tough to tell where the bottleneck is but like any other formal relationship and partnership, it may be down to trust. When the survey was conducted. Some farmers noted that they chose to sell to a trader for an instant cash transaction instead of a broker who is going to auction the wool in Port Elizabeth. Due to a lack of trust. However, this does not benefit anyone in the long run. Therefore, wool buyers and brokers need to be accessible to farmers and explain the processes so that trust can be maintained. That can be also be solved by an efficient and effective flow of information, as discussed previously. Also, the NDP (2012; 113) mentioned that social dialogue is need to improve in the agricultural sector, meaning the South African wool industry cannot afford a dysfunctional relationship between its stakeholders. There is a need to forge better cooperation between the value chain role-players.

Related & supporting industry

The related and supporting industries, as described in the literature review as an integral part of the competitiveness framework. Duly, after the analysis, five factors were selected from the determinant after undergoing rigorous tests. In the strategic plan, these factors are tabled, and possible ways of enhancing their role or turning them from constraining to enhancing with the wool value chain are discussed. The first factor discussed is financial services provided to smallholder wool growers.

Financial service provided are:

To get financial assistance as a smallholder communal wool farmer is nearly impossible. If one is lucky, they will get exorbitant interest rates. For smallholder wool growers to be competitive, this situation has to be remedied. Institutions such as DBSA (Development Bank SA) must chip in and assist farmers. Nevertheless, as stated prior, this is a tricky situation as the farms these farmers own are not considered as assets, when applying for financial assistance.

Availability of extension services:

Based on the study results, extension services have improved over the years, especially with the involvement of non-governmental organizations like NWGA, but there is still a long way to go. In order to assist SGWs to reach their potential, these services must be intensified, and their coverage broadened. There is evidence in the literature that increase extension services correlate with improvement with an increase in competitive performance (as discussed in section 5.2).

Availability of local suppliers of primary inputs:

The unavailability of inputs can hamper the progress of any industry. The Porter diamond model is based on this very principle. This challenge can be changed into an opportunity. A new industry can be created to fill this gap. For example, traditional livestock medicine can be sold to farmers to work hand in hand with modern medicine. However, for such an industry to be created, there has to be a strong demand from farmers. Also, innovative solutions can be implemented to deal with the challenges of distance. For example, online stores can help solve this challenge.

Availability of storage:

The availability of sheds helps farmers to kill many birds with one stone. Sheds are used as a shearing facility, storage site, and meeting centres. In the process of gathering data for the study, the researcher visited a couple of sheds. Nearly all the shed leaders mentioned that security issues had improved with the building of sheds. In one area, farmers took turns guarding the shed at night to protect their clip. Unfortunately, not all farmers have access to shearing sheds, and this compromises the quality of the clip. In order to solve this challenge, the framework followed by the NWGA must be multiplied, where farmers are grouped into larger groups and are given access to a central located shed.

Availability of transport:

Transport is a massive barrier to smallholder wool growers in rural areas. Lack of transport force farmers to sell their produce to local traders who pay them a fraction of the price they

would get in the formal market or auction. However, with the collective shed system, farmers pull resources together and hire a truck to take their produce to the market. Some even ask the wool brokers to come and take the wool from the central shed. That reduces costs tremendously. Therefore, once more, the solution seems to be collective marketing than individual marketing.

Firm strategy

In the farm typology section in chapter 2, the smallholder farmer was defined as a farmer who farms with sheep to grow wool at a smaller scale due to a variety of factors, such as reduced resource endowment, lack of capital and household needs. The farmer may be in a private plot or the communal land. Also, the bulk of labour resources are provided by family members or relatives. However, given the realities of South African agricultural systems, the term smallholder wool grower is used interchangeably as the term communal grower. Therefore, the farm typology itself determines the firm strategy to a certain degree. Nevertheless, the following factors were considered:

Competition in the local market:

Competition is a catalyst for innovation, which, according to Porter (1990), is an essential ingredient for competitive performance. In the study, farmers indicated that there was healthy competition with the smallholder wool growing market. However, this competition at times, it is not conventional. For example, farmer A may compete with farmer B, not for the number of sheep they own, the revenue they derive their respective enterprise but the competition may be on which ram has the prettier horns. This form of competition is not necessarily promoting competitive business performance. However, this can be a starting point. Competition can be staged to compare shearing skills, quality of wool, and health of the flock, and so on. Such an initiative would help produce healthy competition that would, enhance competitive performance.

Governmental factor

In South Africa, probably the greatest constrainer of competitive performance for the whole economy is government support and policies. In the analysis section, Cluster 1 agreed with this sentiment. However, to realize the National Development Plan's vision 2030, of reducing unemployment from 29.1% to 6%, this challenge needs to be resolved.

