

**Exploring South African consumers' attitudes toward game meat**

by

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## **DEDICATION**

To my dear parents, who made countless sacrifices to help us accomplish our dreams in life, who supported all our interests and who never took our aspirations lightly. I am ever grateful for your love and support.

To Amélia, for having faith in this research and for doing everything possible to support me. Without you, this research would not have materialised.

## **DECLARATION**

I, **Anjolize Wassenaar**, hereby declare that the dissertation, which I hereby submit for the degree of **Master of Consumer Science** at the University of South Africa, is my own work and has not previously been submitted by me for a degree at this, or any other, institution.

I declare that the dissertation does not contain any written work presented by other persons whether written, pictures, graphs, or data, or any other information without acknowledging the source.

I declare that, where words from a written source have been used, the words have been paraphrased and referenced and where exact words have been used, the words have been placed inside quotation marks and referenced.

I declare that I have not copied and pasted any information from the Internet, without specifically acknowledging the source and have inserted appropriate references to these sources in the reference section of the dissertation.

I declare that, during my study, I adhered to the Research and Ethics Policy of the University of South Africa, received ethics approval for the duration of my study prior to the commencement of data gathering, and have not acted outside the approval conditions.

I declare that the content of my dissertation has been submitted through an electronic plagiarism detection program before the final submission for examination (see Appendix D).

MISS A WASSENAAR

Date: November 2016

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## **TERMINOLOGY LIST**

*This section provides the definitions of terms as applied in this dissertation. Due to the generally applied nature of some of these terms, definitions were provided to clarify the exact application of these terms when referred to in this research.*

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### **African swine fever**

A fatal and highly contagious viral disease of domestic pigs *Sus domesticus*. Wild pigs, such as warthog *Phacochoerus africanus*, are carriers of the disease. As a controlled disease, the movement of domestic and wild pigs are restricted in order to prevent contact between the species and affected pigs are exterminated. (Bothma & Du Toit, 2016)

### **Animal welfare**

Animal welfare refers to humans' concern to promote the humane treatment of animals and is regarded as the more conventional belief of society (Bothma & Du Toit, 2016).

### **Attitudes**

Attitudes refer to consumers' preferences, inclinations, views, or feelings towards a product (Iacobucci & Churchill, 2010).

### **Bovine Spongiform Encephalopathy**

Bovine spongiform encephalopathy (BSE) is a chronic degenerative disease that affects the central nervous system of cattle and is widely known as "mad cow disease" (National Cattlemen's Beef Association, 2016; APHIS, 2002).

### **Climate change**

Climate change is often directly or indirectly attributed to human activity responsible for altering the composition of the global atmosphere, resulting in the alteration of rainfall and temperature patterns (Kotze & Rose, 2015; World Economic Forum, 2015).

### **Colour variants**

Wild animals which portray rare colour phenotypes like golden wildebeest *Connochaetes taurinus* and black or white springbok *Antidorcas marsupialis*. Although these animals occur occasionally in wild populations, they are bred deliberately by the wildlife industry for their high monetary value. (Taylor, Lindsey & Davies-Mostert, 2015)

## **Common game**

Plains game animals typically bred to stock farms for hunting and meat production purposes such as kudu *Tragelaphus strepsiceros* and impala *Aepyceros melampus* (Cloete, Van der Merwe & Saayman, 2015).

## **Complete protein**

A source of high-quality dietary protein in which all the essential amino acids required by the human body are contained in sufficient quantities for growth and maintenance, usually derived from animal products (Brown, 2015; Whitney, DeBruyne, Pinna & Rolfs, 2011).

## **Contagious Bovine Pleuropneumonia**

Contagious bovine pleuropneumonia is an infectious and highly contagious disease that affects bovines, causing difficulty in breathing due to damage to the lungs; the animal loses condition and often dies (Centre for Food Security and Public Health, 2015; Food and Agriculture Organization, 2002).

## **Environmental degradation**

Environmental degradation refers to the depletion of renewable and non-renewable resources caused by poor grazing practices, deforestation, desertification, pollution, and climate change (Bothma & Du Toit, 2016; Van Oudtshoorn, 2015; RPO/NERPO, 2014; Lindsey, 2012; ABSA Group Economic Research, 2003).

## **Environmentally friendly**

Having little or no negative impact on the environment (Haws, Winterich & Naylor, 2013).

## **Extensive wildlife production unit / extensive system**

An extensive wildlife production unit refers to a large fenced or unfenced area, where wildlife is extensively managed for the direct utilisation of wildlife related products, like hunting and live animal sales and for indirect utilisation such as ecotourism (Bothma & Du Toit, 2016).

## **Fenced camps, similar to cattle production methods**

\*See intensive wildlife production units

### **Foot-and-mouth disease**

A highly contagious, controlled disease in cloven-hooved animals. Buffalo *Syncerus caffer* are considered important carriers of the disease. Although mortality rates are usually low, foot-and-mouth disease outbreaks among cattle can have significant economic consequences, since disease free areas strictly control the movement of animals and products from affected areas. (Bothma & Du Toit, 2016)

### **Game farm**

Animals are intensively managed to ensure optimal levels of production in a smaller intensive breeding system (Cloete *et al.*, 2015).

### **Game meat**

In this research, game meat refers to meat from free-roaming, wild South African antelope, wildebeest, gazelles and buffalo that are harvested for commercial purposes, excluding species such as rabbits, porcupines *Hystrix africaeaustralis*, and ostrich *Struthio camelus* (Taylor *et al.*, 2015; Hoffman & Wiklund, 2006).

### **Game ranch**

Areas where animals are kept for commercial use in an extensive or semi-extensive system (Cloete *et al.*, 2015).

### **High value game species**

Scarce game species with high monetary value, such as sable antelope *Hippotragus niger* and roan antelope *Hippotragus equinus*, bontebok *Damaliscus dorcas dorcas*, buffalo and nyala *Tragelaphus angassi* (Taylor *et al.*, 2015).

### **Humane, lethal methods of predator control**

Refers to predator control methods where the predator is killed by a qualified hunter, in a quick and humane way to limit suffering and where only damage causing predators are targeted (RPO/NERPO, 2014).

### **Humane, non-lethal methods of predator management**

Refers to predator control methods where the predator is not killed; natural shepherds, pens, predator proof fences and livestock protection collars are used instead (RPO/NERPO, 2014).

### **Intensive wildlife production units**

An intensive wildlife production unit refers to a small area that is fenced, where wild animals are managed intensively for the production and harvesting of marketable products like meat, hides and live animals (Bothma & Du Toit, 2016).

### **Natural Origin**

Although there is no official definition for natural foods, it is generally accepted to refer to agricultural products that originated from a natural environment which is free from disease, pollutants, chemicals and medication with minimum processing (Bothma & Du Toit, 2016; Brown, 2015).

### **Organic production methods**

Organic production methods refer to crops that have been produced without synthetic pesticides and fertilizers or genetic modification, livestock produced without synthetic hormones and antibiotics and food products that have not been irradiated (Brown, 2015; Forman & Silverstein, 2012).

### **Plains game**

An informal term used to refer to common species of antelope that occur in open habitats like grasslands or savannas, and normally do not include small antelope species or mega-herbivores (Taylor *et al.*, 2015).

### **Red meat**

In this study, red meat refers to beef, mutton and lamb.

### **Rift Valley fever**

A mosquito borne viral disease that can infect humans, which leads to high neonatal mortality rates and abortion in animals and could lead to liver damage or blindness in humans. It is a controlled disease. (Oberem & Oberem, 2011)

## **Rinderpest**

A highly infectious and fatal viral disease, characterised by acute fever in cloven-hooved animals. Mortality rates can be up to 80% with infected animals dying within six to twelve days. Cattle, eland *Tragelaphus oryx* and buffalo are highly susceptible to rinderpest. (Bothma & Du Toit, 2016)

## **Semi-extensive wildlife system (or game ranch)**

A natural area that is large enough to manage self-sustaining wildlife populations, irrespective of whether it is fenced or not, or meets the ecological requirements of wildlife populations on that land, but human intervention is required to provide for water, supplements, control of parasites or predation, or the provision of health care (Cloete *et al.*, 2015).

## **Shear values (Warner-Bratzler shear force)**

Shear values refers to the most common instrumental measure of meat tenderness by measuring the force required to cut through a sample (Brown, 2015).

## **Sustainable harvesting**

To utilise a population when production proved to be sustainable over a sufficiently extensive period (Bothma & Du Toit, 2016).

## **Traditional agriculture**

In this study, the term traditional agriculture refers to agricultural practices such as crop, domestic livestock (cattle, sheep, pig and goat) and poultry production.

## **Venison**

Meat, often originating from America, Australia, New Zealand and Europe, that is often from intensively farmed animals. It also refers to animals other than antelope and gazelles, for example rabbits, porcupines, kangaroos and farmed deer. (Taylor *et al.*, 2015; Hoffman & Wiklund, 2006)

## **Wild populations**

Wild populations refer to animals that are free-roaming where little, if any, management practices are applied, do not have to be supplemented with food, occur in their natural habitat and the social requirements of the animal are met without human intervention (Bothma & Du Toit, 2016).

## **LIST OF ACRONYMS**

ABSA	One of the major banks in South Africa, previously known as Amalgamated Banks of South Africa
AGRI SA	Agri South Africa
BFAP	Bureau for Food and Agricultural Policy
BSE	Bovine Spongiform Encephalopathy
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
GDP	Gross Domestic Product
HIV/AIDS	Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome
HSF	Heart and Stroke Foundation
IUCN	International Union for the Conservation of Nature
NAMC	National Agricultural Marketing Council
NERPO	National Emergent Red Meat Producers' Organisation
RPO	Red Meat Producers' Organisation
OIE	Office Internationale des Epizooties
WRSA	Wildlife Ranching South Africa
WWF	World Wide Fund for Nature

## **ABSTRACT**

The study explores South African respondents' attitudes toward game meat and finds the differences between the attitudes of *consumer* and *non-consumer* respondents of game meat toward the following attributes of game meat: sensory characteristics; health benefits; game meat production ethics; animal welfare; safety for human consumption; availability; price; promotion; and preparation. This quantitative study determined the attitudes of 1096 *consumers* and 310 *non-consumers* of game meat with an online survey using questionnaires. Recruitment was done through social media and e-mail forwarding. The differences in attitudes between *consumer* and *non-consumer* respondents were determined using Fishbein's attitude-toward-the-object model. Based on attitudes toward individual attributes, respondents classified some product attributes as important in their decision to consume, or not to consume, game meat. Respondents indicated that the availability, sensory characteristics, game meat production ethics and health benefits are considered to be important in their consumption of game meat. To market game meat purposefully, the industry should focus on these attributes.

