Enforcement mechanisms and governance structures to protect a region of origin lamb product

by

Melissa van der Merwe,[a,*] Johann, F. Kirsten[b] and Jacques, H. Trienekens[c]

[a] Department of Agricultural Economics, Extension and Rural Development, University of Pretoria, Pretoria, South Africa. [Melissa.vandermerwe@up.ac.za]
[b] Bureau of Economic Research, Stellenbosch University, Stellenbosch, South Africa. [Jkirsten@sun.ac.za]
[c] Department of Social Sciences, Subdivision - Business Management and Organisation, Management Studies Group, Wageningen University and Research Centre, Wageningen, the Netherlands. [Jacques.trienekens@wur.nl]
* Corresponding author: Melissa van der Merwe. Tel.: +27 (0) 12 420 4084. Private Bag X20, Hatfield, 0028, Pretoria, South Africa. *Email address:* melissa.vandermerwe@up.ac.za (Melissa van der Merwe)

Abstract

Purpose: This paper makes an empirical contribution by investigating the enforcement mechanisms and governance structures required to protect and govern a regional food product when public certification fails. As one of the recent additions to South Africa's repertoire of products with a designated origin, Karoo Lamb made for an interesting case study.

Design/methodology/approach: A conjoint analysis was conducted to elicit the farmers' preferred enforcement mechanisms to protect the authenticity of the Karoo Lamb product. The investigation furthermore draws on survey data collected among 73 farmers, five abattoirs, two processors/packers and five retail outlets to evaluate the governance structures of the Karoo Lamb supply chain.

Findings: The results indicate that, due to failed public certification that is governed by market-like structures, Karoo Lamb is better off being governed by hierarchical structures. These structures are expected to allow for a stronger focus on stricter enforcement mechanisms.

Practical implications: At the farm level, the Karoo Lamb supply chain requires better enforcement mechanisms to protect the unique attributes of origin and taste to ensure the authenticity of Karoo Lamb. This change towards stricter enforcement requires more hierarchical structures to allow for private or mutual enforcement mechanisms.

Originality: This paper contributes empirically to the governance structure knowledge base by analysing the enforcement mechanisms and governance structures needed to enforce, and protect, the quality and origin standards of a region of origin product, Karoo Lamb, in South Africa.

Keywords: Enforcement mechanisms; governance structures; conjoint experiment; transactional model; Karoo Lamb; South Africa

Research paper

1. Introduction

A governance structure is "the institutional matrix within which transactions [in the supply chain] are negotiated and executed." (Williamson, 1996). Governance structures can be viewed as a continuum with spot markets (driven by prices) on the one end and full vertical integration (driven by authority) on the other end, with a range of hybrid governance structures between these two extremes (Williamson, 1991). A spot market governance structure is usually used for an arm's length, non-specific transaction where no effort is made to repeat the transaction (Williamson, 1985). At the other extreme of the governance continuum lies hierarchical governance structures (or vertical integration), where stakeholders decide to integrate transactions into the hierarchy of the firm when transaction costs are high, and greater control is required for successful exchange (Williamson, 1991; Williamson, 1985). Hybrid governance structures fall between these two polar structures, by simultaneously displaying market-like and hierarchy-like characteristics (Makadok and Coff, 2009). Hybrid governance structures allow for the development of relationship elements such as trust (Williamson, 1985), thus enabling supply chain stakeholders to deal with mutual dependence without going as far as integration (Ménard, 1996).

Peterson *et al.* (2001) distinguished five major governance structures on this continuum namely, spot markets, contracts, relation-based alliances, equity-based alliances, and vertical integration. From the far left (spot market) to the far right (vertical integration), the characteristics of the "visible hand" or authority gradually replaces the characteristics of the "invisible hand" or price mechanism (Zhang and Aramyan, 2009). In 2009, Gellynck and Molnár, developed their own governance structure typology (based on the work of Williamson 1973; Webster, 1992; Peterson *et al.*,2001; Raynaud *et al.*, 2005; and Schulze *et al.*, 2006) which comprised of seven typical governance structures; spot market, non-contractual relationships (relational contracts) with non-qualified partners, non-contractual relationships

(relational contracts) with qualified partners, contractual relationships (formal contracts), relation-based alliances, equity-based alliances, and vertical integration (Table 4).

It seems plausible to propose that "simple governance structures should be used in conjunction with simple contractual relations and complex governance structures reserved for complex relations" (Williamson, 1996). However, Fisher *et al.* (2008), highlighted that the selection of an appropriate governance structure might not be as simple, and chain level characteristics, product characteristics and country-specific characteristics need to be taken into account. By allowing for these characteristics, appropriate recommendations for the development of tailor-made governance structures can be made. As a result, there is an explicit need for empirical research efforts that are more focused on these deeper level characteristics (Gellynck and Molnár, 2009). Moreover, Szabo and Bardos (2006) stressed that although governance structures may be equally suited to chains, it is up to the chain stakeholders to select the most appropriate structure for the specific relationship at hand. The typical factors that are likely to influence this decision include; the duration of the relationship (Gulati and Singh, 1998), the technology being applied (Fragata *et al.,* 2007), possible certification in the case of protected designation of origin products (Chappuis and Pierre, 2000), and the collective reputation of products (Raynaud *et al*., 2005).