SA's land reform policy:

The South African land reform policy has been a point of contention recently, however not much has been said about the fate of the former homelands. The former homelands makeup 13% of the total land surface area of the country and is where the majority of smallholder wool

growers are found. Therefore, land reform needs to be fast-paced, and smallholder farmers need to be in the centre of the policy. However, with regards to the former homelands land tenure, creative and innovative solutions are needed. Due to politics, history and customs to give the communal farmers free land ownership is a distant dream, therefore other ways must be explored.

Effect of corruption:

The effect of corruption was ranked as the most concerning of the competitiveness constrainters. To deal with corruption is very tough in the current political climate. However, once farmers have organized themselves into the local, district and provincial associations, they will have enormous lobbying power. Politicians must be held accountable, and farmers are also voters and politicians must be made to know that should they not deliver on the promises or make dodgy deals they will not be re-elected. For example, this is happening in the US with lobby groups and in South Africa through unions. Lastly, one of the legacies of the past brutal regimes is the illegitimacy of public resources and governance. This was due to the fact that the past regimes built the infrastructure not as a way of developing the communal areas, but as a way of dominating them. Therefore, vandalising such infrastructure was seen as a way of venting anger against the ruling class. It is evident that such mindset still exists. Thus, there is a need for frank conversation about this behaviour. To instil that public resources and infrastructure belong to the communities not the government.

Chance factor

The chance factor condition is quite challenging to navigate, especially for smaller holder wool growers. Who have minimal resources to lobby for events beyond their powers to work in their favour. However, as the saying goes 'lack of planning is planning for failure'.

Global economic conditions:

The wool global value chain has been through thick and thin recently, especially the South African industry. China, the industry's biggest export market banned the nation's clip, due to an outbreak of foot and mouth disease in Limpopo. That sent the industry into turmoil and prices plummeted. To compound matters, the US and China went into a trade war, which lowered demand for South Africa's clip. These challenges necessitate the diversification of the industry's export market. The nation is overexposed in the Far East market. To reduce risk, it needs to diversify its export market and look to nations like India, Czech Republic, Italy, and the African textile industry while developing local demand.

Increasing urbanization:

Rural to urban migration is a worldwide phenomenon and is unlikely to stop anytime soon. Thus, only managing its effect is the solution. However, this also can present an opportunity for smallholder wool growers. For example, one of the most significant challenges in the former homelands is population density. That affects agricultural productivity. With urban migration, more agricultural land is made available for grazing and farming. However, the knock-on effect is the loss of labour, especially the younger and more productive labour. To mitigate the challenges, the enterprise of SWGs must be commercialized into to be a viable employment alternative to young people.

Emerging markets:

Emerging markets are both an opportunity and a challenge to the wool industry. A challenge in a sense that they are different from the traditional markets. For example, millennials are now the biggest consumer of apparel products, and they are relatively more environmentally conscious than the baby boomers or the silent generation. That means the South African wool industry has to promote environmentally friendly wool production trends. It is also an opportunity because the South African wool clip is produced under ethical conditions, and the smallholder wool growers can tap into this market.

7.4 Recommendation for future studies

The recommendation for future studies are presented in this section;

- ✓ The first recommendation is on the value addition. Literature shows that for the South African wool value chain to be more competitive it has to add value on its offering. However, the challenge is where precisely in the wool value chain must the value addition occur. For example, if it happen at the farm or producer level, what is the cost implication? Also, South African wool is exported semi-processed, in a greasy form. One of the arguments from the industry is that the cost of processing wool is higher in the country than in China or Eastern Europe due to infrastructural challenges. Then the question is, where must it be added and what will be the implication of such actions on competitive performance.
- ✓ The second recommendation is on the measurement of competitiveness. Competitiveness is mainly measured in the national or international level. However, this does not help the local level and policymakers who want to improve conditions on the ground. Hence, there is a need to measure the competitive performance of several sectors of the South African agricultural sector at a micro-level. Nevertheless, the challenge is how to get reliable data. In order to do such an analysis. In this study certain adaptations in the RCA formula was applied to capture SWGs. For example, in this adaptation needs to be further examined and applied in situations with different business/farm types in the relevant industry typology. Also, there is a need to

expand the traditional Porter model in order to accommodate factors such as socio-economic, this would help improve the implacability of the model to the South African conditions (refer to Barr, 2019).

- ✓ The third recommendation is on the impact of the fourth industrial revolution on the global wool value chain. The second and third industrial revolutions disrupted the wool value chain, with the introduction of synthetic fibres that were cheaper to make than wool. As a result, wool has since lost its dominance as the most used fibre. The question is then what to expect with the fourth industrial revolution?
- ✓ The last recommendation is on the role of the wool value chain in combating climate change. One of the most significant challenges for humanity, especially in the 21st century is global warming, scientists warn. Thus, one of the questions that need to be answered is the role that sheep and wool value chain play in fighting climate change. Recent studies have shown that wool is environmentally friendly than synthetic fibres. However, the question is, should humanity discard wool-based apparel for plant-based apparel? Comparative studies are required in order to answer such questions. Also, how will technological and fintech disruptions such as e-trade, blockchain and e-currency affect the regional, national and global value chain.