## **KEY TERMS**

Game meat; South African consumers; attitudes; sensory characteristics; health benefits; game meat production ethics; animal welfare; meat safety; availability; price; promotion; preparation; Fishbein's attitude-toward-the-object model

## **SUMMARY**

The industry needs to understand consumer decision-making with regard to game meat. It is believed that the game meat sector will be crucial to the growth of the wildlife industry in the near future (Cloete, Van der Merwe & Saayman, 2015). However, very little is known about the South African consumer market for game meat. Attitudes have motivational qualities that are capable of propelling a consumer towards, or repelling a consumer away from a specific behaviour (Egan, 2015; Schiffman & Wisenblit, 2015; Iacobucci & Churchill, 2010). Although there might not be a perfect correlation between attitudes and behaviour, marketing managers have often found that designing an effective marketing mix based on consumer attitudes are often the best tool available to sell a product (McDaniel & Gates, 2013). Since attitudes play a crucial role in consumer decisions, it becomes important to understand South African consumers' attitudes toward game meat if it is to be marketed effectively. The identification of consumer attitudes toward specific product attributes can play a major role in creating a positive image of game meat and motivate its use among South Africans. By selecting the most important combination of product attributes and using those attributes to market a product, a product can best be promoted by highlighting its important attributes.

The attributes of the product itself are very important during marketing, since consumers' evaluation of a product's attributes can account for most of their attitudes toward the product (Solomon, 2013). The more favourable the attitude of a consumer toward a product is, the higher the incidence of product usage; the less favourable the attitude, the lower the incidence of product usage (McDaniel & Gates, 2013). Adequate information is not available to understand how the sensory characteristics, health benefits, game meat production ethics, animal welfare, safety of game meat for human consumption, availability, price, promotion and preparation of game meat contribute to South Africans' attitude toward game meat and how these attributes may play a role in its consumption. Since a consumer's attitude toward a product is often based on the combination of multiple attributes of the product (Clow & Baack, 2014), the differences between the attitudes of consumers and non-consumers of game meat toward the different attributes should be found in order to identify which attributes are important in the consumption of game meat.

The aim of the study was to explore South African respondents' attitudes toward game meat by focusing on the product attributes, such as sensory characteristics, health benefits, game meat production ethics, animal welfare, safety of game meat for human consumption, availability, price, promotion and preparation. It explored the differences between the

attitudes of consumer and non-consumer respondents to determine which attributes could be key in the consumption of game meat. Fishbein's attitude-toward-the-object model, which allows researchers to measure attitudes and to comprehend their role in consumers' decisions better, was implemented to determine which of these attributes are key in the consumption of game meat, based on the differences found between the responses of consumer and non-consumer respondents.

A quantitative study to determine the attitudes of 1096 game meat consumers and 310 non-consumers was designed that applied non-probability sampling strategies such as convenience, purposeful and snowball sampling to obtain data through the use of an online survey, using Survey Monkey Platinum, in which attitude statements were completed by the respondents. Recruitment was done through social media such as Facebook and e-mail forwarding.

Consumer respondents had a positive attitude towards the sensory characteristics of game meat in comparison to non-consumer respondents' undecided-to-negative attitude. Consumer respondents regarded the flavour of game meat to be tasty; non-consumer respondents regarded it to be gamey or wild. While consumer respondents were positive toward the texture of game meat, non-consumer respondents regarded it as tough or dry. Both respondent groups indicated that game meat is dark red, but neither had negative attitudes toward its appearance. The aroma of game meat was viewed positively by consumer and negatively by non-consumer respondents.

The majority of respondents in both groups had a positive attitude toward the health benefits of game meat and indicated that it's a lean product, a nutritious source of protein and that it is high in iron. While both groups had a positive attitude towards the health benefits of game meat, consumer respondents indicated that it was an added benefit, but not their main reason for consuming it; non-consumer respondents indicated that the health benefits do not convince them to consume it if they otherwise disliked the product.

Respondents found game meat to be available, but not as easily and consistently as they would prefer. They regarded game meat to be available outside of the traditional hunting season, but not throughout the year. Family or friends who hunt were considered a better source of game meat than supermarkets and butcheries. Consumer respondents indicated that they would consume more game meat if it was more readily available. Non-consumer respondents were undecided whether it was available in a manner convenient for household use.

Both respondent groups had an overall undecided attitude toward the price of game meat. The price of game meat did not seem to prevent consumer respondents from consuming it on a regular basis. However, among non-consumer respondents, the majority were undecided whether it is good value for money.

Consumer respondents found game meat easy to prepare and convenient to use. They indicated that game meat is always tasty if prepared properly and that its enjoyment is worth the effort. The large number of undecided and negative responses among non-consumer respondents could indicate that they do not feel comfortable, or familiar, with the preparation of game meat, and that they regarded its preparation as difficult, inconvenient, or time-consuming.

Respondents' overall attitudes in both groups toward the promotion of game meat tended to be rather negative. It could be that the promotion of game meat is either lacking, or ineffective. The majority of respondents indicated that there is not enough information available on game meat and that they have not seen promotional material or offers on game meat in the past year.

The majority of consumer respondents believed that game meat is safe for human consumption, while most non-consumer respondents were less positive regarding its safety. Both respondent groups found the absence of growth hormones, antibiotics and pesticide residues, sufficient industry standards and regulations, hygiene, a visible expiry date on the packaging and traceability to be important in their choice of meat.

Trends regarding respondent attitudes toward animal welfare, and whether it is sufficiently respected during game meat production methods, were similar between the two groups. Respondents believed that game meat can be produced in a way that respects animal welfare. They expected that harvesting should be conducted in a quick and humane manner and that predator control methods should be humane. The free roaming nature of game meat production is considered an important and desirable attribute.

Consumer respondents' attitudes regarding ethical aspects of game meat production were remarkably positive and a large portion of non-consumer respondents were undecided. Consumer respondents believed that the sustainable harvesting of game meat is ethical and provides an economic incentive for wildlife conservation. Both respondent groups considered game meat as a valuable resource to support local industries, to enhance the local economy, to increase employment opportunities and to ensure food security. Respondents preferred meat from free roaming game on extensive game ranches with a

sustainable management plan over meat from wild populations. However, they did not find fenced camp systems and intensive systems ethically acceptable for game meat production.

The difference in attitudes toward game meat between consumer and non-consumer respondents was determined by the use of Fishbein's Attitude-toward-the-Object Model (Solomon, 2013). Based on attitudes toward individual attributes, respondents can classify some product attributes as being important in their decision to consume, or not to consume, the product. Firstly, the respondent's belief that the product possesses a certain attribute is measured. Secondly, the respondent's evaluation of the importance for a product to possess that specific attribute is determined.

Consumer respondents perceived the attributes of game meat more positively overall than non-consumer respondents, but seemed undecided regarding the Availability and Price of the product. Ethics, Sensory Characteristics and Health Benefits of the product were considered to be the most important attributes of consideration according to consumer respondents.

Non-consumer respondents regarded the beliefs regarding Animal Welfare and Health Benefits of the product positively, but seemed undecided regarding the Ethical, Food Safety, Price and Availability of the product. Sensory Characteristics were perceived negatively. Although non-consumer respondents were relatively neutral regarding the importance of different attributes, Food Safety was considered an important consideration.

The differences between the attitudes of the two respondent groups were ranked, based on the absolute differences found between the combined value of the belief that the product possesses the attribute and the evaluation of importance of the attribute to the respondent. Respondent groups differed most in their attitudes regarding the Availability, Sensory Characteristics, Game Meat Production Ethics and Health Benefits, which could be considered the most important attributes determining why some people choose to consume game meat while others prefer not to.

## **CHAPTER 1**

### **INTRODUCTION**

*This chapter introduces the research. It describes the current available research relating to game meat, as well as the research problem, and states the aim and objectives of the research. It gives a concise description of the research method, including the data gathering methods used and the ethical clearance obtained.*

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#### **1.1 INTRODUCTION AND BACKGROUND**

The game ranching industry as it is currently known in South Africa covers an estimated 20 million hectares of land, providing substantial economic returns from otherwise mostly marginal agricultural land (Oberem, 2016). Due to a lack of data, the true extent of the wildlife industry in South Africa is currently unknown and estimates provided in this research may vary according to different sources (Taylor, Lindsey & Davies-Mostert, 2015). The sustainable utilisation of wildlife has over time allowed South Africa to utilise a natural resource for economic growth, while providing incentive to conserve wildlife (Oberem, 2016; Taylor *et al.*, 2015; Bezuidenhout, 2012a; Stoltz, 2010; Ampt & Baumber, 2006; Smith, 2004). The game ranching industry has four important pillars from which it derives its economic benefits, namely animal husbandry, hunting, tourism and meat production (Cloete, Van der Merwe & Saayman, 2015; Taylor *et al.*, 2015). Although all four pillars still present opportunities to explore (Janovksy, 2015), certain challenges have compelled the industry to explore the importance of game meat production to ensure the sustainability of the industry. Animal husbandry, or the breeding and live sale of common game species has reached maturity, causing slower growth in this sector, and the breeding of rare species is expected to follow in its steps at some point in time (Cloete *et al.*, 2015). The hunting sector faces challenges such as increased global pressure from animal rights activist groups and the sector's sensitivity to the political stability of hunting destinations (Cloete *et al.*, 2015; Taylor *et al.*, 2015). The industry identified the need to expand its markets by fully developing each aspect of the industry and consequently began to emphasise its need to utilise the production of game meat to its full potential (Gouws, 2012c; Oberem, 2012; Wild Game Industry Symposium, 2012). Game meat, in this study, specifically refers to the meat of free-roaming and wild South African antelope, gazelles and buffalo, harvested for commercial purposes. The full potential of the game meat sector is still unknown, since current data is limited (Janovsky, 2015), but in 2013, the retail and export market of game meat had an estimated value of R230 million (DEA, 2014). The development of the game meat sector can contribute to food security, while

providing consumers with a healthy source of protein (Gouws, 2012b; Lindsey, 2012; Dahlan & Norfarizan Hanoon, 2008). However, very little is known about the South African consumer market for game meat. The industry needs to understand consumer decision-making with regard to game meat, especially why some South Africans choose to be consumers, while others are non-consumers. Since attitudes play a crucial role in consumer decisions, it becomes important to understand South African consumers and non-consumers' attitudes toward game meat to market it effectively (Schiffman & Wisenblit, 2015; Iacobucci & Churchill, 2010). Adequate information is not available to understand how the combination of different attributes of game meat constitute South African consumers' attitudes and how these attitudes may play a role in its consumption. In order for the game meat industry to reach its potential and to market its product effectively, research on South Africans' attitudes toward game meat becomes essential.

## **1.2 PROBLEM STATEMENT**

According to Cloete *et al.* (2015), the game meat sector will be crucial to the growth of the industry soon. Since the wildlife industry believes that game meat production could contribute significantly to food security, while providing a healthy source of meat to consumers and economic returns to game ranches, it has become desirable to invest in research on the South African market for game meat (Bothma & Du Toit, 2016; Oberem, 2012). However, the fact that little is known about the South African consumer market for game meat remains a hindrance to develop effective marketing strategies (Cloete *et al.*, 2015). In order to present a product that meets consumer requirements on the market, the industry needs to understand why some people would choose to consume game meat products, while others would choose not to consume it. The industry needs to understand which attributes of game meat could play a role in this choice. The research problem involves different aspects related to game meat which are briefly discussed below regarding available literature, including the product itself, the consumer's interest in the product, as well as the lack of literature on South African consumers' attitudes specifically pertaining to game meat.