The quest for appropriate governance structures and enforcement mechanisms in niche food products with a protected designation of origin is increasingly receiving public attention as more and more food products are differentiated based on their regional identity and reputation. The consensus is that if public certification bodies, through their enforcement mechanisms, adequately instil consumer confidence in these products, then market like structures will be the most effective governance structure. However, if public certification bodies are unsuccessful at monitoring stakeholders and enforcing product standards, market like structures seize to be effective, and alternative modes are required to protect the interests of consumers adequately

(Raynaud *et al.,* 2005). The success of food products with a regional identity, therefore, lies in the capability of the enforcement mechanisms to protect the product against exploitation, and to protect the consumers against deception. However, the success of these enforcement mechanisms relies on the support of an adequate governance structure. In this study, this analogy is investigated in more detail by (i) examining the enforcement mechanisms necessary to ensure compliance with the quality and origin standards of Karoo Lamb, and (ii) by examining the governance structures needed for successful enforcement of these quality and origin standards.

2. Karoo Lamb background

The quality and unique taste of lamb produced in the Karoo region of South Africa has been part of the South African heritage for centuries. The region is far from urban centres and home to flocks of free-roaming sheep. The vegetation of this flat semi-arid region stretching north-eastwards from the Cape comprises a variety of different species of wild herbs with limited grass growth (Kirsten *et al*., 2008). As a result, the lamb reared on the natural indigenous Karoo vegetation is believed to produce meat with a unique flavour (Erasmus *et al.*, 2016).

The assumed quality and unique taste of lamb products from the Karoo region denotes considerable value to the Karoo name, and significant marketing potential waiting to be tapped into. It is precisely this potential that makes the Karoo name much sought after, even by retailers, butcheries and restaurants with little or no link to the Karoo region (Kirsten *et al*., 2008).

Driven by an increased concern over the misappropriation of the words "Karoo Lamb", the lamb producers in the Karoo region had collectively, in 2011, taken the initiative to register the Karoo Meat of Origin certification mark under existing trademark laws in South Africa. The Karoo Meat of Origin certification scheme seeks to guarantee that the lamb product originates from the Karoo region, is raised under free-range conditions with good animal practices in

mind, without the provision of routine antibiotics and hormones, and is supported by a full farm-to-fork traceability system (KMOO, 2016).

Since the establishment of the certification scheme, 209 Karoo farmers (farming on about two million hectares) have been certified. Downstream in the supply chain, five abattoirs, four processors and packers, 17 butcheries and one retail chain have been certified to use the certification mark. The standards and requirements that participating stakeholders need to adhere to are summarised in Table 1.

Table 1: Karoo Meat of Origin standards and requirements

Stakeholder	Karoo Meat of Origin standards and requirements
Farmer	• At least two of the six[1] Karoo shrub species should be present on at least 60 % of the farm area. • Pastures should be well managed to prevent overgrazing and camps should be fenced. • Adherence to the Code of Practice of Good Stockmanship, Animal Welfare Practice, and the Animal Protection Act (Act 71 of 1962). • Sheep should feed freely from indigenous Karoo veldt, roam freely in sizable camps, and have access to clean cold and fresh water. • The occasional use of supplementary feed is allowed within reasonable measure. • Trucks should not be overloaded and should be free from any hazards when sheep are transported. • Movement of animals to abattoirs or between farms should be recorded. • Sheep carcasses of class A, AB, B and C, fat classes 1 to 6, and carcass conformation 3 to 5 qualify for certification as Karoo Meat of Origin.
Abattoir	• Should be a sheep-slaughtering abattoir in the Karoo. • Should be registered with the South African Red Meat Abattoir Association. • Traceability systems should be in place that can trace the carcass back to the farm of origin. • Carcasses should be safe, of consistently high quality, and should meet all legal requirements as set out by South African law.
Processor/ Packer/ Retailer	• Not limited to the Karoo region. • Should comply with the Food Premises Regulation. • Products should be safe, hygienically processed, of consistently high quality, and should meet all legal requirements as set out by South African law. • Traceability systems should be in place that can trace the carcass back to the slaughtering abattoir and processing plant as well as the farm of origin. • The registered Karoo Meat of Origin label should be visible on the packaging.

Source: KMOO, 2016

The success of Karoo Lamb relies on efficient monitoring mechanisms for every transaction in the supply chain based on the standards mentioned above to ultimately ensure the quality and origin of the final product. To achieve this, a third party was appointed by the State to

ensure the enforcement of the quality and origin standards by monitoring the supply chain stakeholders for compliance with the standards and requirements set out in Table 1.

It is against this backdrop that the research paper aims to analyse the enforcement mechanisms and governance structures needed to enforce and protect, the quality and origin standards of a region of origin product, Karoo Lamb, in South Africa. In addition, the paper aims to contribute to the knowledge base of governance structures through an empirical analysis of chain governance structures of traditional food products (Robert, 2006; Schulze *et al.*, 2006; Raynaud *et al.*, 2005; Chappuis and Pierre, 2000; Jordana, 2000).

3. Methodology

During June and July of 2015, 73 farmers from the population of 209 certified Karoo Lamb farmers were interviewed by way of referral sampling, a convenience sampling method. At the same time, the Karoo Lamb product was followed downstream, and data was collected from five certified abattoirs, two certified processors and packers, and five certified retail outlets.

To understand the enforcement mechanism and governance structures that govern the Karoo Lamb supply chain, a two-step approach was followed for the analysis. The first step was aimed at identifying the enforcement mechanisms employed to monitor the Karoo farmers' compliance with the Karoo Lamb standards and requirements to ensure that the quality and origin attributes of the product are protected. To reach this aim, a conjoint experiment was employed to test, specifically, the 73 Karoo farmers' preferences for alternative enforcement mechanisms. The second step was aimed at evaluating the governance structures that currently govern the Karoo Lamb supply chain, similar to the studies done by Raynaud *et al.* (2005) and Wever *et al.* (2010). During the second step, 73 Karoo farmers, five certified abattoirs, two certified processors and packers, and five certified retail outlets were interviewed, based on semi-structured questionnaires, to enable an evaluation of the governance structures that govern the Karoo Lamb supply chain.