7.5 The validity of the stated hypothesis

This section aimed to validate the hypothesis of the study. Which was stated in chapter one, section 1.5. The hypothesis was based on the problem statement in section 1.3. The hypothesis was that SWG's competitiveness was based on a range of factors, and many of the factors were outside of the farmers' direct influence.

In chapter five, the study calculated the competitive performance of SWGs, the RCA results show that these farmers are marginally competitive but at an increasing rate, however it must be mentioned that the study used an innovative way in dealing with data gaps. Where the RCA formula was modified in order to be applicable in calculating the competitiveness, as highlighted in chapter 5, page 45. While chapter six focused more on the factors that affect the competitive performance of SWGs. From the two chapters, it is evident that the stated hypothesis was validated by the Porter determinants applied in section 6.3. That showed that the competitive performance of smallholder farmers was constrained and enhanced by a variety of factors. This conclusion was reached after analysing the SWGs survey responses by various analytical methods such as Cluster, PCA and Cronbach's alpha analysis. Which showed that factors such as access to finance, extension officers, corruption, land reform policies, global markets and competition in the local market. Either promote or constrain competitive performance.

Additionally, the research questions which were stated in chapter 1, section 1.4 were answered. As the competitive performance of smallholder wool farmers was defined, factors influencing it highlighted. The competitive performance of smallholder wool growers measured and factors affecting

competitiveness were outlined. Also, the strategic plan to enhance the competitive performance of smallholder wool growers in South Africa was developed. Lastly, the study used focus groups which may limit the potential application of the study to smallholder wool growers in general. However, certain pointers can be drawn due to the generality of the smallholder farming typology investigated (Fundira, 2004; Modiselle et al., 2005; Tshoni, 2015; Gerwel, 2019)

7.6 Concluding remarks

To conclude, the South African value chain is doing very well as far as competitiveness is concerned. However, the same cannot be said about small wool growers, their competitive performance is peaking up, but it is slower than the expected pace. This slow pace is undermining the gigantic potential the industry has in terms of job creation, economic growth, poverty alleviation and inter-sectoral benefits such as agro-processing and tourism. Moreover, reforms must be made while this window of opportunity is still available. These reforms must include land reform for communal wool growers, animal improvement programs, skills developments for the farmers and market intelligence training. Then only can the industry realize its potential and increase productivity beyond the current 50 million kg per year maybe to 75 or even 100 million kg.

References

- Abei, L., 2017. An analysis of the competitive performance of the Cameroonian cocoa industry. MCom thesis, Stellenbosch: Stellenbosch University
- Angala, A. 2015. An analysis of the competitive performance of the Namibian date industry - 2001 to 2013. Thesis, Master of Science in Agriculture (Agricultural Economics). Stellenbosch University.
- Abbott, M. 2015. A long-term view of the effectiveness of wool promotion schemes. Pretoria: UNISA
- Abbott, M. 1997. South African wool marketing. South African Journal of Economic History. Vol 12, no 1&2
- Abbott, M & Ahmed, A. 1999. The South African wool supply response. Agrekon, Volume 38, number 1. [Online]. Available:
- Abbott, M. & Ahmed, A. The South African wool supply response. Vol38, No 1, March 1999, March 1999: 90-104. [Online]. Available
- Agri SETA. 2010. Sector analysis agriculture. [Online]. Available: https://www.agriseta.co.za/downloads/news/AGRISETA_Sector_Analysis_290610-version_2.pdf [2019, June 10]
- Bahta, S. and Molope, P. 2014. 'Measurement of competitiveness in smallholder livestock systems and emerging policy advocacy: An application to Botswana', Food Policy. [Online]. Available doi: 10.1016/j.foodpol.2014.10.006 [2019, March 20]
- Balassa, B. 1965. Trade liberalization and revealed comparative advantage. The Manchester School, 33:99-123.
- Basu, S. 2011. Evolving Nature of Firm Level Competitiveness - A Technical Note. Indore Management Journal. 3. 52-57
- BKB.2018. Annual report 2016/17. [Online]. Available: <https://www.bkb.co.za/wp-content/uploads/2018/10/Annual-Review-2018-ENG-Digital-compressed.pdf> [2018, June 10]
- Boonzaaier, T. L. and Van Rooyen, C. J. 2015. 'An inquiry into the competitiveness of the South African stone fruit industry'. [Online]. Available: <http://www.bfap.co.za/wp->

content/uploads/2018/08/Boonzaaier_Competitive-performance-of-the-South-African-stone-fruit-value-chain.pdf [2018, May 29]

Boonzaaier, T.L. 2015. An inquiry into the competitiveness of the South African stone fruit industry. M.Agric. Admin. Thesis. Stellenbosch: Stellenbosch University.