### **1.2.1 Research Relating to Game Meat as a Product**

International research available on meat derived from wildlife includes various studies on the safety of venison (Ampt & Owen, 2008; Hoffman & Wiklund, 2006; Alwynelle, Nganwa & Wilson, 2002), the importance of traceability (Hoffman & Wilkund, 2006; Steiner, Strivastana & Gao, 2006; Beverland, 2005), the possibility of disease transmission from

game to humans (Abrams, Maddox, Harvey, Schonberger & Belay, 2011; Ampt & Owen, 2008; Hoffman & Wiklund, 2006), the possibility of lead poisoning (Iqbal, Blumenthal, Kennedy, Yip, Pickard, Flanders, Loring, Kruger, Caldwell & Brown, 2009) and the quality of venison (Dahlan & Norfarizan Hanoon, 2008; Mulley, Hutchison, Flesh, Wiklund & Nicetic, 2006; Beverland, 2005). Since South African game meat is not well defined as a brand internationally, most of the international studies are based on venison, which could include anything from kangaroo to deer. Game meat from African plains game is not specially investigated in international research. Further, most international studies on venison focus either on meat derived from the country's own indigenous wildlife, or on venison from Australia and New Zealand (Ampt & Owen, 2008; Mulley *et al.*, 2006; Beverland, 2005). This is mostly due to the fact that these two countries have effectively promoted their venison products as a brand and export large quantities of meat (Ampt & Owen, 2008; Hoffman & Wiklund, 2006; Beverland, 2005).

South African research, conducted on game meat as a product itself, include studies done on the chemical, quality, physical, sensory and nutritional characteristics of South African game meat (Hoffman, Mostert, Kidd & Laubscher, 2009b; Hoffman, Mostert & Laubscher, 2009a; Van den Berg, 2009; Hoffman, Smit & Muller, 2008; Hoffman, Kroucamp & Manley, 2007a; Hoffman, Kroucamp & Manley, 2007b). There are also studies on the export, production methods, general retail and restaurant retail of game meat in South Africa (Hoffman & Wiklund, 2006; Hoffman, Muller, Schutte & Crafford, 2004; Radder, 2002). These studies, however, focus on the meat product and not on South African consumer attitudes toward game meat.

### **1.2.2 Research Relating to the Consumer and Game Meat**

International studies that link consumers to meat derived from wildlife is, once again, mostly concerned with venison from either their own indigenous species, or from Australia and New Zealand (Ampt & Owen, 2008; Dahlan & Norfarizan Hanoon, 2008; Mulley *et al.*, 2006; Beverland, 2005). International research is often based on the consumer's perception on the safety of venison (Ampt & Owen, 2008; Hoffman & Wiklund, 2006; Alwynelle *et al.*, 2002), the types of venison preferred (Steiner *et al.*, 2006), the perceived importance of traceability (Hoffman & Wiklund, 2006; Steiner *et al.*, 2006; Beverland, 2005) and the quality of venison (Dahlan & Norfarizan Hanoon, 2008; Mulley *et al.*, 2006; Beverland, 2005). There are also articles on the popularity of venison in European and American restaurants (Fabrigant, 2003; Webster, 2003). However, international studies

on consumers and venison cannot simply be accepted as applicable to South African consumers and game meat.

In 2003, Hoffman, Crafford, Muller and Schutte published the results of their study on the perceptions and consumption of game meat as it pertained to international tourists who were visiting South Africa. This was a South African study, but focused on international tourists as consumers. South African studies that focus on the South African consumer and game meat include the studies of Bekker, Hoffman and Jooste (2011); Radder and Grunert (2009); Hoffman, Muller, Schutte, Calitz and Crafford (2005); Radder and Le Roux (2005) and Radder (2003) and are discussed below.

Radder's study (2003), illustrated how the decision-making process can be applied to consumers' adoption of venison. The study identified general product attributes that may play a role in the consumer's adoption of venison. However, it did not base all its findings strictly on game meat; some assumptions were made based on red meat from domestic livestock. This study did exploratory work, but more research is required to determine if the findings are completely applicable to game meat and what current consumer attitudes are towards the identified attributes.

The study published by Radder and Grunert (2009) is similar to the published study of Radder and Le Roux (2005). These two studies identified consumer perceptions of game meat and factors that they believe influence the choice of game meat among consumers, but they did not study consumers' attitudes toward the identified attributes of game meat. Once again, not all factors were based solely on game meat; some findings were based on red meat from domestic livestock.

The study published by Hoffman *et al.* (2005), investigated consumer knowledge, perceptions and purchasing behaviour of game meat in a general manner. They compared the expectations and perceptions of white, coloured and African consumers when purchasing game meat. Their study focused on the four P's of the Classical Marketing Mix, namely price, product, promotion and place. The study found that, in 2005, South African consumers were ill-informed regarding the positive attributes of game meat, would not be willing to pay a higher price for game meat than for other types of meat, that marketers and producers were not believed to be doing enough to promote game meat and that game meat was not regularly available. African consumers were found to be concerned about the hygiene and safety of the meat, while South African consumers in general seemed indecisive regarding the ethics and animal welfare issues related to

producing game meat and culling wild animals. The study did not specifically consider consumer attitudes and its potential effect on the choice to consume or not to consume game meat. Although some of the results might still be valid, it cannot be assumed that the results from 2005 still accurately describe consumers' current attitude towards game meat.

In 2011, Bekker *et al.* published the results of a study which investigated the knowledge of different stakeholders, including consumers, on the game meat industry's compliance to food safety standards. It also considered how the knowledge of stakeholders contributed to the compliance to safety legislation and the implementation of control strategies. The study did, however, not show consumers' attitude towards safety regulation or how it influences their decision to purchase game meat.

### **1.2.3 Consumer Attitude Gap in Research**

An appropriate marketing strategy is needed for game meat (Hoffman, 2015). To develop a marketing strategy, the industry needs to understand South African consumers and their attitudes toward game meat. This includes the need to understand why consumers would choose to consume game meat and non-consumers would choose not to consume it. The differences between the attitudes of these two groups could indicate which attributes of the product need attention to be able to present it in a manner which would encourage its consumption. These differences could also indicate barriers to the consumption of game meat. None of the above-mentioned studies specifically determined South African consumers' and non-consumers' attitudes towards game meat. It is apparent that a gap exists in the literature regarding attitudes toward game meat, since international research on venison cannot simply be applied to game meat, and South African research did not focus specifically on consumer attitudes, nor on the difference in attitudes among consumers and non-consumers. Further, an overall positive or negative attitude held by respondents toward game meat does not explain sufficiently the possible reasons why this attitude is held (Solomon, 2013). Consumers' attitudes toward an object are based on the evaluation of its different attributes and these attributes can vary in importance to different consumers (Clow & Baack, 2014; Solomon, 2013). Consumers are more likely to purchase a product which ranks high on the attributes that are important to them and these attributes should be emphasised during the promotion of game meat (Clow & Baack, 2014). Therefore, the industry needs to know which attributes of game meat are considered important by consumers and non-consumers in order to develop a product which meets their needs and to promote its use more effectively. The literature has shown

that the following attributes can play an important role in consumer decision-making regarding meat products in general:

- sensory characteristics (Utrilla, Ruiz & Soriano, 2015; Vermeulen, Schönfeldt & Pretorius, 2015; Leick, Behrends, Schmidt & Schilling, 2011; Hoffman *et al.*, 2009a; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Manchini & Hunt, 2005; Resureccion, 2003);
- health benefits (Vermeulen *et al.*, 2015; BFAP Baseline, 2014; Steiner *et al.*, 2006; Hoffman *et al.*, 2005);
- production ethics (BFAP Baseline, 2014; Webb, 2013; Verbeke, Pérez-Cueto, De Barcellos, Krystallis & Grunert, 2010; Ampt & Owen, 2008);
- animal welfare (Bothma & Du Toit, 2016; Vermeulen *et al.*, 2015; Verbeke *et al.*, 2010; Steiner *et al.*, 2006; Radder & Le Roux, 2005);
- safety for human consumption (Bothma & Du Toit, 2016; Vermeulen *et al.*, 2015; Wang, Zhu, Chen, Xu & Zhou, 2015; BFAP Baseline, 2014; Bodnar, Hodi & Bodnar, 2014; Bekker *et al.*, 2011; Verbeke *et al.*, 2010; Steiner *et al.*, 2006; Nganje, Kaitibie & Taban, 2005);
- availability (Bekker *et al.*, 2011; Ampt & Owen, 2008; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Radder & Le Roux, 2005; Radder, 2003);
- price (Vermeulen *et al.*, 2015; Radder & Grunert, 2009; Ampt & Owen, 2008; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Radder, 2003);
- promotion (Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Radder & Le Roux, 2005);
- and preparation (BFAP Baseline, 2014; Ampt & Owen, 2008; Steiner *et al.*, 2006; Radder & Le Roux, 2005; Schyver & Smith, 2005; Resureccion, 2003).

These attributes and their relevance to a game meat study are discussed in more detail in Section 3.3.4. Adequate information is not available to understand how these attributes of game meat contribute to South African consumer's attitude toward game meat - if these attributes are in fact relevant to the game meat concept - and how these attributes may play a role in its consumption. Since a consumer's attitude toward a product is often based on the combination of multiple attributes of the product, information on consumer attitudes toward these individual attributes of game meat is necessary to promote the product effectively (Clow & Baack, 2014).

Information relating to the common reasons for South Africans to consume, or not to consume, game meat is limited. It is important to understand why some individuals choose to be consumers and others to be non-consumers of game meat. The attitudes of

consumers can indicate which attributes are considered to be positive regarding game meat for marketing purposes; while the attitudes of non-consumers can indicate which attributes are considered negatively and potentially prevent its consumption. By finding the differences in attitudes between consumers and non-consumer respondents, the industry can gain a clearer understanding on which specific attributes hinder the consumption of game meat in general. Therefore, a non-consumer group of respondents brings valuable information to the study by indicating which aspects of the product should be improved if its consumption is to be increased among current non-consumers. Since there is a lack of information on the difference in attitudes among South African consumers and non-consumers of game meat, research is required to identify which attributes are important to South Africans in the consumption of game meat. Therefore, South Africans' attitudes toward the individual attributes, as well as their overall attitudes, toward game meat in general are not completely understood.