3.1 Methodology: Enforcement mechanisms

During the first step of the analysis, a conjoint experiment was conducted to examine the Karoo farmers' preferred enforcement mechanisms to ensure compliance with the standards and requirements to ensure that the quality and origin attributes of Karoo Lamb are protected. In total, 73 farmers participated in the conjoint experiment.

Originally, a conjoint analysis has been used to evaluate the decision-making process when consumers are faced with various attributes of competing products that require a trade-off between these products and their attributes (Walley *et al.*, 1999; Green and Srinivasan, 1990). A conjoint analysis in these studies enables the researcher to model consumer trade-offs between products or services with multiple attributes, just as the consumer presumably does (Padberg *et al.*, 1997). A conjoint experiment, therefore, measures the relative importance that consumers attach to each product attribute, as well as the utility that consumers attach to the different attribute levels (Malhotra, 1996). Conjoint analyses have seen many application in the evaluation of consumer preferences for hypothetical products in food-related marketing research; see *inter alia* Rodrigues, 2018; Vermeulen *et al*., 2007; Murphy *et al*., 2000; and Baker, 1999. Other applications include, the assessment of commercial lamb buyers' attitudes towards key supply chain attributes (Stanford *et al.*, 1999), the measurement of food production attributes (Baker and Burnham, 2002), new product development processes (Wittink *et al.*, 1994), animal welfare attributes (Den Ouden *et al.*, 1997), farmers' crop insurance preferences (Sherrick *et al.*, 2003), consumers' food safety preferences (Halbrendt *et al.*, 1995), food safety at the farm level (Valeeva *et al.*, 2005), risk factors in animal diseases (Horst *et al.*, 1996), and production and post-harvest management attributes (Hirpa *et al.*, 2012). This paper aims to contribute to the pool of conjoint analysis applications by using the conjoint analysis as a tool to determine the Karoo farmers' preferences for enforcement mechanisms.

The conjoint model is a multi-attribute model, which assumes that products are selected based on the attributes of the product and that each attribute may have two or more levels (Valeeva *et al.*, 2005). The individual's utility for a particular product is then expressed as the sum of its utility attributes (Churchill, 1999).

$$Y_k = \sum_{j=1}^{J} \sum_{m=1}^{M} \beta_{jm}\, x_{jm}$$

where

Y_k: estimated total utility for product scenario k

C: constant

β_{jm}: partial utility for attribute level m of attribute j

X_{jm}: 1 if scenario k has an attribute level value m for attribute j,

0 if else.

In the Karoo Lamb case, the conjoint analysis is developed around three essential attributes required for successful monitoring and enforcement of the Karoo Lamb standards and requirements These attributes are the incentive or the price premium received by the stakeholder for one kilogram of Karoo Lamb; the mechanism utilized to monitor the supply chain stakeholders to ensure compliance with the standards and requirements, and the penalty to be imposed in the case of non-complying stakeholders (summarised in Table 2). These attributes were developed based on interviews with industry experts and other prominent Karoo Lamb supply chain stakeholders. The industry experts included an experienced researcher in the lamb supply chain, the chairperson of the certification scheme, the chairperson of the Karoo Development Foundation, the manager of one of the certified Karoo Lamb abattoirs, and a certified Karoo Lamb farmer.

Table 2: The selected levels for each attribute

Attribute	Attribute levels
Incentive[2]	Level 1: 0USD/kg price premium Level 2: 0.16USD/kg price premium Level 3: 0.24USD/kg price premium
Monitoring	Level 1: Monitored for compliance with every Karoo Lamb delivery Level 2: Monitored for compliance once a year Level 3: Monitored for compliance during times of drought
Penalty	Level 1: Expelled for three years for non-compliance Level 2: Expelled for five years for non-compliance Level 3: Expelled forever for non-compliance

Following the in-depth discussions with the five industry experts mentioned earlier, it was decided to use 0USD/kg, 0.16USD/kg, and 0.24USD/kg as incentive levels.

The monitoring attribute mainly includes on-farm inspections to monitor where the lamb originated from, for example, were the lambs roaming freely on natural vegetation, where they fed in a feedlot, or were they grazing on planted pastures. The monitoring attribute was pinned at three levels; monitored once a year, during times of drought, or monitored with every Karoo Lamb delivery to the abattoir. The experts all agreed that, to ensure the authenticity of Karoo Lamb products farmers should be monitored at least once a year. However, because the authenticity of the Karoo Lamb product is at its most vulnerable during times of drought when lambs might need supplementary feed, it was also recommended to include monitoring during times of drought as an attribute level. According to the Karoo Lamb protocols, 300g of supplementary feed per lamb per day is allowed. However, farmers often provide feed ad libitum (which might exceed the 300g allowance), especially during times of severe drought. One of the attribute levels was, therefore, to monitor the Karoo farmers during times of drought.

In terms of penalising non-compliant stakeholders, the certification scheme basically has two measures in place, one for severe deviations in the protocol and one for slight deviations. In the case of a severe default, the certification will be revoked with immediate effect, and the stakeholder will have to reapply for certification. For minor misdeeds, a request to correct the mistake will be issued, together with a follow-up audit without any significant consequences.

