# The economic potential for an origin based marketing and certification system for a meat product in South Africa:
## Perceptions, preferences and experiments

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# Background and Justification



- Countries in the European Union have a long tradition of producing food products whose quality and reputation is linked to the region where they are produced. These food products are protected through a system of **Geographic Indications**.

- **Karoo mutton and lamb** has gained reputation over decades for its quality and unique sensory attributes such as the flavour of the meat which has tested direct links with the natural veld.

# Aims and Objectives

- Origin based food products work on the basis of **reputation** of the place and product.
- A number of studies were applied and this paper combine the results from studies applying:
  - sensory analysis,
  - perception analysis,
  - stated preference methods (through a conjoint analysis);
  - and a range of revealed preference methods (an experimental auction and a retail store experiment)

Used to establish South African consumers' perceptions about Karoo Lamb <u>and</u> their willingness to pay a premium for mutton and lamb from the Karoo under a certification scheme.

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# The unique Karoo Region

# Methodology

**Several individual studies applying different methods:**

1. Trained sensory panel
2. Consumer perception survey
3. Conjoint analysis
4. Means-end chain theory (Association Pattern Technique)
5. Experimental economics (an auction and an in-store experiment)

# Studies and methodology

A synthesis of all studies where done in order to test **consumers perception** towards and **willingness to pay** for Karoo mutton or lamb. Each method measured certain aspects that contributed to the results:

1. **Trained sensory panel and consumer survey**
- A scientific evaluation of the link between the unique flavour of the meat associated with the Karoo grazing plants was conducted.
- Principal Component Analysis (PCA) was applied to identify the attributes that differentiate the most between the various mutton samples .
- To develop further evidence, a standard consumer survey was conducted.

2. **Conjoint analysis**
- The conjoint analysis study was aimed at identifying and valuating the key attributes and attribute levels that influence the purchasing decisions of lamb
- a specific focus on attributes related to traceability, quality and traceability.
- The analysis specifically considered the relative importance of the five attributes in the consumers' purchasing decision of mutton / lamb.

# Studies and methodology(2)

**3. Means-end chain theory ( Association Pattern Technique)**

- Means-end Chain – establishes linkages between values & consumer behaviour through hierarchical relations between attributes, values & consequences Common method used to measure perceptions (Association Pattern Technique (APT))

- This method investigated the perceptions driving consumers' purchase decisions regarding Karoo lamb by considering relevant attributes, consequences and values according to the Means-end chain theory, in a hierarchical manner.

**4. Experimental economics (Random $n$th-price experimental auction and supermarket experiment)**

- The experimental auction applied the random $n$th-price auction, which encourages competition amongst bidders, and which gives all bidders a chance to win the auction

- A market experiment setting where consumers have to use their own money if they are interested in buying a particular product removes the hypothetical bias, as it takes place in a real-life setting.