The difference in attitudes among consumers and non-consumers of game meat towards the specific attributes mentioned above could be explored using an attitude model that focuses specifically on the attributes of the product and not just on the overall attitude towards the product. A multiattribute attitude model assumes that an individual's overall attitude towards an object is comprised of the attitudes held toward the product's different attributes and how these attributes are evaluated (Solomon, 2013). The Fishbein attitude-toward-the-object model, as used in various other consumer related studies (Ahamed, Islam & Qaom, 2015; Mollah, Kim & Choudhury, 2015; Yosini, 2011; Moon, Balasubramanian & Rimal, 2005) is a multiattribute attitude model which can be useful to compare attitudes toward specific game meat attributes among South Africans. The main strength of the Fishbein's attitude-toward-the-object model (described in Chapter 3) which makes it particularly useful to this research, is the model's ability to determine the importance of an attribute to the respondent, while comparing different attitudes (Solomon, 2013). The use of this model will allow the researcher to determine whether consumers and non-consumer respondents believe that game meat possess certain attributes and how important each of these attributes are to both respondent groups. The differences found in the attitudes between the respondent groups and the importance each group places on each attribute could indicate why some respondents choose to be consumers while others choose to be non-consumers of game meat. If consumer respondents believe that game meat possesses a certain attribute and find it important in their choice when choosing meat products, identifying these attributes through the use of the above-mentioned model will allow the industry to capitalise on the relative advantage

the specific attribute provides to game meat during advertising (Solomon, 2013). By identifying attributes which non-consumer respondents consider important, but lacking in game meat, the industry can work towards improving those specific attributes in the product.

### **1.3 JUSTIFICATION FOR RESEARCH**

Research on South African consumers' attitudes and its role in their decision to choose game meat or not will allow the industry to promote game meat more effectively. This study can indicate which attributes of game meat are important to both consumers and non-consumer respondents. Previous studies indicated that sensory characteristics, health benefits, production ethics, animal welfare, safety of meat for human consumption, availability, price, promotion and preparation might be important attributes to consumers when choosing red meat products. It is necessary to explore if these attributes are also important to South African consumers when choosing to consume, or not to consume, game meat. Determining the differences in attitudes among consumers and non-consumers toward the different attributes of game meat and evaluating the importance of each attribute will allow the industry to find the best marketing mix for game meat among South African consumers. By exploring the attitudes among South African respondents toward the attributes of game meat and finding the most important attributes that limit its consumption, this study will allow the industry to gain a deeper understanding of the local game meat market. Without an understanding of what constitutes attitudes and preferences held toward game meat, it becomes challenging to develop effective marketing strategies for game meat.

## **1.4 RESEARCH AIM AND OBJECTIVES**

The aim of the study is to explore South African respondents' attitudes toward game meat. To achieve this aim, three objectives are formulated as follows:

**Objective 1:** To explore the attitudes of South African respondents toward the following attributes relating to game meat:

- sensory characteristics
- health benefits
- game meat production ethics
- animal welfare
- safety of game meat for human consumption
- availability
- price
- promotion
- preparation

**Objective 2:** To find the subjective differences between the attitudes of *consumer* and *non-consumer* respondents toward the above-mentioned attributes relating to game meat

**Objective 3:** To explore which attributes are important in the consumption of game meat, based on the differences found between the responses of *consumer* and *non-consumer* respondents toward the attributes of game meat, using Fishbein's attitude-toward-the-object model

## **1.5 RESEARCH DESIGN AND METHODOLOGY**

A quantitative paradigm was used to explore the attitudes of South African respondents toward game meat. Since South African consumers' attitudes toward game meat have not been studied previously, this study was exploratory, and attempted to provide insight into respondent attitudes toward game meat. However, since this study used a multi-attribute attitude model, as utilised by Ahamed *et al.* (2015); Mollah *et al.* (2015); Yosini (2011) and Moon *et al.* (2005), and attitudes are measured on scales, the type of information gathered from respondents lends itself to quantitative research.

As stated in the objectives, the study aimed to find the differences in respondents' attitudes among *consumers* and *non-consumers* of game meat in order to gain a better

understanding of which attributes are key in the consumption of game meat or not. Therefore, respondents were divided into two groups. The first group consisted of game meat *consumers* and the second group of *non-consumers* of game meat. The total number of respondents were 1406, of which 1096 were *consumers* and 310 *non-consumers*.

The non-probability sampling strategies used for this study included a combination of convenience, purposeful and snowball sampling strategies. Recruitment of respondents was conducted through the use of social media and e-mail forwarding. The researcher created a page for the research on Facebook with the link to the online survey. The researcher shared the page with personal and professional contacts, with the request to respond if they met the criteria and were willing to be respondents for the research. They were also asked to share the link with their contacts, in order to create a snowball sample.

Survey data was gathered electronically, using the Survey Monkey Platinum Plan, through a structured, self-administered questionnaire. The questionnaire was designed to gather data regarding respondents' attitudes toward specific attributes of game meat, namely sensory characteristics, health benefits, game meat production ethics, animal welfare, safety of game meat for human consumption, availability, price, promotion and preparation. Survey questions were also designed to measure how important respondents believed these attributes to be, allowing the use of the Fishbein's attitude-toward-the-object model (see Section 3.3.3 for a description of the model) during the data analysis phase of the research.

## **1.6 ETHICS**

The research adhered to ethical requirements as stipulated by UNISA (2007) in its *Policy on Research Ethics* during the entire research process. The research proposal, including the research methodology, was approved by the Ethics Committee of the College of Agriculture and Environmental Science at UNISA for approval before the study commenced. The CAES Ethics Approval is attached in Appendix B (Reference Number: 2014/CAES/121). Data was only gathered once ethical clearance was obtained.

### **1.6.1 Essentiality and Relevance**

As demonstrated in the Problem Statement (Section 1.2), research is essential in the pursuit of knowledge regarding South African consumers and the growing game meat industry. It will be advantageous to the South African public if the game meat industry can

be firmly established in South Africa. The public can benefit from the local marketing and the regular consumption of a meat product with outstanding health benefits. The expansion of the South African game ranching industry to generate more income locally from game meat will also help to build the country's economy as well as to broaden the income opportunities for the local farming community. By consuming locally produced meat, South African consumers can be less dependent on imported protein sources.

#### **1.6.2 Maximisation of Public Interest**

The research was carried out for the benefit of society and not for a specific institution. Results from the study will be made public in an appropriate manner and form, according to the regular procedures that UNISA master's degree research results are made public after the examination phase. The researcher aimed to report results accurately and truthfully, irrespective of whether it supported or contradicted the expected outcomes.

#### **1.6.3 Respect for and Protection of Respondent's Rights**

The rights and interests of respondents were respected and protected at every stage and level of the research process. The research aimed not to harm respondents or infringe on their privacy. The use of online data gathering did not infringe on respondents' privacy, since no personal information were requested when respondents were approached to request their participation. Only information available publicly on the internet was used to locate respondents. Since the study made use of an online survey, only information volunteered by the respondent was available to the researcher. No attempt was made to gain further personal information related to respondents. All personal information and records, as well as any information obtained during the research that may reveal the identity of respondents, will remain confidential and anonymous. Respondents' identity will be kept secret and they are not recognisable in research results or the publication thereof. The obligation to maintain privacy, anonymity and confidentiality extends to the researcher, anyone who assisted in the research process and anyone who might possibly have access to the information.

#### **1.6.4 Implied Consent**

Respondents were regarded as autonomous agents who had the right to choose whether or not to be participating in the research. Respondents participated voluntary through implied consent. Implied consent, particularly deemed appropriate for online surveys, refers to a respondent granting consent to participate in the research by knowingly

agreeing to complete a research task after being informed that the completion of the task would serve as consent to participate (Cornell University Office of Research Integrity and Assurance, 2014). Since the researcher had no direct contact with the online respondents, no information could be obtained from individuals unless they chose to complete the survey. A document with their rights and responsibilities was available on the same Facebook page as the link to the online survey. Respondents were informed that participation was voluntary and that completion of the survey implied consent. Any respondent could choose to abandon their participation at any point in the research. They retained their right to withdraw any previously given consent at any stage.

#### **1.6.5 Respect for Cultural Differences, Justice and Fairness**

No distinction was made between respondents based on demographic information. Respondents were treated as unique human beings, with valuable contributions, regardless of their culture or ethnicity. Demographic information was requested merely to be able to describe the population group who participated in the research in the results section. The selection of respondents was based on scientifically acceptable sampling methods. No group was purposefully or unfairly excluded from the research.

#### **1.6.6 Integrity, Transparency and Accountability**

The conduct of the research aimed to be honest, fair and transparent. The researcher did not commit plagiarism, piracy, falsification or fabrication of results at any stage of the research. Where information from other studies or publications were quoted, appropriate credit was given according to the Harvard referencing method, as prescribed to students in UNISA's Life and Consumer Science Department (Department of Life and Consumer Sciences, 2016). The aim was to report the findings of the research accurately and truthfully. No incentives were offered to respondents to participate, nor to provide specific responses to survey questions.

#### **1.6.7 Risk Minimisation**

Since the research did not deal with any stigmatising, sensitive or potentially damaging information or issues, there were minimal risks involved for respondents. No physical, social, or psychological harm was undertaken and the study made provision to minimise privacy and confidentiality risks to respondents. Only information that was relevant and necessary was collected. The presentation of the data did not identify respondents and

were presented in the form of anonymous, abstracted facts. Publishing of research findings will not be done in a manner which can harm respondents.

#### **1.6.8 Non-Exploitation**

The researcher did not engage in discriminatory, harmful, or exploitative practices or in harassment. The researcher did not impose personal beliefs or views on, nor tried to seek personal or economic gain from anybody involved in the research. The researcher did not coerce respondents to provide specific answers. The research was not involved in any exploitation of respondents, communities, institutions or vulnerable persons. The researcher will protect the rights of any vulnerable person who chose to participate in the research. Children (persons under the age of eighteen) were not eligible to participate in the research.

#### **1.6.9 Use of Facebook and an Online Survey**

The researcher created a Facebook profile page specifically for the research, on which the link to the online survey was available. The goal of the Facebook page was to create an interest in the research, as well as to direct possible respondents, in a user-friendly way, to the online survey. By using Facebook, the researcher could reach potential respondents without having access to any of their personal information. It is not necessary to gain access to respondents' Facebook profile in order to request their participation.

Any person could like or share the page and gain access to information that was posted on the page. However, when a person responded to the research's Facebook page by liking or sharing it, the researcher still could not gain access to the person's personal Facebook profile or any of their personal information. In the case of an individual's profile security settings being open to the public and not only to friends, the researcher only had potential access to information that the individual has published publicly. However, the researcher did not attempt to gain any such information either published publicly or among friends. Thus, it was only through a person's own choice that they will look at, like or share the research page and possibly follow the link to the online survey. The researcher only gained information which respondents chose to complete during the online survey. Potential respondents could also open the Facebook page without liking or sharing it and could read through the information posted, or follow the link to the online survey, in which case the researcher had no knowledge of the individual who opened the page. Therefore, the Facebook page was merely used to create awareness of and to gain

interest in the research. It also simplified finding the link to the online survey, should they choose to become respondents by publishing it on a public page.