However, if the mistake has not been rectified, the certification will be revoked (KMOO, 2016). Notwithstanding the penalties set out by the certification scheme, the discussions with industry experts revealed the need for more stringent penalties. Based on these discussions, the levels for the penalty attribute were therefore identified as; expel from the certification scheme for three years, expel for five years, and expel forever.

The total number of hypothetical scenarios for the conjoint analysis was 27, three attributes with three levels each. The 27 scenarios were reduced to a fractional factorial design of nine scenarios by means of the Orthogonal Design procedure to make the conjoint analysis more manageable (summarised in Table 3). The full-profile approach was selected for this conjoint analysis, and a user-friendly rank order method was chosen to measure the preferences of the farmers. The farmers were asked to rank the nine options from most preferred (1) to least preferred (9) during an in-depth interview, after which the data were coded and analysed in IBM SPSS Statistics 24.

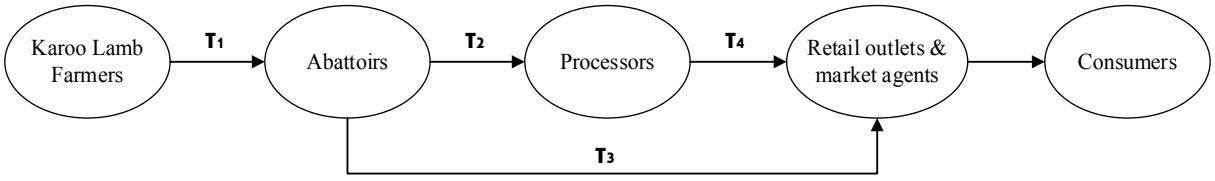
Table 3: The 9 enforcement mechanism scenarios derived from the Orthogonal Design

Option	Incentive attribute	Monitoring attribute	Penalty attribute
1	0.24USD/kg price premium	Monitored for compliance with every Karoo Lamb delivery	Expelled forever for non-compliance
2	0.24USD/kg price premium	Monitored for compliance once a year	Expelled for three years for non-compliance
3	0USD/kg price premium	Monitored for compliance during times of drought	Expelled forever for non-compliance
4	0USD/kg price premium	Monitored for compliance with every Karoo Lamb delivery	Expelled for three years for non-compliance
5	0.16USD/kg price premium	Monitored for compliance with every Karoo Lamb delivery	Expelled for five years for non-compliance
6	0.24USD/kg price premium	Monitored for compliance during times of drought	Expelled for five years for non-compliance
7	0.16USD/kg price premium	Monitored for compliance during times of drought	Expelled for three years for non-compliance
8	0.16USD/kg price premium	Monitored for compliance once a year	Expelled forever for non-compliance
9	0USD/kg price premium	Monitored for compliance once a year	Expelled for five years for non-compliance

3.2 Methodology: Governance structures

The second step of the research analysis was aimed at evaluating the governance structures that currently govern the Karoo Lamb supply chain. To understand the mechanisms that govern the Karoo Lamb supply chain, the paper employs the same approach as Raynaud *et al*. (2005), and Gellynck and Molnár (2009), by utilizing the transactional model. This model disaggregates the Karoo Lamb supply chain into the following dyadic transactions (Figure 1) and then fits each transaction with a set of determining variables and ultimately a specific governance mechanism:

- The transaction between Karoo farmers and abattoirs (henceforth referred to as T1)[3]
- The transaction between abattoirs and processors (T2)
- The transaction between abattoirs and retail outlets (T3)
- The transaction between processors and retail outlets (T4)



Note: Retail outlets encompass retailers, butcheries and deli's

Figure 1: Karoo Lamb supply chain with transaction numbers

Following the decomposition of the Karoo Lamb supply chain, the responses from 73 Karoo farmers, five certified abattoirs, two certified processors and packers, and five certified retail outlets were matched with the determining variables from Gellynck and Molnár's (2009) governance mechanism typology (summarised in Table 4). By matching the responses to the determining variables, it is possible to identify the typical governance mechanisms that govern each transaction in the Karoo Lamb supply chain.

Table 4: Governance mechanisms and their determining variables

	Spot market (market)	Non-contractual relationship		Contractual relationship	Relation-based alliance	Equity-based alliance	Vertical integration (hierarchy)
		with a non-qualified partner	with a qualified partner				
	S	**S+**	**S++**	**C**	**RB**	**JV**	**VI**
Irrelevance of identity	Yes	No	No	No	No	No	No
Length	Short	Medium	Long	Long	Long	Long	Long
Restriction on the choice of partner	No	No	Yes	No	No	Yes	Yes
Written contract	No/Yes	No	No	Yes	No/Yes	Yes	Yes
Contract specifications	Price	General terms and relational objectives	General terms and relational objectives	All or part of each party's obligation	All or part of each party's obligation	Alliance agreement	Governance structure
Resource sharing	Owns own resources	Owns own resources	Owns own resources	Owns own resources	Owns own resources	Each party put resources into a new entity	Common ownership
Joint forces for mutual benefit	No	No	No	No	Yes	Yes	Yes
Intensity of control	Low	Low	Low	Moderately Low	Moderate	Moderately high	High
Focus of control	Immediate transaction	Relationship	Relationship	Contract terms	Relationship	Property rights of stakeholders in a limited joint entity	Property rights of stakeholders in full entity

Source: Adapted from Gellynck and Molnár, 2009

4. Findings

The findings are discussed in accordance with the two-step methodological approach, with the first step being the evaluation of the enforcement mechanisms and the second step being the evaluation of the governance structures. The first sub-section, therefore, evaluates the findings related to the preferred enforcement mechanisms to ensure compliance with the standards and requirements of Karoo Lamb, led by the conjoint analysis, as done in the first step. The second sub-section then evaluates the findings related to the governance mechanisms, led by the transactional model, as done in the second step.