Boonzaaier, J.W. 2009. A framework for the improved competitiveness of resource poor farmers. MSC thesis, Stellenbosch: Stellenbosch University

Barr, A. 2019. An analysis of the factors impacting the competitive performance of the South African wine industry value chain. Thesis (MCom)--Stellenbosch University [Online] Available: <https://scholar.sun.ac.za/handle/10019.1/105864> [2020, February, 15]

Cape Wool SA. 2016. The 2014/2015 Annual Report. [Online] Available: <http://www.capewools.co.za/view-pdf/16/2/annual-report#PDF/1> [2019, March 20]

Cape Wool SA. 2017. [Online]. Available: Annual Sales Statistics 2016-17.pdf (PDF 3.34MB) [2018, March 20]

Cape Wool SA. 2018. Statistical Review of Wool Sold in South Africa. [Online]. Available: Production & Sales Graphs 201819 Season.pptx (PPTX 0.24MB) [2019, March 20]

Cardellino, R & Mueller, J. n.d. Wool and other animal fibres in South America.

20. [Online]. Available: <http://www.fao.org/docrep/pdf/011/i0709e/i0709e07.pdf> [2019, June 10]

Centre for Development Support (CDS). 2005. Assisting poor wool producers to access the international wool market: Successes and stumbling blocks. CDS Research Report, LED and SMME Development. [Online]. Available: <https://www.ufs.ac.za/docs/librariesprovider23/centre-for-development-support-documents/all-documents/led---research-report-2005> (3) -80-eng.pdf? Status=Master&sfvrsn=0 [2019, March 20]

Cherunilam, F: International Economics; Fifth edition; 2008: McGraw-Hill

Chiyangwa, T. 2018. Financial implications of converting from livestock to game farming in the Karoo region, South Africa. [Online]. Available: <https://scholar.sun.ac.za/handle/10019.1/103526> [2018, May 29]

Clarke K.C, OBE, MC. 1975. The Future for Wool. Managing Director, International Wool Secretariat, London. [Online]. Available: https://ac.els-cdn.com/0024630175900291/1-s2.0-0024630175900291-main.pdf?_tid=f955c8c1-00e9-4440-b25a-ac4475f0dead&acdna [2018, March 28]

DAFF, 2012. Abstract of agricultural statistics. Pretoria: Directorate Statistics and Economic Analysis.

Department of Agriculture, Forest and Fisheries. 2018. The South African Year book. [Online]. Available: <https://www.gcis.gov.za/content/resourcecentre/sa-info/south-africa-yearbook-201718> [2018, March 28]

De Beer, L., Terblanché, S. 2015. Improving the livelihoods of wool producers in a sustainable manner by optimizing the woollen sheep production systems within the communal farming area of the Eastern Cape. [Online]. Available; <http://dx.doi.org/10.17159/2413-3221/2015/v43n2a382> [2018, May 29]

De Beer. 2018. Wool outlook. [Online]. Available: <https://www.bizcommunity.com/Article/1/741/176327.html> [2018, June 10]

De Beer.2018. The local wool industry: A major success story [Online]. Available: https://journals.co.za/docserver/fulltext/vp_fbiz/2/10/vp_fbiz_v2_n10_a4.pdf?expires=1565142365&id=id&accname=57845&checksum=11A105C182FCFC83013F8A4FD41F211F [2018, May 29]

Davids, T. & Meyer, F.H. 2017. Agricultural economics research, policy and practice in Southern Africa: Price formation and competitiveness of the South African broiler industry in the global context. *Agrekon*, 56(2):123–138.

D’Haese, M., Calus, M., Kirsten, J. F., Van Huylenbroeck, G., & Bostyn, F. 2001. Efficiency analysis of small-scale wool production in the former Transkei South Africa. [Online]. Available; *Agrekon*. <https://doi.org/10.1080/03031853.2001.9524980> [2018, May 29]

D’Haese, M., Calus, M., Kirsten, J. F., Van Huylenbroeck, G., & Bostyn, F. 2001. Efficiency analysis of small-scale wool production in the former Transkei South Africa. [Online]. Available; *Agrekon*. <https://doi.org/10.1080/03031853.2001.9524980> [2018, May 29]