The Facebook page served as an advertisement for the research project. If respondents chose to complete the survey, their information could not be linked to their personal Facebook information, since the survey was completed on a separate website (Survey Monkey Platinum online survey platform). The privacy settings for the online survey on the Survey Monkey Platinum platform were specifically set to keep individual respondents' identity anonymous (even to the researcher) and could not be traced back to their personal Facebook profiles or computers. Thus, the survey was like any other online survey and Facebook was used only as an advertising tool to create awareness of the research and to inform people that the research project needs respondents.

## **1.7 OUTLINE OF THE DISSERTATION**

This dissertation is presented in six chapters and can be described as follows:

Chapter 1: Serves as an introduction to the research project. This chapter deals with the research problem, the aim and the objectives of the research. It also gives a concise description of the research method, including the data gathering methods used and ethical clearance obtained.

Chapter 2: Formulates a definition of game meat, as used in this study. Then the chapter presents a background of the game ranching industry, describing the historical shift from traditional agricultural practices in South Africa towards game ranching. It highlights the advantages of game ranching in South Africa, the current state of the industry, as well as the need for the industry to expand by producing game meat.

Chapter 3: Presents a literature review on game meat and consumer attitudes. This chapter considers the potential of game meat as a product and common misconceptions held toward the product. It then explains consumer decision-making and the role of attitudes in this process. The chapter describes the characteristics of attitudes and Fishbein's attitude-toward-object model, which forms the proposed theoretical framework required to understand South African respondents' attitudes toward game meat. Finally, the importance of the specific product attributes explored in this study is presented from literature.

Chapter 4: Describes the research methodology used. The chapter provides a description of the quantitative paradigm, the type of study, the geographic location of the study, the respondent groups, the sampling strategies used, as well as the instrument and data collection method used in this study.

Chapter 5: Presents the results of the research. The results of the study are reported and discussed, as set out in the aims and objectives of the research. Results from literature related to the findings of this study are included in the discussion.

Chapter 6: Concludes the research and makes recommendations for further research. The research in context of the theoretical framework is presented, as well as the contributions and limitations of this study. Recommendations to the game meat industry are made, based on the research conclusions for the individual and the key attributes of game meat. Finally, it suggests areas where the need for further research was identified.

## **CHAPTER 2**

### **BACKGROUND OF GAME RANCHING INDUSTRY**

*This chapter presents a background on the game ranching industry. It presents reasons for the historical shift from traditional agricultural practices in South Africa towards game ranching. Furthermore, it portrays the advantages of game ranching in South Africa, the current state of the industry, as well as the need for the industry to expand by producing game meat.*

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#### **2.1 INTRODUCTION**

In the previous chapter, an introduction was given to the research problem as well as a short overview of the research methodology used to achieve the objectives of the study. The term game meat, as used in this study, is briefly explained and the history of the South African game ranching industry is described. The challenges that traditional agricultural practices faced and how those challenges provided opportunities for game ranching practices to become popular land use practices are presented. Finally, the growth of the industry, its current economic activities and the need to invest in game meat production is described.

#### **2.2 GAME MEAT**

In this study, the term “game meat” will be used to refer to the meat of free-roaming and wild South African antelope, gazelles and buffalo that are harvested for commercial purposes. South African game meat must be distinguished from venison, since venison from America, Australia, New Zealand and Europe are often from intensively farmed animals, while South African game meat is usually from free-roaming, wild animals (Taylor *et al.*, 2015; Hoffman & Wiklund, 2006). The term venison is also used to refer to animals other than antelope and gazelles, for example rabbits, porcupines, kangaroos and farmed deer, which will not be considered in this study. Game meat, therefore, refers to the typical African plains game, which are suitable for meat production, like antelope, wildebeest, buffalo and gazelle species, while excluding species like rabbits, porcupines and ostrich. The study specifically refers to game meat produced on game ranches (extensive and semi-extensive wildlife production units), since the same benefits and properties ascribed to animals and game meat from extensive and semi-extensive systems will not necessarily apply to animals and game meat from intensive wildlife production units (Bothma & Du Toit, 2016).

## **2.3 CHALLENGES TO TRADITIONAL AGRICULTURE**

The traditional agricultural sector in South Africa faced several challenges over the last few decades. These challenges are believed to have contributed significantly to the establishment of South Africa's game ranching industry by forcing farmers to search for alternative and economically viable land use practices. These challenges include: marginal land; environmental degradation; climate change; livestock diseases; increased pressure to reduce production costs; livestock theft (Taylor *et al.*, 2015; ABSA Group Economic Research, 2003).

### **2.3.1 Marginal Land**

Ferreira (2012) explains that the concept of marginal agricultural land is either linked to the soil type or the lack of rainfall in an area.

*For example, certain areas in South Africa, like the Karoo, have soil types which are not suited for crop cultivation and are, therefore, considered marginal. Other areas, especially the western region of South Africa, have good soil, but the rainfall is too low to sustain crops throughout hot, dry summers. In areas where rainfall is not too low, the very high summer temperatures cause high evapo-transpiration, or earth surface evaporation and plant transpiration. Due to the fact that growing crops are not viable in these areas, marginal land is usually utilised for animal production.*

Generally, South Africa is poorly endowed with precipitation, soil quality and soil depth and experiences high rates of evaporation - the three basic requirements for good agricultural production (Oberem, 2012; Van Rooyen, 2008). According to the World Wide Fund for Nature (WWF) Report, only 1% of South Africa has a suitable combination of climate and soil for rain-dependent crops and only 3% of South Africa has truly fertile soil (Kotze & Rose, 2015). About 82.2 % of South Africa is allocated to agricultural practices; however, only 14% to 16.4% of South African land (20% of agricultural land) is considered high potential agricultural land for crop production (Kotze & Rose, 2015; Van Hoven, 2015; Dry, 2011; Oberem, 2011b; Van Rooyen, 2009). In contrast, 65.8 % to 69% of South African land (80% of agricultural land) is considered marginal agricultural land, fit only for animal production (Kotze & Rose, 2015; Dry, 2011; Oberem, 2011b). Therefore, large areas of South Africa's available agricultural land are completely unsuitable for producing crops and only suitable for the intensive grazing of herbivores (Scholtz, Van Ryssen, Meissner & Laker, 2013). Thus, it is challenging for South Africa to compete globally with traditional agricultural practices such as crop production (Oberem, 2012).

### **2.3.2 Environmental Degradation**

Apart from the already marginal nature of land, South Africa is also faced with environmental degradation. Rangeland degradation is generally caused by poor grazing practices, overstocking and overgrazing, causing the profitability and productivity of livestock production to decline in many areas (Van Oudtshoorn, 2015; Lindsey, 2012). Overgrazing and environmental degradation often result in bush encroachment, leading to a reduction in the grazing capacity and economic viability of the farm (Van Oudtshoorn, 2015; RPO/NEPRO, 2014; ABSA Group Economic Research, 2003). The carrying capacity of agricultural land declines as a result of bush encroachment, resulting in a decrease of quality grazing material for livestock (Van Oudtshoorn, 2015; ABSA Group Economic Research, 2003).

### **2.3.3 Climate Change**

South African agriculture is also faced with the uncertainties caused by global climate change (Oberem, 2011b). Global climate change is predicted to cause the southern African climate to become drier and warmer, while increasing unpredictable and irregular weather patterns (Kotze & Rose, 2015; Lindsey, 2012). The impact of global climate change further reduces the profitability of livestock production on marginal land (Lindsey, 2012). Higher predicted temperatures can lead to heat stress in livestock that are not well-adapted to heat, while decreased rainfall can result in less available water to meet livestock requirements and irrigation of pastures (RPO/NERPO, 2014).

### **2.3.4 Diseases**

Domestic livestock are exposed to a number of diseases, such as foot-and-mouth disease, African swine fever, and tick borne diseases, that can be costly to control (Bothma & Du Toit, 2016; ABSA Group Economic Research, 2003). The regular control of disease through antibiotics and immunizations can drastically raise production costs for livestock (Bezuidenhout, 2012a). The costs of controlling cattle diseases contributed to farmers considering alternatives to livestock farming (ABSA Group Economic Research, 2003).

### **2.3.5 Increased Pressure to Reduce Production Costs**

After the political transition to democracy in 1994, the South African agricultural sector became increasingly subjected to international market forces and it was forced to become less dependent on government support (Taylor *et al.*, 2015; ABSA Group Economic

Research, 2003). Trade liberalisation in the agricultural sector resulted in lower and more competitive prices for agricultural products and farmers were forced to compete globally despite having poorer natural resources (Cloete *et al.*, 2015; ABSA Group Economic Research, 2003). Therefore, farms - particularly in marginally profitable areas – found it harder to remain viable and farmers had to review their traditional production practices and products (Cloete *et al.*, 2015; ABSA Group Economic Research, 2003). Furthermore, South Africa's inexpensive farm labour was partly responsible for the viability of cattle and sheep farming in the past, but the Basic Conditions of Employment Act of 1997 changed labour relations fundamentally and costs related to farming increased dramatically (Taylor *et al.*, 2015; ABSA Group Economic Research, 2003).

### **2.3.6 Theft**

The ABSA Group Economic Research (2003) and the Red Meat Producers Organisation (RPO) (RPO/NERPO, 2014) reported dramatic stock losses in South Africa due to theft. According to the RPO, livestock theft has a severe impact on the cattle industry (Bezuidenhout, 2011a). The organisation found that, as theft declines in one area, it would suddenly become a huge problem in previously unaffected areas (Bezuidenhout, 2011a). It also found that the emerging farming sector is as vulnerable to stock theft as the commercial sector (RPO/NERPO, 2014). The number of sheep in South Africa has drastically declined over the past few years (ABSA Agribusiness, 2015a). This is mostly attributed to stock theft and farmers' decisions to decrease their risk by moving away from sheep farming (ABSA Agribusiness, 2015a). The expense to replace stolen livestock, to increase policing, and the under-utilisation of large areas of land (especially next to main roads) due to security risk, raised the costs of domestic livestock farming in South Africa (ABSA Group Economic Research, 2003). Although livestock theft is still a current problem in South Africa, as observed by Cloete *et al.* (2015) and the RPO (RPO/NERPO, 2014), there is not any recent research available, other than that of the ABSA Group Economic Research (2003), which indicates the effect of livestock theft on the choice of landowners to change from domestic livestock farming to game ranching. Currently, theft might not be the main consideration for farmers to change from traditional livestock practices to wildlife based land-use practices, although it did play a major role in the past.

## **2.4 ADVANTAGES OF GAME RANCHING**

The above-mentioned challenges impacted the profitability of traditional agricultural practices on marginal land negatively and caused farmers to search for alternatives (Cloete *et al.*, 2015). The game ranching industry has the advantage that the elements which present challenges to the traditional agricultural sector, do not pose the same threats and to that extent to the game ranching industry. The inherent characteristics of the game ranching industry, as described in the following sections, makes it less susceptible to the challenges faced by traditional agricultural practices. Therefore, the challenges faced by the traditional agricultural sector become the competitive advantage the game ranching industry holds over the traditional agricultural sector. The large-scale shift in terms of land use practices in marginal areas of South Africa during the past few decades from traditional agriculture to game ranching will be discussed following the description of the advantages of game ranching.