4.1 Findings: Enforcement mechanisms

The survey data support the notion that the State-appointed third party (responsible for public certification) is relatively unsuccessful when it comes to the monitoring of the Karoo farmers for compliance with quality and origin standards. Surprisingly, the data reveals that 85 % of the farmers believe that they are not monitored for compliance following that initial audit by the certification scheme, prior to certification. Of the surveyed farmers, 32.8 % were due for an announced audit by the State-assigned independent third party. Shockingly, none of these farmers knew about this audit, and none of them has been contacted for a follow-up audit at the time of the survey. Alternative enforcement mechanisms are therefore investigated by using a conjoint experiment to test, specifically the Karoo farmers' preference, for alternative enforcement mechanisms.

Before the conjoint analysis was evaluated, the data were assessed for validity (Hair *et al.*, 1995). The external validity of the sample was confirmed, with 34.9 % of the population being represented by the surveyed sample. Kendall's tau-b correlation coefficient was used to measure the strength and direction of the relationship between the observed and estimated rank order variables with a view to assessing the internal validity of the conjoint results. The Kendall's tau-b coefficient was statistically significant at a 1 % level of significance for all the

farmers who participated in the research, and the joint Kendall's tau-b coefficient (0.898) was indicative of a representative model.

The range of utility values for each attribute, summarised in Table 5, provides a measure of importance to the farmers' overall preference for the various attributes.

Table 1: Relative importance values of conjoint attributes

Attribute	Average importance score
Incentive (price premium)	45.862
Monitoring	25.826
Penalty	28.312

From the scores of average importance, it is clear that the farmers regard the price premium, as an incentive mechanism, as being the most important attribute. In terms of ensuring compliance with the Karoo Lamb standards and requirements, the farmers preferred a more severe punishment strategy (see Penalty in Table 5), compared to a more frequent monitoring mechanism.

The additive conjoint equation was used to estimate the utilities (path-worth) scores and the standard errors for each attribute level (summarised in Table 6).

Table 2: Conjoint analysis utility estimations

Attribute and attribute level	Utility estimate	Standard error
Incentive (price premium)		
0USD/kg	-2.042	0.058
0.16USD/kg	0.403	0.058
0.24USD/kg	1.639	0.058
Monitoring		
Every delivery	-0.204	0.058
Once a year	0.060	0.058
Drought	0.144	0.058
Penalty		
Three years	0.292	0.058
Five years	0.097	0.058
Forever	-0.389	0.058
(Constant)	5.000	0.041

As expected, the farmers value a higher price premium for Karoo Lamb more than a lower or no price premium (0USD/kg). This is clearly reflected in the high positive utility (1.639) for

a premium of 0.24USD/kg and a sizeable negative utility (-2.042) for no premium. Farmers furthermore regard the inconvenience of continuous monitoring during every delivery and the harsh penalty of being expelled forever for non-compliance as comprising a disutility, at -0.204 and -0.389, respectively.

A closer look at the most preferred enforcement mechanisms revealed that the majority of the surveyed farmers (30 %) preferred enforcement mechanisms that (i) include a relatively high premium (0.24USD/kg), (ii) allow monitoring with every delivery or only during times of drought and, (iii) expel non-compliant farmers forever or for five years (Figure 2).

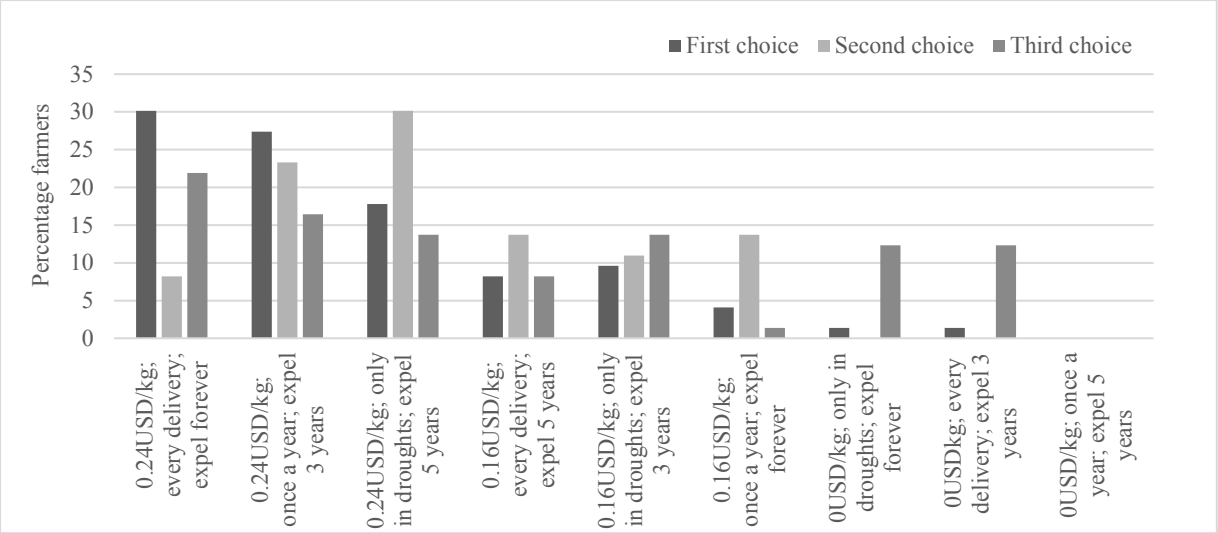


Figure 2: Farmers' preferred enforcement mechanisms

Although statistically significant results for the rest of the supply chain could not be derived by means of a conjoint experiment because of the relatively small sample sizes, the semi-structured questionnaires revealed definite differences in preferences when it comes to enforcement mechanisms (Table 7). Farmers and processors prefer the highest price premium with the abattoirs and retail outlets preferring slightly lower premiums. When it comes to monitoring and penalties for non-compliance to the standards and requirements, farmers prefer stricter monitoring mechanisms and harsher penalties compared to the rest of the supply chain.