# Hierarchical Value Map of consumer perception of Karoo lamb using Association Pattern Technique
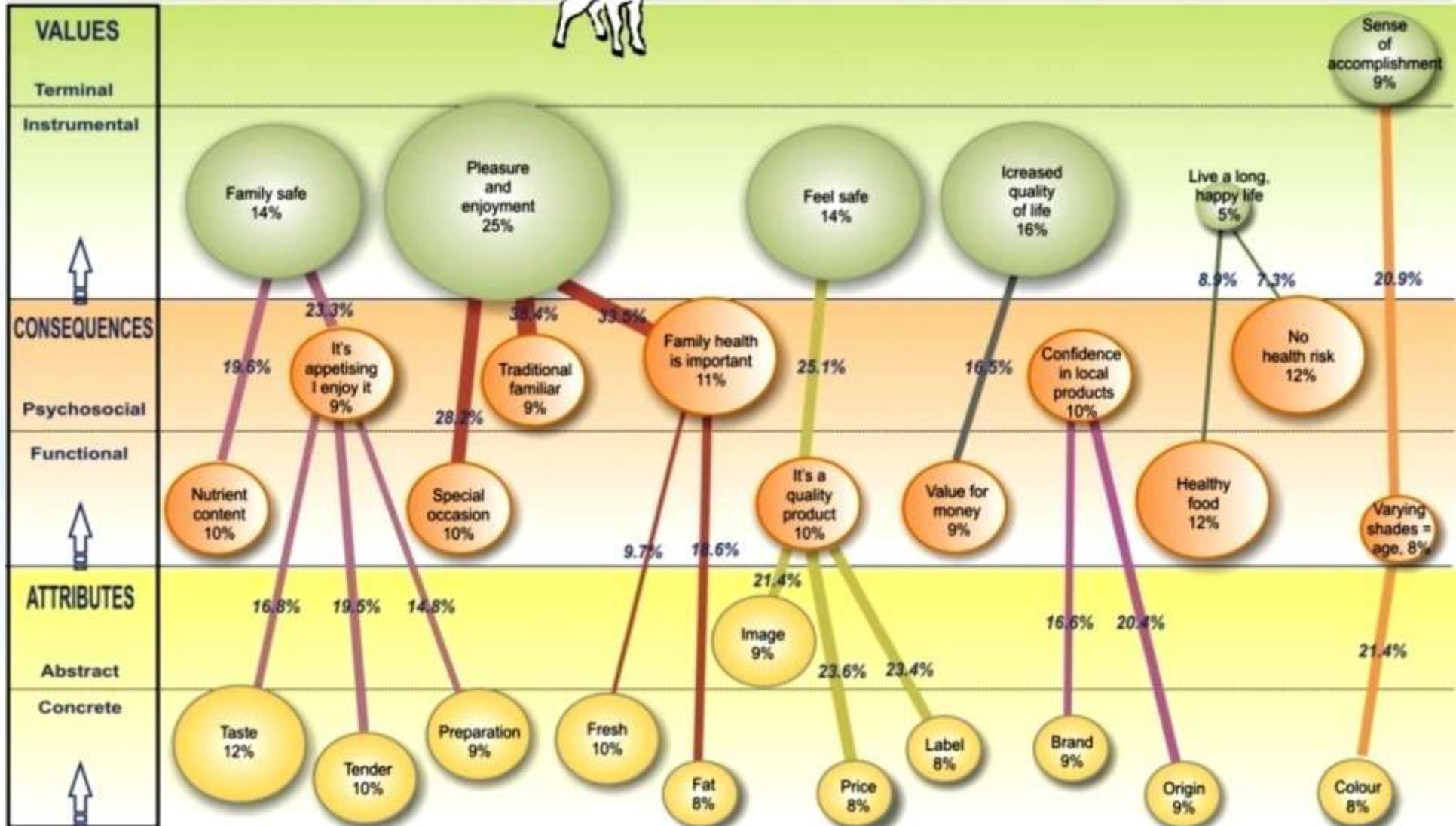