### **2.4.1 Marginal Land**

Various studies have shown that wildlife is better suited to the dry, marginal agricultural areas of South Africa, especially areas which receive less than 400mm rain per year, and use rangeland resources more efficiently than livestock (Bothma & Du Toit, 2016; Oberem, 2012; Van Rooyen, 2008; Prins, Grootenhuis & Dolan, 2000). Wildlife was found to be better adapted to these dry environments than cattle, since they utilise vegetation more effectively and make use of both browsing and grazing material (Oberem, 2012; ABSA Group Economic Research, 2003). Sheep utilise short grass, cattle consume longer grass and goats rely on herbs, shrubs and trees (Van Rooyen, 2008). In contrast, different game species can consume a variety of trees, grass, shrubs and herbs (Taylor *et al.*, 2015; Van Rooyen, 2008). By converting from domestic livestock to wildlife, farmers can, therefore, utilise their marginal land resources more productively.

The South African game ranching industry utilises mostly marginal land for its economic activities (Van Rooyen, 2009). Most game ranches are located in areas with low rainfall where crop production is not viable and about half of the game ranches are in Limpopo Province, where challenging environmental circumstances make it extremely difficult to sustainably apply agricultural practices other than game ranching (Van Rooyen, 2009). According to Oberem (2011b), wildlife ranching has transformed 20 million hectare of marginal land into thriving, sustainable land use operations.

## **2.4.2 Climate Change**

As mentioned above, game is better adapted to the marginal conditions in South Africa, and is not as likely to suffer from the effects of global climate change as severely as domesticated livestock (Taylor *et al.*, 2015; Dry, 2011). Certain wildlife species have increased resilience to drought and, therefore, reduce the risks associated with climate change and drought for farmers (Bezuidenhout, 2012a; Lindsey, 2012). It is predicted that global climate change may cause the climate of southern Africa to become drier, which would further reduce the profitability of livestock relative to that of wildlife-based land uses (Lindsey, 2012).

## **2.4.3 Environmental Impact**

Due to the conservation of biodiversity, including natural habitat and game numbers in extensive and semi-extensive systems, game ranching is considered to be an environmentally friendly agricultural practice (Lindsey 2012; Dry, 2011). As described briefly in the following sections, if properly applied, game ranching can have a positive environmental impact on an area by conserving the habitat while also increasing the number of wildlife. By conserving the habitat of the utilised species, the habitat of other non-utilised species can also be protected (Bothma & Du Toit, 2016).

### *2.4.3.1 Conservation*

At the International Symposium for Wildlife Management, Moodlar, as cited by Smith (2011), stated that the new international tendency is to protect habitat, species and biodiversity, and aspire towards sustainable utilisation, rather than toward strict regulations. The sustainable use of natural resources - especially in developing nations - has become a recognised practice by organisations such as the International Union for the Conservation of Nature (IUCN) and WWF to ensure biodiversity conservation (Van Hoven, 2015). After Brazil and Indonesia, South Africa ranks as the third most biologically diverse country in the world (Reilly, 2014). South Africa currently has more game than at any other time in the past 100 years (Van Hoven, 2015; Van Burick, 2012). Since game attained value as a farming asset, it became valuable for landowners to invest in wildlife ranching and consequently in conservation (Taylor *et al.*, 2015; Van Burick, 2012). According to Lindsey (2012), game ranching contributes to the effective expansion of protected area networks and enhances coverage of ecosystem types that are under-represented in park networks. Lindsey (2012) further states that it effectively increases the abundance and distribution of wildlife, while recovering degraded rangelands to

productive natural vegetation. Currently, there is more land conserved under private ownership than in all the state-owned parks combined (Cloete *et al.*, 2015).

#### *2.4.3.2 Habitat*

As mentioned earlier, bush encroachment and environmental degradation in marginal areas cause a decrease in the land's productive potential. According to Gouws (2012a), the decline in the small livestock industry is partially due to bush encroachment and many small livestock farmers switched to cattle or game farming. Bush encroachment, has a more severe impact on cattle farming than on game ranching, since cattle are grazers, while game species can be grazers, mixed feeders, or browsers (ABSA Group Economic Research, 2003). Consequently, a variety of game species can be selected for a game ranch according to the available plant species, while cattle only graze on grass. Introducing game species, that include browsers, selective feeders and grazers, can complement sustainable rangeland management strategies (RPO/NERPO, 2014). According to Van Rensburg, previous spokesperson of the Western Cape game industry, game meat can be produced on marginal land without degrading the environment or damaging the vegetation (Botha, 2010a). Game does less damage to vegetation in areas where cattle and sheep farming have caused denudation, desertification or bush encroachment (Taylor *et al.*, 2015; Oberem, 2012). Apart from the reduction in vegetation degradation, game is also considered to be more environmentally friendly than conventional livestock production since it utilises 66% less water than cattle (Dry, 2012).

Since South Africa's game ranchers currently own and conserve vast tracks of land, they preserve many animal, bird and plant species through their production practices (Oberem, 2016; AGRI SA & WRSA, 2010). Bezuidenhout (2012a) believes that the conservation of biodiversity is employed more rigorously, as it makes economic sense to the game ranchers to manage their land in an environmentally friendly manner. He claims that since owners of wildlife ranches have to ensure that animals are kept in good condition in order to obtain an income from the animals, they have to conserve the habitat carefully in which their game will flourish (Bezuidenhout, 2012a). Therefore, the management practices on extensive and semi-extensive wildlife production units, if applied correctly, can contribute to natural habitat and vegetation conservation. However, more recently, concerns were raised that if game ranching were to become more intensive, these beneficial properties would no longer apply (Taylor *et al.*, 2015). For the purpose of this study, however, only extensive and semi-extensive wildlife production units were considered, as mentioned in Section 2.2.

#### **2.4.3.3 Animals**

Overexploitation, hunting, diseases (such as rinderpest), the ivory trade and the fact that game were considered a threat to livestock farming, have led to a severe decline in game numbers in South Africa and, by 1964, only an estimated 500 000 game animals were left (Van Hoven, 2015; Van Burick, 2012). The combined efforts of various stakeholders, like government conservation departments, parks' boards and game ranchers, were responsible for reversing the decline in wildlife numbers (Van Burick, 2012). The game ranching industry contributes to conservation through sustainable utilisation of wildlife (Stoltz, 2010). When economic value is placed on an animal through sustainable utilisation, it justifies the cost for the farmer to keep it on the farm and, therefore, it pays for its own conservation (Bezuidenhout, 2012a; Smith, 2004). The protection and increase of animal numbers become a crucial part of the game rancher's daily activities and the harvesting of excessive game becomes a management practice that contributes economically to the game ranch (Dry, 2012).

The National Agricultural Marketing Council (NAMC) estimated that approximately three to four times the number of game animals are commercially owned than the number of game animals that are conserved in government owned protected areas (Meissner, Scholtz & Palmer, 2013). In the Eastern Cape, the numbers of nineteen game species studied by Nelson Mandela Metropolitan University (Ferreira, 2016) increased significantly, over a period of nine years. For example, eland numbers increased from about 5 100 animals in 2002 to approximately 15 300 animals in 2011, red hartebeest *Alcelaphus buselaphus* increased from about 3 900 to approximately 12 500 animals and blue wildebeest increased from approximately 5 800 to almost 13 000 animals (Ferreira, 2016).

#### **2.4.4 Diseases**

According to Oberem (2012), various studies have shown that plains game animals are more resistant to the diseases and parasites that complicate cattle and sheep farming. Therefore, animal diseases are believed to have a smaller impact on the game industry than on other livestock industries (Oberem, 2012; Bezuidenhout, 2011b; ABSA Group Economic Research, 2003). The fact that regular disease control through antibiotics and immunizations are not generally necessary for plains game in extensive wildlife production units drastically lowers production costs for wildlife in comparison to livestock (Bezuidenhout, 2012a).

#### **2.4.5 Economic Benefits**

Wildlife ranching is an important contributor to South Africa's Gross Domestic Product (GDP) and allows diversification of both local and national economies (Lindsey, 2012; WRSA, 2012). By creating an economic incentive to value and manage wildlife, the main aim of wildlife utilisation on private land is to use these natural resources sustainably (WRSA, 2012). Wildlife ranching allows for the generation of a high proportion of income in foreign currency (Lindsey, 2012). The game ranching industry also served as catalyst for the establishment of numerous industries, like game capturing, transportation and taxidermies (Cloete *et al.*, 2015).

Prins *et al.* (2000) stated that it is the diversity of complementary products that gives wildlife its comparative advantage, which the landholder finds profitable. His view is confirmed by the fact that commercial game ranches generate a higher yield per hectare than domestic livestock production (Dry, 2012). The game ranching industry relies on its variety of income opportunities to be successful economically. Game ranchers have four possible markets for their animals – game meat exports, the sale of live animals, trophy hunting and the local game meat market (Botha, 2010b). The game ranching industry also contributes to several related sectors including tourism, animal breeding, wildlife auctions, taxidermy, wildlife capturing and translocation (Dry, 2012; WRSA, 2012). Wildlife-based land uses were found to be generally more profitable in semi-arid areas than livestock production (Lindsey, Havemann, Lines, Price, Retief, Rhebergen, Van der Waal & Romañach, 2013.)

#### **2.4.6 Theft**

Game species are considered to be more difficult to steal than domestic livestock. This attribute of game, combined with high levels of stock theft, motivated many farmers to switch from cattle and sheep farming to game ranching in the past few decades (Taylor *et al.*, 2015; ABSA Group Economic Research, 2003; Radder, 2002; Le Roux & Jordaan, 2000). Many farmers, especially in the vicinity of main roads where rangelands are more accessible to criminals, turned towards game ranching as a solution (Jordaan, 2001). The influence of theft on the economic viability of small stock production created more incentive for farmers to change to wildlife production (Taylor *et al.*, 2015).

#### **2.4.7 Employment Opportunities**

According to Lindsey (2012), wildlife-based land use provides more and better quality employment opportunities than domestic livestock farming. The wildlife ranching industry employs between 65 000 and 100 000 people in South Africa (Taylor *et al.*, 2015; Oberem, 2012, Dry, 2011). Game ranches employ three to four times the number of people employed on an average domestic livestock farm (Dry, 2011; Oberem, 2011b; Van Rooyen, 2009; Taylor *et al.*, 2015). Apart from the fact that the industry presents more employment opportunities, employees on game ranches on average earn an income that is three to four times higher than the average income earned in the conventional agricultural industry (Oberem, 2011b; Van Rooyen, 2009). Therefore, the industry contributes tremendously to social upliftment, without harm to the environment (Dry, 2011).