Table 7: Karoo Lamb stakeholders' enforcement mechanism preferences

	Attributes and attribute levels		
Karoo Lamb stakeholders	**Incentive (price premium)**	**Monitoring**	**Penalty**
Farmer	0.24USD/kg	Every delivery	Expel forever
Abattoirs	0.16USD/kg	Times of drought	Expel for 3 years
Processor/Packer	0.24USD/kg	Once a year	Expel for 3 years
Retail outlet	0.16USD/kg	Every delivery	Expel for 3 years

Despite these findings, identifying the correct vehicle for ensuring proper implementation of the preferred enforcement mechanisms throughout the supply chain remains a challenge. According to the findings of Raynaud *et al*. (2005) and Wever *et al*. (2010), different quality (and in this case, origin) enforcement mechanisms should be aligned with different governance structures. A detailed understanding of the governance structures that govern the Karoo Lamb supply chain, and ensures the enforcement of standards and requirements, is therefore needed at this point.

4.2 Findings: Governance structures

Anecdotal evidence suggests that owing to many years of commodity style operations, and the importance of shifting large volumes due to squeezed margins, the Karoo Lamb supply chain is still, seven years later, believed to be embedded in the commodity lamb supply chain and mainly governed by market transactions. A detailed analysis of the semi-structured questions pertaining to the governance of the Karoo Lamb supply chain revealed that the supply chain is indeed predominantly governed by market-like mechanisms (S++), as opposed to the expected hierarchical governance structures such as contractual relationships (C), relation-based alliance (RB), or equity-based alliance/joint venture (JV) (Table 8).

Table 8: Transaction detail subsequent governance mechanism

Transaction	**Detail**	**Governance mechanism**
Farmers – Abattoir (T1)	Medium- to long-term relationships.	**S++ and RB**
	Farmers and abattoirs are certified to produce, process and sell Karoo Lamb.	
	Contracts are verbal and generally negotiated on a weekly basis.	
	Prices are set weekly, based on the market price for conventional lamb with a premium added for Karoo Lamb.	

Transaction	Detail	Governance mechanism
	Volumes are arranged according to the farmer's and abattoir's capacity – small deviations from the volumes are allowed with prior notice. Although higher prices are realized for better quality carcasses (grade A2 and A3[4]), specifications are not set.	
	Control is relational in nature and is focused on the reputation of the farmer and the abattoir, and the trust between the stakeholders.	
	Some of the farmers in one of the Karoo districts are shareholders in the abattoir. They have long-term relationships with one another and transact for mutual benefit.	
Abattoir – Processor/Packer (T2)	Medium- to long-term relationships.	**S++ and VI**
	Abattoirs and processors are certified to process and sell Karoo Lamb.	
	Contracts are verbal and negotiated weekly.	
	Prices are negotiated weekly, based on the market price for conventional lamb with a premium added for Karoo Lamb. Volumes are arranged according to the market demand, and deliveries are strictly according to the order. Quality specifications are set according to the market demand, typically A2 and A3 carcasses.	
	Although the contract terms are stricter, the control remains relational in nature and is focused on the reputation of the abattoir and processor.	
	One of the abattoirs holds its own smaller processing plant and is only allowed to process lamb from that particular abattoir. The abattoir has full control over the processor, and jointly makes decisions for mutual benefit.	
Abattoir – Retail outlet (T3)	Medium- to long-term relationships.	**S++**
	Abattoirs and retail outlets are certified to process and sell Karoo Lamb.	
	Contracts are verbal and negotiated weekly.	
	Prices are negotiated weekly, based on the market price for conventional lamb with a premium added for Karoo Lamb. Volumes are arranged according to the market demand, and deliveries are strictly according to the order. Quality specifications are set according to the market demand, typically A2 and A3 carcasses.	
	Control between the butcheries and abattoirs are relational in nature and built on trust and reputation. Although control is somewhat stricter when dealing with retail outlets, the particular retail outlets are independently owned and operate under voluntary trading principles. Control, therefore, remains relational.	
Processor/Packer – Retail outlet (T4)	Medium to long term.	**S++**
	Processors and retail outlets are certified to process and sell Karoo Lamb.	
	Contracts are verbal and negotiated weekly.	
	Prices are negotiated weekly, based on the market price for conventional lamb, with a premium added for Karoo Lamb. Volumes are arranged according to the market demand, and deliveries are strictly according to the order. Quality specifications are set according to the market demand, typically A2 and A3 carcasses.	
	Although control is somewhat stricter when dealing with retail outlets, the particular retail outlets are independently owned and operate under voluntary trading principles. Control between the processor and retail outlets are therefore relational in nature and supported by trust and reputation.	