- Dlikilili, X. 2018. An analysis of the competitive performance of the South African citrus industry. Agri Admin.thesis. Stellenbosch: Stellenbosch University.
- Esterhuizen, D. & van Rooyen, C. J., 1999. How competitive is agribusiness in the South African agro-food commodity chain? *Agrekon*, 38(4), pp. 744-752.
- Esterhuizen, D., 2006. An evaluation of the competitiveness of the South African agribusiness sector, Pretoria: University of Pretoria.
- Esterhuizen, D. & van Rooyen, C., 2001. 'Winners ', 'losers 'and 'turnarounds 'in the South African agro-food and fibre industry. *Agrekon*, 4(38), pp. 744-752.
- Fearne, A & Champion, S. 2001 Supply Chain Management: A 'First Principles' Consideration of its Application to Wool Marketing. *Wool Technology and Sheep Breeding*, 49 (3). pp. 222-236. ISSN 0043-7875.
- Freebairn, J. 1986. Implications of Wages and Industrial Policies on Competitiveness of Agricultural Export Industries. Paper presented at the Australian Agricultural Economics Society Policy Forum, Canberra.
- Francis Cherunilam: 2008. *International Economics*; Fifth edition: McGraw-Hill
- International Institute for Management Development. (2018). *World Competitiveness Year Book*, 2018. Year on year changes. [Online]. Available: <file:///E:/Analytical%20framewrok/one-year-change-2-columns.pdf>. [22-October 2018]
- Gerber, W.H.2004. Enhancing the competitive advantage of South African Cultivated Abalone industry. Stellenbosch: University of Stellenbosch.
- Gerwel, H. and Conradie, B. 2016. Determinants of efficiency of ex-homeland farmers: The case of wool production supported by the National Wool Growers Association' Paper presented at *AEASA Annual Conference*, September, 2016. Krugersdorp.
- Groenewald, J. & Niewouldt, L., 2003. Chapter 15: Demands on and Challenges for South African Agriculture. In L. Niewouldt & J. Kirsten, Eds. *The challenge of change: Agriculture, land and the South African economy*. Pietermaritzburg: University of Natal. Pp.265-83.

Hanekom, A.J. 1959. South African Wool Board. The South African Wool Industry. 1. Published by SA Wool Board department of publications. Stellenbosch. Stellenbosch University.

Hayes, P.B. 2000. Enhancing the Competitiveness of Rooibos industry. Stellenbosch: University of Stellenbosch

International Wool Textile Organisation (IWTO). 2018. Market Information Edition 13. [Online]. Available: http://www.iwto.org/sites/default/files/files/iwto_resource/file/20180319_IWTO%20Report_Preview%20Chapter_web.pdf [2018, March 28]

Jafta, A., 2014. Analysing the competitiveness performance of the South African apple industry, Stellenbosch: University of Stellenbosch.

John Longworth, Colin Brown & Scott Waldron, 2005 <https://www.uq.edu.au/agriculture/docs/CAEG/Wool-industry-in-China-eng.pdf>

Kirsten, J. F. and Van Zyl, J. 1998. 'Defining small-scale farmers in the south African context', *Agrekon*, 37(4), pp. 551–562. Doi: 10.1080/03031853.1998.9523530.

Kom, L. 2016... Sheep flock structure, dynamics, management practices, and wool production under bush encroached and non-encroached areas of the Eastern Cape Province. University of Fort Hare.

National Development Plan. 2012 [Online]. Available: http://www.dac.gov.za/sites/default/files/NDP%202030%20-%20Our%20future%20-%20make%20it%20work_0.pdf [2018, January 16].

National Wool Growers Association. 2015. Status of South African wool industry. IWTO conference, Stellenbosch.

Nkonki, B. 2006. The diversity of smallholder wool production and its marketing aspects: A case study at Xume, Eastern Cape, South Africa. University of Pretoria

NSW Department of Primary Industries. 2015. NSW Wool Industry and Future Opportunities. [Online]. Available: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/543523/Final-Report-NSW-Wool-Industry-and-Future-Opportunities.pdf [2019, August 9]

Madima, T.M. 2009. Competitiveness of the South African deciduous fruit canning industry. Master's thesis, University of Pretoria, Pretoria, South Africa [Online]. Available: <http://www.repository.up.ac.za/dspace/bitstream/handle/2263/27362/dissertation.pdf?sequence=1>. [30 July 2017].

Mahlanza, B., Mendes, E. and Vink, N. 2003. 'Comparative advantage of organic wheat production in the Western Cape', *Agrekon*, 42(2), pp. 144–162. Doi: 10.1080/03031853.2003.9523617.

Mashabela, E. M., 2007. Measuring the relative competitiveness of global deciduous fruit supply chain: South Africa Versus Chile, Stellenbosch: University of Stellenbosch.

Mashabela, T. E. and Vink, N. 2008. 'Competitive performance of global deciduous fruit supply chains: South Africa versus Chile', *Agrekon*. Doi: 10.1080/03031853.2008.9523799.

Mosoma, K. 2004. Agricultural competitiveness and supply chain integration: South Africa, Argentina and Australia. *Agrekon*, 43(1):132-144.

Ortmann, G. & Machethe, C., 2003. Problems and opportunities in South African agriculture. In L. Niewouldt & J. Groenewald, Eds. *The challenge of change: Agriculture, land and the South African economy*. Pietermaritzburg: University of Natal Press. Pp.47-62.

Porter, M., 1990. *The competitive advantage of nations*. London: Macmillan.

Porter, M. E. 1998. *Competitive advantage: Creating and sustaining superior performance - with a new introduction*. Free Press New York.