### **2.5 SHIFT TOWARDS GAME RANCHING**

ABSA (ABSA Agribusiness, 2015a; Cloete *et al.*, 2015) reports on the establishment of the wildlife industry as follows:

*Initially, game had little monetary value in South Africa and was considered to be competitors for domestic livestock on grazing land game. Wildlife was hunted and eradicated from farms, leading to a situation by the 1950s where South Africa had only a small number of wildlife left. With the change in legislation in 1991, allowing land owners ownership of game, combined with a demand amongst international tourists for hunting and an African safari experience, game ranching emerged as an economically viable alternative to traditional agricultural land use practices. The establishment of game ranches for hunting and tourism led to a demand in live plains game species to stock the ranches, resulting in the breeding of plains game. Around the mid-2000s, the establishment and stocking phase of wildlife ranches seemed to have matured and a general decline in the demand for plains game was observed. This led to the intensive breeding of rare game species, such as sable and roan antelope, causing a demand and high prices for these species. The production of rare and high value species is currently still in a herd-building phase and the demand for these species is expected to continue over the medium term.*

Game ranching and intensive game farming has grown to a point where it has gained recognition as an organised agricultural enterprise (Du Toit, Meissner & Van Niekerk, 2013). Currently, the South African wildlife industry is considered the largest privately

owned wildlife industry in the world (Cloete *et al.*, 2015). South African legislation has enabled landholders to use wildlife sustainably for economic benefit, allowing game ranching to become a popular land use.

### **2.5.1 Legislation**

A positive change in the country's legislation, through the Game Theft Act 105 of 1991, established ownership rights of wild animals and provided greater incentives for game ranching (Cloete *et al.*, 2015). The fundamental actions of granting landholders the right to use wildlife commercially and by establishing proprietorship allowed wildlife's value to reflect directly in monetary value for the landholder (Lindsey, 2012; Van Rooyen, 2008). Instead of being common property, as in the past, and having unmeasurable conservation or tourism value to the country's citizens, the change in legislation allowed landholders to gain income from wildlife on their farms (Taylor *et al.*, 2015; Van Hoven, 2015). This made it more appealing to landholders to tolerate, or even ranch, game and earn an income, as opposed to seeing wildlife as an agricultural pest that competes with livestock for fodder, damages fences and carries disease to domestic livestock.

A further change that favoured a shift towards game ranching in South Africa includes the introduction of exemption permits for commercial harvesting of animals. If wildlife ranches meet the minimum specifications of the relevant conservation authorities, they can qualify for exemption permits, allowing them to hunt, capture and sell wild animals throughout the year (Bothma & Du Toit, 2016). Following the introduction of exemption permits, which allows game ranches to develop a year-round income from wildlife, the game ranch industry grew rapidly (Taylor *et al.*, 2015). In 1993, exempted game ranches covered 8.5% of the available agricultural land in South Africa, by 2002 this percentage grew to 13.3% of the available agricultural land and by 2013 it was estimated at 16.8% (DEA, 2014; Bothma & Du Toit, 2010).

### **2.5.2 Popular Land Use**

The factors described in the previous sections, as well as the financial incentives to stock game, made game ranches a popular land use practice in South Africa (Cloete *et al.*, 2015). Recent evaluations indicated that wildlife-based land uses are becoming more popular among younger farmers, suggesting a generational shift in land use preferences (Lindsey, 2012). Due to this shift in land use preferences, it can be assumed that game ranching will enjoy continued support amongst landowners for some time in the future.

## **2.6 GROWTH OF GAME RANCHING INDUSTRY**

The game ranching and hunting industries possess limited reliable data, since each province has its own regulations and record system (Fourie, Els, Van Niekerk & Curtis, 2012). The lack of a central record system in South Africa makes it difficult to describe current trends accurately in the industry (Fourie *et al.*, 2012). One province that possesses more reliable data is the Eastern Cape. Research was conducted every four years to gain statistical data to determine trends in the industry (Ferreira, 2016; Fourie *et al.*, 2012). Research conducted by the Nelson Mandela Metropolitan University since 2002, provided more detailed information on the wildlife industry in the province (Ferreira, 2016).

According to the last estimates made available by the Department of Environmental Affairs (DEA, 2014), there are more than 10 000 wildlife ranches with exemption permits in South Africa, of which approximately 50% are situated in Limpopo, 19.5% in the Northern Cape and 12.3 % in the Eastern Cape, with the remainder spread across the other provinces. Trends in the Eastern Cape indicated that about 13.4% of the province's area is fenced with game fencing, approximately 203 006 animals are utilised annually in the province (Ferreira, 2016; Fourie *et al.*, 2012). The Department of Environmental Affairs (2014) reported that South Africa has an estimated 20 million head of game, of which 16 million is privately owned, with the remaining 4 million being owned by the state. Currently, there are no newer data available on animal numbers and game ranches than the estimates from the 2014 DEA report.

### **2.6.1 Overall Economic Growth**

In 2002, the game ranching industry was indicated to be the fastest growing agricultural industry in South Africa (Radder, 2002). Growth in the total wildlife industry market between 2008 and 2013 has been estimated at 14% per year (DEA, 2014). Current growth estimates for the industry are not yet available. The 10 000 game ranches in South Africa contribute an estimated R 10 billion to the GDP of South Africa (DEA, 2014).

In the Eastern Cape alone, the total value of game utilised in the province increased from approximately R168.2 million in 2001 to R372.9 million in 2011 (Ferreira, 2016). A total of 11.11% respondents among farmers indicated that game ranching was their focus in 2009; when compared to the 6% indicated in 2002 the expansion of the industry during that period becomes evident (Fourie *et al.*, 2012). Kudu are amongst the most commonly utilised game in the province and, the estimated income generated from them grew from

R50.8 million in 2002 to almost R77.8 million in 2011 (Ferreira, 2016). Similar trends were visible in other commonly utilised species. The growth and current state of the different sectors of the wildlife industry will be briefly discussed below.

### **2.6.2 Hunting**

Initially, the economic contribution of trophy hunting stimulated the development of the wildlife ranching industry in South Africa and only recently game meat production has become a potentially strong economic alternative (Bothma & Du Toit, 2016; Cloete *et al.*, 2015). Although hunting still contributes significantly to the industry, it faced numerous challenges during the past few years. In 2008, the hunting industry showed a record turnover, but the following two years resulted in a definite decline in the number of foreign hunters (Bezuidenhout, 2011b). A combination of global economic recessions in 2009, the outbreak of Rift Valley Fever and severe droughts in the Eastern Cape led to major financial loss for the hunting industry in the Eastern Cape – and possibly also in other provinces (Bezuidenhout, 2011b; Botha, 2010c; Le Roux, 2010). The global financial crisis resulted in a 25% decline of foreign hunters visiting South Africa during the 2009 hunting season (Botha, 2010c). From February to May in 2010, the outbreak of Rift Valley Fever in the Eastern Cape resulted in restrictions on the trade of wildlife and wildlife products. All trade permits were recalled in affected areas and consequently many animals could not be marketed or removed from game ranches, resulting in financial loss (Le Roux, 2010). This problem was compounded by the severe drought in the province, which further reduced areas in which hunting was possible (Le Roux, 2010). Positive growth was once again visible during the 2011 hunting season. With unusually high rainfall, the Eastern Cape game industry was once again considered to be healthy, impala *Aepyceros melampus* and kudu *Tragelaphus strepsiceros* populations increased and the number of foreign hunters improved once again and after the decrease observed in 2009 and 2010 (Bezuidenhout, 2011b).

Hunting is a valuable sector of the wildlife industry in South Africa. Up to 31 436 jobs are upheld by hunting in three of South Africa's most prominent hunting provinces (Cloete *et al.*, 2015). The South African hunting sector generated an estimated total turnover of R7.5 billion in 2014 from international and local hunters (Janovsky, 2015) with no more recent estimates available.

Currently, there are several circumstances in favour of the South African hunting sector. Declining game numbers internationally has caused a growth in demand for hunting in South Africa, which possesses high numbers of game animals (Janovsky, 2015). South Africa's unique game breeding sector has enhanced the quality of trophy animals available through improved genetics and supplementary feeding (Janovsky, 2015). Several previously major hunting destinations, including Botswana, have banned hunting, while other destinations are affected by economic and political instability (Cloete *et al.*, 2015). This presented South Africa with many opportunities to grow its hunting sector.

Although the hunting industry is currently considered to be strong, the wildlife industry must increase its competitiveness through diversification (Oberem, 2012). Since only 5% to 7% of a herd have potential to be trophy animals (Cloete *et al.*, 2015), land owners need to consider other forms of economic returns from wildlife. The hunting industry currently faces the following challenges (Gouws, 2012c): the world economy is under pressure, marketing costs are high, Namibia is considered to be more industry and hunter friendly and competition in the industry is intense. Globally, the hunting industry is also subjected to pressure in the media from anti-hunting groups and the resulting ban on transporting trophies by several airlines can have a negative effect on this sector (Taylor *et al.*, 2015).

### **2.6.3 Breeding and Sale of Live Animals**

The live game industry in South Africa is well-developed with intensive game breeding production, high-quality infrastructure for game translocation and excellent auction operators (Janovsky, 2015; Gouws, 2012c). Factors such as the introduction of insurance, developments in DNA research, supplemental feeding, pharmaceuticals, and breeding practices had a major impact on the development of the breeding sector and allowed wildlife to be bred intensively (ABSA Agribusiness, 2015a; Cloete *et al.*, 2015). With an annual increase between 10% and 15%, the period between 1995 and 2007 presented drastic increases in the average prices for game sales (Bezuidenhout, 2012b). Following this period of growth, the phase of establishing and stocking of game ranches seems to have stabilised (Le Roux, 2010; Kriel-Combrink, 2009). The previous growth in the live sale of common game stagnated after reaching this saturation point (Wild Game Industry Symposium, 2012; Bronkhorst, 2005). Currently, the prices of common game are under pressure and good prices are only fetched for exceptional animals (Gouws, 2012c). The main reasons for the continued trade in common game species is to support genetic diversity on established game ranches and for trophy hunting (Le Roux, 2010).

As the industry reached maturity with regard to the sale of common species, game ranch owners moved towards the breeding and trade of high value game species and colour variations of some species (Bezuidenhout, 2012b; Oberem, 2012). For the time being, breeding and live sales of high value species and colour variants have given the industry a new life (Oberem, 2012). However, it is expected that as soon as there are enough breeding animals available, their value will also decrease (Gouws, 2012c). As with common game species, once this sector reached maturity, its economic value will rely on genetic variety and trophies (Gouws, 2012c). Recently, there has also been wide criticism of the intensive and selective breeding of game for colour variations and horn-length, potentially placing more pressure on game breeders in the future (ABSA Agribusiness, 2015b).

Currently, the wildlife industry trades in more than sixty indigenous wildlife species (DEA, 2014). In 2014, the auctions in the industry reached a historical high with a turnover of R1.8 billion, but prices started to decline early in 2015 (Janovsky, 2015). This could be due to an increase in the supply of high-value game (Janovsky, 2015), or due to the extended drought experienced presently, once again indicating the need to diversify income generating opportunities in the wildlife industry.