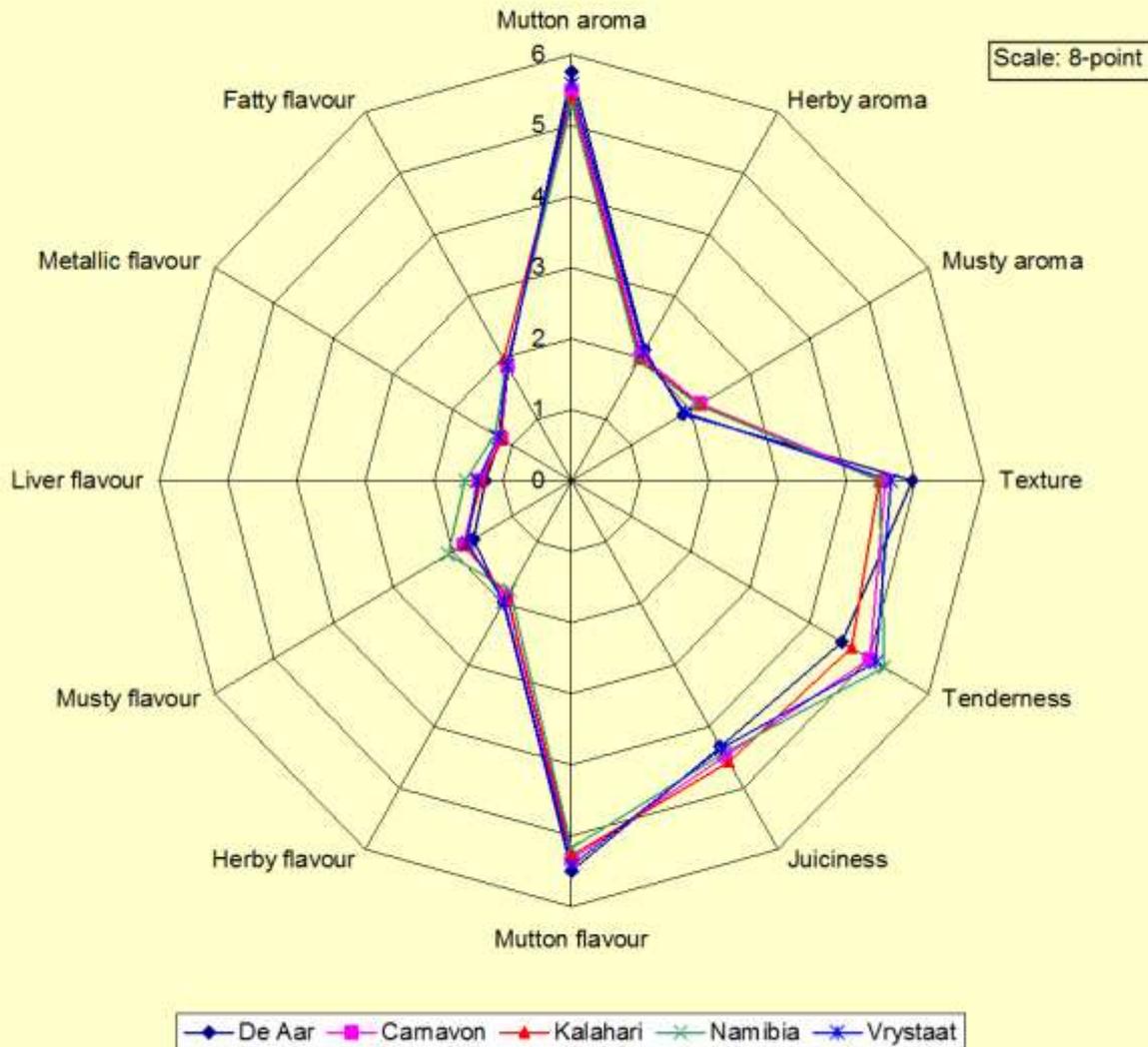
**Point of sale material for the supermarket experiment**