Porter, M. E. (2007). *Creating a Competitive South Africa*. Institute for Strategy and Competitiveness, Harvard Business School. Johannesburg, South Africa, 3.

Pienaar, P. L. 2013. 'Typology of Smallholder Farming in South Africa's Former Homelands: Towards an Appropriate Classification System', (December), p. 122.

RUST, J.M. & RUST, T., 2013. Climate change and livestock production: A review with emphasis on Africa. *South African J. Anim. Sci.*, 43(3):255-267.

Sadr, K. 2016. The story of how livestock made its way to southern Africa. [Online]. Available: <https://theconversation.com/the-story-of-how-livestock-made-its-way-to-southern-africa-64256> [2019, August, 08]

Schumacher, R. 2013. Deconstructing the Theory of Comparative Advantage. Accessed on: <http://wer.world-economics-association.org/files/WEA-WER2-Schumacher.pdf> on 21-05-18

Siudek, T. and Zawojka, A. 2014. 'Competitiveness in the economic concepts, theories and empirical research', *Oeconomia*, 13(1), pp. 91–108. doi: c82799727548.

Sigel, E. 2006. International competitiveness and comparative advantage: A survey and proposal for measurement. *Journal of Industry, Competition and Trade*. 6:137-159.

Sihlobo, W. 2016. An Evaluation of Competitiveness of South African Maize Exports Stellenbosch: University of Stellenbosch

South African Wool Board. Hanekom, A. J. The South African Wool Industry. 1959. Published by SA Wool Board department of publications.

Stats SA, 2012. Income and Expenditure of Households 2010/2011. Statistical Release P0100. Pretoria: Statistics South Africa.

Statistics South Africa. 2019. Fact about poverty. [Online], Available: <http://www.statssa.gov.za/?p=12075> [2019, February 20].

Siudek, T. and Zawojka, A. 2014. Competitiveness in the economic concepts, theories and empirical research. *Acta Scientiarum Polonorum. Oeconomia*, 13(1).

Sibulali, A. 2018. Analysing the competitive performance of the South African subtropical fruit industry Unpublished Master's thesis. Stellenbosch University, Stellenbosch, South Africa

Thomas, B. 2007. The development of the horticultural industry in Namibia: An assessment of the determinants of the global market competitiveness of table grape production. Unpublished Master's thesis. Stellenbosch University, Stellenbosch, South Africa

USDA. 2015. Farm typology. Vol 2, no 10. [Online]. Available: https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/Typology/typology13.pdf [2018, April, 18]

Van der Merwe, J.D., Cloete, P.C. & Van Schalkwyk, H.D. 2016. Factors influencing the competitiveness of the South African wheat industry: A hedonic price model. *Agrekon*, 55(4):411-435.

Van Rooyen, I.M., Kirsten, J.F., Van Rooyen, C.J. and Collins, R., 2001, January. The competitiveness of the South African and Australian flower industries: an application of three methodologies. In 45th Annual Conference of the Australian Agricultural and Resource Economics Society, January (Vol. 23).

Van Rooyen, Tihanyi. K, Kiran. M, Mabaya. E. 2011. Case Studies of Emerging Farmers and Agribusinesses in South Africa. Published by Sun Press, a division of African Sun Media, Stellenbosch 7600

Van Rooyen, C.J. & Esterhuizen, D. 2012. Measurement and analysis of the trends in competitive performance: South African agribusiness during the 2000's. *Journal of Applied Management and Investments*, 1(4):426-434.

Venter, R. & Horsthemke, O. 1999. Analysis of the competitive nature of the Southern African sheep meat value chain. *Agrekon*, 38(4):716-725.

Verikios, G. 2007. "Modelling the World Wool Market: A Hybrid Approach," *Economics Discussion / Working Papers 07-18*, The University of Western Australia, Department of Economics

Vink, N., Kleynhans, T.E. & Street, K. 1998. The competitiveness of Western Cape wheat production: An international comparison/Die mededingendheid van koringproduksie in die Wes-Kaap: 'n Internasionale vergelyking. *Agrekon*, 37(3):255-268.

World Economic Forum. (2018). *Global Competitiveness Report 2017-18*. Available: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>. Viewed 22-October 2018

World Bank 2018: https://wits.worldbank.org/wits/wits/witshelp/Content/Utilities/e1.trade_indicators.htm

World Economic Forum. 2017. *The global competitiveness report*. [Online] Available: <http://www3.weforum.org/docs/GCR2016->

2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf [2018, September 12]

World Economic Forum. 2018. The global competitiveness report. [Online] Available: <http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf> [2019, July 20]

Yim. O and Ramdeen. T. 2015. Hierarchical cluster analysis: Comparison of three linkage measures and application to psychological data. [Online] Available: file:///H:/Hierarchical_Cluster_Analysis_Comparison_of_Three_.pdf