Note: S++ – Non-contractual relationship with a qualified partner, RB – Relation-based alliance, VI – Vertical integration

The certified Karoo Lamb abattoirs are only permitted to procure lamb from certified Karoo Lamb farmers, and the certified farmers are only permitted to market their lamb as Karoo Lamb to certified abattoirs. The data revealed that most of the farmers deliver to mainly one abattoir (60.3 %). Their reasons for being loyal to one abattoir include: (i) they have long-term relationships with the particular abattoir (25 %), (ii) they prefer to support their town or are shareholders in the specific abattoir (20.7 %), (iii) it is more convenient compared with other abattoirs (17.2 %), (iv) the abattoir offers the best price (12.9 %), (v) the abattoir is trustworthy (12.1 %), and (vi) other reasons, such as sound management and good service (12.1 %). On average, these farmers have been delivering to the same abattoir for 22 years, with 27.4 % of farmers being loyal to the same abattoir for 30 or more years. As a rule, the abattoirs do not have preferred farmers, since the only requirement for the sale of Karoo Lamb is that the farmers should be certified to produce Karoo Lamb.

The nature of the relationship between the majority of the Karoo farmers (79.3 %) and abattoirs (T1) is, therefore, a non-contractual relationship with a qualified partner (S++). It is considered 'non-contractual' because the relationship between the farmers and the abattoirs is not governed by a formal contract but by informal verbal agreements, generally initiated by the farmers (72.3 %), either a day (20 % of the farmers) or a week (74.1 % of the farmers) in advance, with only 5.9 % of the farmers making arrangements more than a week in advance. There is, however, a two-level capacity issue – abattoir capacity and the size of the certified orders. The abattoir will only slaughter and pay for Karoo Lamb when they have retail orders for the certified carcasses. If there are no orders for Karoo Lamb carcasses, lamb from the Karoo region will be slaughtered and sold as free-range or conventional lamb. These informal, non-contractual relationships between certified abattoirs and farmers conclude upon delivery, and a new non-contractual relationship is established for every new transaction. On the other hand, some of the farmers in one of the districts (20.7 % of those surveyed) are shareholders in

the abattoir, and their relationship shows characteristics of a relation-based alliance (RB). These farmers have been loyal to this specific abattoir for many years and transact with the abattoir for mutual benefit.

The second transaction (T2) in the Karoo Lamb supply chain involves one large certified processor and one smaller certified processor whose transactions with the certified abattoirs are governed by two extremes on the governance continuum; non-contractual relationship with a qualified partner (S++) and vertical integration (VI), respectively. The transactions between the abattoirs and the large independent processor are less formalized, non-contractual, and based on mutual trust and the reputations of both the abattoirs and the processor (S++). This, somewhat informal relationship is mainly attributable to the fluctuating demand for Karoo Lamb. In addition to the varying quantities of Karoo Lamb traded between the abattoir and processor, these stakeholders also trade conventional lamb that is governed by more formal contracts and control mechanisms. To some extent, these more structured agreements support the less structured Karoo Lamb negotiations. At the other end of the governance continuum, the transactions of the smaller processor are governed by vertical integration (VI). This particular processor is only allowed to process Karoo Lamb carcasses, slaughtered by its holder abattoir, that originate from its certified farmers.

Currently, Karoo Lamb is mainly sold through independent butcheries and delis, with only one retail chain with independent stores being certified to sell Karoo Lamb. The relationships between the abattoirs and the retail outlets (T3) are very much relational in nature (S++) with the abattoirs and retail outlets dealing either with one another directly or via a Karoo Lamb marketing agent.

The transactions between the processors and retail outlets (T4) are similar in nature. The Karoo Lamb products processed by the larger certified processor are currently destined for its surrounding certified retail outlets and are governed by non-contractual relationships with

preferred suppliers (S++). Similar to T2, smaller retail outlets participating in T4 transactions utilize the existence of more formal control mechanisms, such as the auditing of processors by large retail chains, as a guarantee for the reputation of a larger processor. Unlike the products of the large processor, the Karoo Lamb products processed by the smaller, vertically integrated processor are processed, vacuum packed, boxed and frozen for sales direct to consumers via a marketing agent.

Both the T3 and T4 relationships depend on the reputation of the stakeholders and the extent to which the orders have been fulfilled, and payments have been successfully made. Although the larger retail chain depends on stricter mechanisms (such as annual hygiene and food safety audits conducted at the processing facilities) to control the more formal contracts of conventional lamb trades, the Karoo Lamb control mechanisms remain, probably due to small volumes, relational in nature.

The analysis of the governance structures governing the Karoo Lamb supply chain, reveals non-contractual arrangements with qualified partners (S++) as being the most frequently utilized governance mechanism. These mechanisms are similar to the specific mechanisms with which the transactions of the meat supply chains with a protected region of origin are governed (Raynaud *et al*., 2005). According to Wever *et al.* (2010) and Raynaud *et al*. (2005), these market-like mechanisms successfully govern the supply chains of products with a protected designation of origin, provided that reliable public monitoring and enforcement mechanisms are in place to guarantee quality and origin. However, in South Africa, where sporadic, 'light' enforcement of standards mainly beyond the farm gate is most common, the credibility of Karoo Lamb might be questionable. As a result, alternative governance structures are recommended, to improve the governance, and ultimately the monitoring and enforcement, of the transactions in the Karoo Lamb supply chain.

5. Alternative governance structures

The compliance of stakeholders with the quality and origin standards of a product depends, to a large extent, on the success of the enforcement mechanisms and the ability of the governance structures to accommodate these mechanisms (Wever *et al.*, 2010). This statement also holds true for the Karoo Lamb supply chain.

To ensure the credibility of Karoo Lamb, better enforcement mechanisms are specifically required at the farm level, in which the quality and origin attribute of the product is embedded. The conjoint experiment revealed that the farmers prefer enforcement mechanisms that include a relatively high premium, monitoring during times of drought or with every load of lambs delivered to the abattoir, and strict penalties for non-compliance such as being expelled from the certification scheme forever or at least for 5 years.