| STUDY SCOPE | Applying conjoint analysis to investigate consumers' preference for Karoo lamb ('Study 2') | Applying Means-end-chain theory and association pattern technique to investigate consumers' preferences and WTP for Karoo mutton / lamb ('Study 3') | Applying experimental economics to determine consumers' willingness to pay for Karoo mutton / lamb ('Study 4') | In store experiment ('Study 5') |
|---|---|---|---|---|
| **Year conducted** | **2009** | **2009** | **2009 / 2010** | **2011** |
| **SUBJECT OBJECTIVE(S)** | To determine consumers valuation of key attributes and attribute levels that influence their purchasing decision of mutton/lamb with a focus on Karoo lamb (meat-of-origin) (includes traceability). | To investigate the perceptions driving consumers' purchase decisions regarding Karoo lamb by considering relevant attributes, consequences and values according to the Means-end chain theory. To investigate consumers' willingness to pay (WTP) for Karoo lamb | To apply an $n$th price experimental auction to determine consumers' WTP for certified Karoo mutton / lamb and to test the impact of different information treatments on consumers' bidding behaviour. | To test willingness to pay by presenting the certified product in the shelves of an upmarket store where it competes with other lamb products |
| **METHODOLOGY OVERVIEW** | Conjoint analysis with a fractional factorial design & part-wise evaluations(1-3) | The association pattern technique (APT) was applied as a data collection method to apply means-end chain theory (4-7). Estimation of WTP with Van Westendorp's technique (8). | $n$th price experimental auction with six bidding rounds incorporating three information treatments (9). | Point of sale material, scale labels, certification mark were developed and packets of meat put out for sale at R5 premium above the house brand of the store |
| **TARGET SAMPLE** | Wealthier consumers who consume mutton / lamb, with variations in gender, income groups and age categories. | Wealthier consumers who consumer mutton / lamb, with variations in gender, income groups and age categories. | Wealthier mutton / lamb consumers who are also the main buyers of meat in the household. Gender and age not specified. | Neighborhood stores of LSM 8-10 consumers. |
| **SAMPLE SIZE** | Electronic questionnaires were distributed to 1011 respondents. **Valid responses: 352 questionnaires** (34.9% response rate). | **Valid responses: 276 completed questionnaires** | 60 respondents were invited, of which 31 consumers participated in the auction. | |
| **SAMPLING APPROACH** | A random selection of respondents on the research database of the Consulta marketing research firm. | A random selection of respondents on the research database of the Consulta marketing research firm. | Convenient sample complying with the target sample selection criteria. | None |
| **DATA GATHERING PROCEDURE** | Electronic distribution of self-completion questionnaires. | Electronic distribution of self-completion questionnaires | Central location $n$th price experimental auction complimented with self-completion survey instrument. | Sales statistics from till data base was analysed |
| **MAIN SURVEY COMPONENTS** | The conjoint analysis attributes and attribute levels were: **Traceability** (to animal/birth farm/abattoir/processing plant/none); **Origin** (Local region/SA national/No region/Karoo specific region); **Quality** (through certification/labeling, branding/origin/ Not assured); **Safety** (through certification/labeling, branding/place of purchase/Not guaranteed/No safety knowledge); **Price** (9 levels +10% to -10%) | Initial focus groups. Application of APT to elicit attributes, consequences and values of Karoo lamb consumers. Estimation of WTP with Van Westendorp's technique's perceived price levels (too expensive, expensive, affordable, too cheap – bad quality). | **Pre-survey**: · Red meat and mutton / lamb (generic & Karoo) purchasing and consumption behaviour · Karoo mutton / lamb perceptions · Demographics **Experimental auction**: Bidding on a 400g packet of lamb chops with a R200 monetary endowment *Round 1 & 2:* Exposure to Karoo lamb logo on label *Round 3 & 4*: Exposure to information sheet as well *Round 5 & 6*: Exposure to informative talk as well. | None |
| **DATA ANAYSIS PROCEDURE** | Conjoint analysis syntaxes in SPSS. | Means-en-chains were analysed through Hierarchical Value Maps. WTP was analysed by applying the Van Westendorp's technique. | **Pre-survey:** Descriptive and comparative statistics (e.g. Pearson Chi-square test) in SPSS. **Auction:** one-way ANOVA to explore differences between bidding rounds and other variables in SPSS. | Descriptive statistics |