Appendix A

Questionnaire for wool value chain member 2019:

1. RESPONDENT INFORMATION

Name of Respondent:

Organisation:

Role in the organisation:

Contact number:

E-mail address:

Geographical Area of operation:

1.1 Sheep Wool Types (sold/handled/processed):

Greasy	
Semi-processed	
Processed	
Other	

1.3 Position in the value chain:

Producer	Buyer/processor	Broker	Retailer	Supporting services	Other

1.6. Indicate with an "x", the applicable volume of wool (tonnes) handled by your business:

<10t	10t-100 t	100 t - 1 000 t	>1 000 t

2. PRODUCTION FACTOR CONDITIONS

Please mark only one block: 1 = Negative; 3 = Neutral; 5 = Positive for the following questions about the Smallholder Wool Growers your organisation deal with. You do not have to be accurate we just need your opinion.

2.1 Quality of labour involved in wool production:

Poorly skilled

Highly skilled

1	2	3	4	5

2.2 Quality of grazing land:

Poor

High

1	2	3	4	5

2.3 The cost of doing business in your industry is: (i.e. transaction costs).

Extremely high

Very affordable

1	2	3	4	5

2.4 Quality of your flock:

Poor

High

1	2	3	4	5

2.6. The quality of information available about the wool market:

Generally, lags behind other industries outstanding

1	2	3	4	5

2.7. Obtaining finance for your business is: (e.g. short- & long-term loan)

Extremely difficult and too costly Easy and very affordable

1	2	3	4	5

2.8. Access to natural resources (land and water) is:

Limited Readily available

1	2	3	4	5

2.9. The productivity level of smallholder wool growers is:

Very low Very high

1	2	3	4	5

2.10. Availability of infrastructure:

Poor High

1	2	3	4	5

3. DEMAND/MARKET FACTORS

Please mark only one block: 1 = Negative; 3 = Neutral; 5 = Positive for the following questions about the Smallholder Wool Growers your organisation deal with. You do not have to be accurate we just need your opinion.

3. 1 Local (SA) market size is:

Unable to handle large volumes (of SWG produce)

Large enough

1	2	3	4	5

3.2 Do wool buyers have enough information about the local SMG?

Insufficient

Adequate

1	2	3	4	5

3.3 The share of SWG in the national wool industry export market is:

Too small

Large enough

1	2	3	4	5

3.4 The South African SWG's relationship with major brokers.

Very Poor

Very good

1	2	3	4	5

3.5 The chance of expansion in the existing markets is:

Less likely

Very likely

1	2	3	4	5

4. RELATED AND SUPPORTING INDUSTRIES

Please mark only one block: 1 = Negative; 3 = Neutral; 5 = Positive for the following questions about the Smallholder Wool Growers your organisation deal with. You do not have to be accurate we just need your opinion.

4.1 Financial service providers generally:

Constrains your business competitiveness

Enhances your business competitiveness

1	2	3	4	5

4.2 Availability of extension services or government assistance:

None-existent

the best in their fields

1	2	3	4	5

4.3 Evaluation and testing of shearing and processing techniques according to industry's best practices:

Improper

Properly evaluated and tested

1	2	3	4	5

4.4 Availability of local suppliers of primary inputs (Feed, medicine etc.):

Largely non-existing and limited supply

Numerous and provides all necessary input components

1	2	3	4	5

4.5 Availability of storage and packing/product handling facilities:

Not available

Readily available

1	2	3	4	5

4.6 Availability of transport to take wool to the market:

Not available

Readily available

1	2	3	4	5

5. FIRM STRATEGY, STRUCTURE AND RIVALRY

Please mark only one block: 1 = Negative; 3 = Neutral; 5 = Positive for the following questions about the Smallholder Wool Growers your organisation deal with. You do not have to be accurate we just need your opinion.

5.1 Competition in the local market is:

Very limited

Very intense

1	2	3	4	5

5.2 Your willingness to reinvest in Wool production operations:

Reluctant

Keen

1	2	3	4	5

5.3 Your willingness to take risk:

Risk averse

Risk taker

1	2	3	4	5

5.4 Reasons for producing wool:

Commercial	Subsistence	Culture	Luxury

5.5 Knowledge of the wool value chain:

Very Poor

Very good

1	2	3	4	5

6. GOVERNMENT SUPPORT AND POLICIES

Please mark only one block: 1 = Negative; 3 = Neutral; 5 = Positive for the following questions about the Smallholder Wool Growers your organisation deal with. You do not have to be accurate we just need your opinion.

6.1 South Africa's agricultural policies policy:

Constrains your company's competitiveness

Enhances your company's competitiveness

1	2	3	4	5

6.2 South Africa's land reform policy:

Constraints your company's competitiveness

Enhances your company's competitiveness

1	2	3	4	5

6.3 South Africa's labour policy (e.g. minimum wage):

"Constraints your company's competitiveness

Enhances your company's competitiveness

1	2	3	4	5

6.4 The effect of corruption and opportunism on business' competitiveness:

Impedes business investment

Promotes business investment

1	2	3	4	5

6.5. The effect of communal land tenure:

Constraints your company's competitiveness

Enhances your company's competitiveness

1	2	3	4	5

7. Future projections/expectations:

Please give your opinion on developments in the business structure of your industry over the next 10 years.