However, according to the studies by Wever *et al.* (2010) and Raynaud *et al.* (2005), a change in the enforcement mechanisms of quality and origin standards towards stricter and perhaps private enforcement mechanisms, also require a change in the governance structures. Currently, the Karoo Lamb supply chain is mostly governed by non-contractual relationships between qualified partners (S++). However, according to Wever *et al*. (2010) and Raynaud *et al.* (2005), this governance structure seems insufficient when public enforcement mechanism is insufficient. A move towards a more hierarchical structure is therefore expected, which would ensure a stronger focus on private or mutual enforcement mechanisms. This means that the stakeholders in the supply chain would be jointly responsible for the enforcement of the quality and origin standards, and therefore the credibility of Karoo Lamb.

According to Wever *et al*. (2010), Gellynck and Molnár (2009), and Raynaud *et al*. (2005), products with a protected region of origin requires greater coordination at T1 and T2 and less coordination between T3 and T4, to guarantee and ensure the quality and origin attributes of those products. Similarly, it is expected that the collectively owned Karoo Lamb initiative, is

better off being governed by structures that rely on the mutual control of the stakeholders and on the mutual benefit accruing from complying with the Karoo Lamb standards and requirements. The adoption of governance structures that resemble relation-based alliances (RB), where stakeholders are mutual owners and feel mutually responsible for an exceptional product, therefore seems plausible, especially at T1 and T2. However, because public monitoring at T3 and T4 is adequate, the current market like mechanisms (S++ or C) used to govern these transactions should suffice (Table 9).

Table 9: Proposed changes in the governance mechanisms

Transaction	Current governance mechanism[5]	Proposed governance mechanism	Reason suggested change
Farmers – Abattoir (T1)	S++ and RB	RB	RB alliances are based on mutual trust. RB brings about mutual benefits as a result of a common interest in producing top quality lamb. Currently, the few transactions governed by RB seem to be more successful, compared with the transactions governed by S++.
Abattoir – Processor/Packer (T2)	S++ and VI	RB or VI	VI would allow proper alignment of the abattoirs' and processors' marketing strategies and the alignment of their quality management systems to produce top quality lamb. RB with control in the relationship rather than in property rights (as is the case with VI) might be equally efficient in aligning marketing strategies and quality management systems without seriously having to restructure the transaction.
Abattoir – Retail outlet (T3) Processor/Packer – Retail outlet (T4)	S++	S++ or C	The fluctuating consumer demand for Karoo Lamb dictates the T3 and T4 relationships. In future, more stable demand for Karoo Lamb could allow a change in the governance mechanism from an S++ to a C mechanism. C will allow high-quality lamb to be regularly supplied with short lead times.

Note: S++ – Non-contractual relationship with a qualified partner, C – Contractual relationship, RB – Relation-based alliance, VI – Vertical integration

6. Concluding remarks and recommendations for future research

This research paper about the enforcement mechanisms and governance structures in the Karoo Lamb supply chain acts as a point of departure for future studies on the protection of various products with a protected geographical indication, especially in developing countries. The paper revealed that the monitoring and enforcement of Karoo Lamb's quality and origin standards by the State-appointed third party seem to be inadequate. Because of this inadequacy,

the market-like governance structures, usually recommended to govern products, which are supported by public certification, might be unsuccessful. Interestingly, the monitoring and enforcement of Karoo Lamb's quality and origin standards are particularly troubling at the farm level. To enforce the Karoo Lamb quality and origin standards adequately, more hierarchical governance structures, between the Karoo farmers and the abattoirs, to protect the region of origin attribute of the Karoo Lamb product is required.

Although the somewhat tricky question, should the transactions in the Karoo Lamb supply chain be governed by market-like or hierarchical governance was sufficiently addressed in this paper, the most prominent limitation was encountered in the small population of abattoirs, processors, and retail outlets. These small populations made inferences from the conjoint analyses at each level of the supply chain impractical, and the conclusions on preferred enforcement mechanisms drawn beyond the farm gate remain anecdotal.

Subsequent research can build on this work, by analysing regional products from other developing countries, to gain a better understanding of the different ways in which these products are protected within a country's institutional framework (Fisher *et al.*, 2008). The distinct institutional environments of these different countries are also expected to bring about differing enforcement mechanisms and governance structures (Williamson, 1991), which are sure to reveal exciting findings. The research can also be expanded to a dynamic approach which is expected to shed light on the consequences of different enforcement mechanisms and governance structure choices.

Another interesting angle for future research, and this is in line with what was done by Raynaud *et al*. (2005), is to contrast the enforcement mechanisms and governance structures of various differentiated products. In doing this, the influence of different production factors, different marketing factors, and different stakeholder attributes, amongst other things, on the choice of enforcement mechanism and governance structure, will be revealed.

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Notes

[1] The six Karoo plant species are: *Plnthus karrooicus*, *Pentzia spincescens*, *Eriocephalus ericoides*, *Salsola glabrescens*, *Pentzia incana* and *Pieronia glauca/rosenia humilis* (Kirsten *et al*., 2008).

[2] Exchange rate of R12.46/USD (11/01/2018).

[3] Since the Karoo Lamb supply chain relies on free-range production practices on natural Karoo vegetation, input suppliers are omitted from the transactional model.

[4] The South African Meat Industry Company classifies carcasses based on age (A – youngest to C – oldest) and fatness (0 – no fat to 6 – excessively overfat).

[5] The current governance mechanisms referred to in Table 9 are explained in detail in Table 8.