# Results: Sensory Evaluation



Scale: 8-point

Mutton aroma · Herby aroma · Musty aroma · Texture · Tenderness · Juiciness · Mutton flavour · Herby flavour · Musty flavour · Liver flavour · Metallic flavour · Fatty flavour

—◆— De Aar  —■— Carnavon  —▲— Kalahari  —✕— Namibia  —✳— Vrystaat

# Results: Sensory Evaluation

- When comparing each region with one another:
- slight differences were found on the mutton aroma and flavour, musty flavour and livery flavour.  Some textural differences were found between the breeds and regions
- Mutton from the **De Aar** and **Namibia** contrasted each other the strongest in the PCA
- Mutton from the De Aar region was most intense in the herbal component

# Results: Perceptions survey
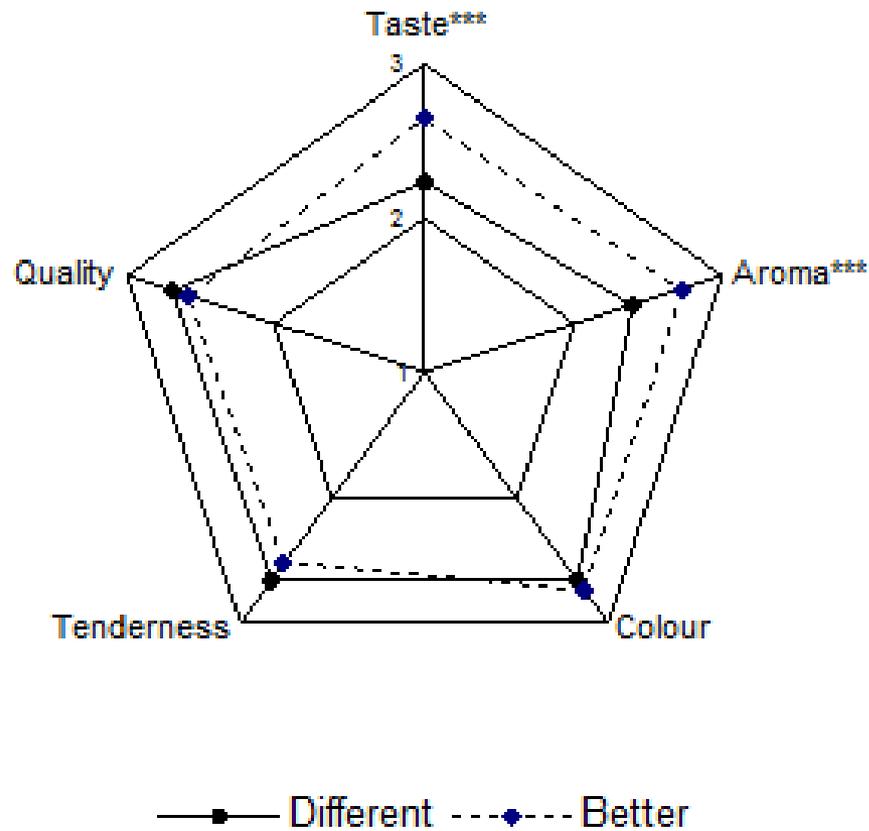
# Results and Discussion

Summary of the results from the different consumer research projects and the supermarket experiment

| STUDY: | KEY FINDING |
|---|---|
| **'Study 1':** Initial survey to establish the reputation of Karoo mutton / lamb | Only 15% of the total sample of mutton / lamb consuming consumers was willing to pay a premium for Karoo mutton / lamb. The potential magnitude of the WTP was not investigated in this study. |
| **'Study 2':** Conjoint analysis to investigate consumers' preference for Karoo lamb | Even though the sampled consumers derived the highest utility from a 'sophisticated' product (that is traceable to birth farm (and abattoir), originates from the Karoo and has quality and safety guaranteed through certification) the sampled consumers derived the highest utility from a price discount of 5% to 7%. |
| **'Study 3':** Means-end-chain theory and APT to investigate consumers' preferences and WTP for Karoo mutton / lamb through Van Westendorp's technique | WTP 6% price premium (i.e. R6/kg) for Karoo lamb. One of the strongest links in the hierarchical value map for Karoo lamb related to the association between price and a positive quality perception. |
| **'Study 4':** Random $n$th-price experimental auction | Average bidding premiums for Karoo lamb: · After information sheet exposure: R23/kg · After informative talk: R27/kg Generally higher bids for older consumers and females. |
| **'Study 5': The supermarket experiment** | At a premium for Karoo lamb of R5/kg above the price of Certified Natural Lamb (CNL) and about R8/kg above generic lamb sold at Checkers stores Karoo lamb sales contributed 20% of sales volumes (21% of sales values) representing about 50% of CNL sales during the experimental period. |

# Conclusion and Recommendations

- The results confirm the **reputation of the product** but show that there is still amongst some consumers no real appreciation of the '**origin**' attribute of food products.

- **Price** and **food safety** remain the dominant attributes.

- It is further also evident that the various **willingness to pay** estimates presented different results but at least the stated preference methods confirm the hypothesis that consumers will be willing to pay premium and the applied reference method shows market potential.

- This premium will certainly be confirmed by effective promotion and **information dissemination** programmes.

# Thank you

# Questions