Do you expect, over the next 10 years?

7.1. That, SWG will increase your stock, quality and flock?

Yes	No

7.2. That, SWG will work more with the other role players within the wool value chain?

Yes	No

7.3 That, the market for SWG will increase?

Yes	No

7.4 That, there will be an increase in supply of long-term contracts (along the value chain)?

Yes	No

7.5 That, the number of SWG will increase?

Yes	No

7.6 That, there quality of smallholder's wool will improve?

Yes	No

8. GENERAL QUESTIONS - In your opinion:

8.1. Do you think government is investing enough in SWG in order to increase its competitiveness status? If no why?

8.2. Where SWG sell their wool and why?

8.3 Do you wish there were diverse buyers of smallholder's clip? If yes why?

8.4 How can smallholder farmers increase their production and quality?

8.5 How can smallholder farmers be assisted to better penetrate the market?

9. Dominant factors currently shaping the Smallholder wool industry:

Please mark only one block: 1 = Negative; 3 = Neutral; 5 = Positive for the following questions about the Smallholder Wool Growers your organisation deal with. You do not have to be accurate we just need your opinion.

1) Global economic conditions

Dominant factor

No impact/minimum factor

1	2	3	4	5

2) Increasing urbanization

Significant factor

Less significant factor

1	2	3	4	5

3) Changing demand

Big impact

No impact

1	2	3	4	5

4) Emerging markets

Dominant factor

No impact/minimum factor

1	2	3	4	5

5) Uncertainty and vitality

Big impact

No impact

1	2	3	4	5

Thank you very much for taking your valuable time to complete this survey. Your response is highly appreciated.

Appendix B

The PCA results for the production factor determinant

Communalities		
	Initial	Extraction
Quality of labour	1.000	.505
Quality of your flock	1.000	.825
quality of information	1.000	.672
Obtaining finance	1.000	.410
Productivity level	1.000	.693

Extraction Method: Principal Component Analysis.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.852	37.048	37.048	1.852	37.048	37.048	1.653	33.057	33.057
2	1.253	25.068	62.116	1.253	25.068	62.116	1.453	29.059	62.116
3	.867	17.349	79.465						
4	.640	12.792	92.257						
5	.387	7.743	100.000						

Extraction Method: Principal Component Analysis.
--

Rotated Component Matrix^a		
	Component	
	1	2
Quality of your flock	.898	-.140
Productivity level	.806	.208
Quality of information	.000	.820
Quality of labour	.050	.709
Obtaining finance	.441	.464
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization. ^a		
a. Rotation converged in 3 iterations.		

Appendix C

The Cronbach's Alpha test results

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.725	.727	16

Item Statistics			
	Mean	Std. Deviation	N
Q3	3.30	1.268	44
Q4	2.00	1.100	44
Q7	3.11	1.513	44
Q8	3.18	1.225	44
Q9	2.77	1.179	44
Q11	2.27	1.208	44
Q12	2.34	1.311	44
Q14	3.48	1.285	44
Q15	2.98	1.248	44
Q16	3.32	1.216	44
Q17	3.64	1.080	44

Q21	3.20	1.212	44
Q23	2.52	1.000	44
Q36	2.45	1.150	44
Q37	2.45	1.389	44
Q39	3.02	1.267	44

Item-Total Statistics						
		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q3	Quality of information	42.75	65.448	.438	.528	.699
Q4	Obtaining finance	44.05	67.672	.396	.720	.705
Q7	Wool value chain have enough information	42.93	64.298	.390	.542	.704
Q8	quantity of SWG's clip brokered is	42.86	68.074	.320	.425	.712
Q9	SWG's relationship with major brokers/buyers	43.27	64.575	.532	.629	.690
Q11	Financial service provided are	43.77	66.459	.413	.738	.702
Q12	Availability of extension services	43.70	60.818	.661	.681	.673
Q14	Availability of local suppliers of primary inputs	42.57	65.367	.434	.621	.699
Q15	Availability of storage	43.07	72.809	.079	.689	.736
Q16	Availability of transport	42.73	66.901	.385	.497	.705
Q17	Competition in the local	42.41	74.619	.014	.542	.739
Q21	SA's land reform policy	42.84	71.951	.128	.552	.731
Q23	Effect of corruption	43.52	64.534	.654	.629	.684
Q36	Global economic conditions	43.59	74.294	.022	.520	.739
Q37	Increasing urbanization	43.59	70.015	.177	.425	.728
Q39	Emerging markets	43.02	71.139	.155	.532	.729