#### **2.6.4 The Need to Expand Markets**

As mentioned above, hunting faces many challenges and is vulnerable because of its controversial nature (Taylor *et al.*, 2015; Gouws, 2012c). The live sale of common game species has reached maturity and the breeding and sale of rare species is expected to follow in its footsteps at some point in time (Gouws, 2012c; Oberem, 2012). Consequently, the industry identified the need to expand its markets by fully utilising each aspect of the industry (Gouws, 2012c; Wild Game Industry Symposium, 2012). The game ranching industry recently began to emphasise its need to utilise the production of game meat to its full potential (Oberem, 2012). According to Cloete *et al.* (2015), the game meat sector will be important to the growth of the industry in the near future.

## **2.7 CONCLUSION**

Several important elements that shaped the history of the South African wildlife industry were highlighted in this chapter, such as the inherent characteristics of game ranching that led to it being considered a viable alternative to traditional agricultural practices, as well as the South African legislation enabling the possession and consequently trade in indigenous wildlife species. The emergence of wildlife ranching as a popular land use due to its perceived practical and economic advantages over livestock farming was emphasized. The discussion has pointed out that the industry has various sectors which contribute to its success. The discussion also raised the importance of expanding game meat markets in order to continue its exceptional growth. In the next chapter, a literature review on game meat and consumer attitudes as focal point for this research is presented.

## CHAPTER 3

### LITERATURE REVIEW ON GAME MEAT AND CONSUMER ATTITUDES

*In this chapter, a literature review on game meat and consumer attitudes is presented. The potential of game meat as a product is discussed and consumer attitudes, as well as their role in the consumer decision-making process, are explained. Fishbein's attitude-toward-the-object model is described as the proposed theoretical framework required to understand South African consumers' attitudes toward specific attributes of game meat.*

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#### **3.1 INTRODUCTION**

As concluded in the previous chapter, the South African wildlife industry needs to develop its game meat sector. Game meat holds major potential as a healthy source of protein which could contribute to food security, as well as to the expansion of both the export and local markets (Oberem, 2011a). However, common misconceptions regarding the product, as well as a lack of available research and marketing strategies, are limiting game meat production and consumption (Bothma & Du Toit, 2016). Consumer decision-making and attitudes toward game meat play a major role in marketing strategies and, therefore, it must be understood in order to market game meat effectively (McDaniel & Gates, 2013). Fishbein's attitude-toward-the-object model allows researchers to measure attitudes and to comprehend their role in consumers' decisions better (Solomon, 2013). Specific attributes of game meat which may play an important role in its consumption have been identified from literature and are discussed.

#### **3.2 FACTORS INFLUENCING THE GAME MEAT MARKET**

Based on the issues discussed in the previous chapter, the promotion and production of game meat is important for the sustainability of the wildlife industry (Oberem, 2012). Traditional consumptive utilisation markets of wildlife products, like hunting, cannot keep up with the rate at which game ranches were established, making an established local and export market for game meat essential to the future of the wildlife industry (Janovsky, 2015). Currently, the game meat production aspect of the industry is still a largely unexplored market in South Africa (Bothma & Du Toit, 2016). South Africa faces an unregulated local market, inconsistent supply, fluctuating game meat prices, pressure to stop consumptive use of wildlife and varying quality in game meat (Cheney, 2015; Oberem, 2011b). According to the current red meat regulations in South Africa, animals must be alive when delivered to an abattoir, causing the local game meat market to remain relatively underdeveloped (Janovsky, 2015). If initiatives for the use of mobile

abattoirs and self-regulation are approved, the industry may be able to establish a sustainable game meat market (Janovsky, 2015). By productively utilising marginal land that is not really suitable for other agricultural practices (Lindsey, Barnes, Nyirenda, Pumfrett, Tambling, Taylor & t'Sas Rolfes, 2013), the game ranching industry has the potential to become an important production unit to supply the country with affordable protein, if properly employed (Dry, 2012).

Data for the game meat sector are limited, so the full potential of the sector is still unknown (Janovsky, 2015). The most frequently quoted data is that of the DEA report of 2014. According to the DEA, the following estimates were reported: the retail and export market of game meat had an estimated value of R230 million in 2013; the most commonly utilised species were springbok *Antidorcas marsupialis*, kudu, gemsbok *Oryx gazella*, impala, eland, and wildebeest; an estimated 2000 tons of game meat were exported annually to the European Union, with most of the meat originating from the Eastern Cape, Northern Cape and Free State provinces (DEA, 2014). One major limitation remains the fact that South African game meat producers know very little about both the export and South African consumer market for game meat and good marketing to the consumer is crucial to the success of the game meat production industry (Cloete *et al.*, 2015; Oberem, 2011b).

### **3.2.1 Food Security**

Due to the rapidly growing human population, concerns are raised globally regarding the world's ability to provide sufficient animal protein sources to contribute to food security (Webb, 2013). Apart from the growing world population, the greater affluence in developing countries caused an increase in the middle-class population, indirectly increasing the global demand for meat (Meissner *et al.*, 2013). According to Oberem (2011a), food security has become a global priority for the following reasons:

- The estimated world population has increased from 3 billion people in 1959 to 7 billion people in 2011.
- Locally, the estimated South African population increased from 19.2 million people to over 50 million people over the last 40 years.
- To keep up with population growth, South Africa needs to double its food production in the next 15 years.

Therefore, increasing pressure can be expected from the government to address food security (Cloete, 2012). According to Gouws (2012b) and Lindsey (2012), the South African game industry can make a real contribution to food security, since wildlife-based land uses can generate large quantities of game meat protein. During the annual hunting season, game meat comprises an estimated 10% of the red meat consumed in South Africa (Dry, 2011). Considering the fact that South Africa imports meat to the value of about R 4 billion annually, there is room for the increased utilisation of a local product (Dry, 2011). In order to utilise the wildlife industry to its full capacity in supplying protein, a successful local market must be established for game meat (Cloete, 2015). Currently, several stakeholders are actively involved in the development of a supply chain to have a consistent supply of quality game meat (Cloete, 2015). The focus is, therefore, to develop both foreign and local markets for South African game meat and to market the product effectively.

### **3.2.2 Health Benefits**

Game meat is considered a healthy source of complete protein. According to Dahlan and Norfarizan Hanoon (2008), game meat contains less calories, cholesterol and fat than commonly consumed cuts of pork, beef and mutton. In addition to having a low fat content, the fat that is present in game meat can be removed easily, since it does not run through the muscle tissue (Bothma & Du Toit, 2016). Game meat is significantly lower in fat, with an average of < 3% fat per 100g meat than meat derived from domestic livestock, with an average fat content >14% per 100g meat (Bothma & Du Toit, 2016). For example, springbok meat has four-fold lower total lipid content than beef (Hoffman *et al.*, 2007a). Due to global changes in the demand for meat, especially for low-fat red meat, the global interest in game meat has increased (Dahlan & Norfarizan Hanoon, 2008). It is uncertain to what extent the possible demand for low-fat meat has influenced South African consumers' interest in game meat.

The low fat content of game meat can hold major benefits for South African consumers. According to the Heart and Stroke Foundation (HSF) (2015), the prevalence of hypertension - the biggest risk factor for cardiovascular disease - among South African's over 50 years is the highest in the world, with less than 50% of affected individuals being aware of their situation. Approximately 210 people die daily in South Africa due to cardiovascular disease, while high cholesterol affects approximately one in four South African adults (HSF, 2015). After HIV/AIDS, cardiovascular diseases are the second leading causes of death in South Africa, more than deaths from all types of cancers

combined (HSF, 2014). It is a generally held belief that lifestyle changes, including a healthy diet, can prevent up to 80% of these deaths (HSF, 2015). It was established that a decrease in dietary saturated fatty acids lowers a person's risk of cardiovascular disease by lowering blood serum cholesterol (Bothma & Du Toit, 2016). The Heart and Stroke Foundation of South Africa has programmes in place to inform South African consumers about the dangers of high cholesterol and to recommend a varied, healthy diet and the use of products that are low in saturated fat (HSF 2007; Steyn, 2007).

Consumers in general seem to become more conscious of their dietary saturated fatty acid intake (Hoffman *et al.*, 2007a). This is where game meat can be beneficial to consumers. Springbok meat in particular can lower a person's serum cholesterol due to its high arachidonic acid concentration (Bothma & Du Toit, 2016). The high arachidonic acid content, therefore, does not only prevent cholesterol to build up, but assists in breaking cholesterol down in the human body (Bothma & Du Toit, 2016).

The moderate intake of lean red meat can assist consumers in following a healthy, balanced diet (Wyness, Weichselbaum, O'Connor, Williams, Benelam, Riley & Stanner, 2011). It provides important nutrients, such as zinc and iron to the human body, while the intake of saturated fatty acids remains limited (Ruxton, Derbyshire & Pickard, 2012). The human body needs zinc for proper cell functioning, enzyme activity, DNA and protein synthesis and intracellular signalling, while iron is required for support of cognitive and immune functions (Ruxton *et al.*, 2012).

Additional health benefits of game meat include protein quality - blesbok *Damaliscus dorcas phillipsi* meat contains 81.8% of the amino acids required by the human body – and its exceptionally high iron content in comparison to other red meat (Hoffman *et al.*, 2008). Since meat from extensive and semi-extensive wildlife production systems is generally not exposed to growth hormones and antibiotics, it is currently considered one of the purest forms of red meat available (Bothma & Du Toit, 2016). In an increasingly health-conscious modern society, food that is safe and of natural origin – free from growth hormones, antibiotics, disease, medication and pollution is progressively required more and more by consumers (Bothma & Du Toit, 2016).

### **3.2.3 Consumer Misconceptions**

There seems to be misconceptions among South African consumers regarding the flavour and quality of game meat, which could be due to poor harvesting, marketing and presentation methods (Bothma & Du Toit, 2016; Hoffman *et al.*, 2005; Radder, 2002).

There is a general perception among South African consumers that game meat is tougher and drier than the meat of generally consumed domestic livestock (Bothma & Du Toit, 2016; Radder & Grunert, 2009; Radder, 2003). Contributing factors to consumers' negative perceptions of the toughness of game meat include poor harvesting and handling methods in the field, animals harvested under stressful conditions, poor bleeding methods, hunting older animals for trophy purposes and using inappropriate cooking methods (Bekker *et al.*, 2011).

Due to the regulations mentioned previously which limit the sale of game meat, most South Africans consume game meat received from recreational hunters, and not from animals that have been harvested by professionals (Cheney, 2015). In order to obtain a trophy, recreational hunters usually take heart or lung shots which can allow the animal to run a short distance and to release adrenalin in the blood shortly before it dies, tainting the meat (Cheney, 2015; Radder & Le Roux, 2005). Professional harvesting teams, on the other hand, usually take head or neck shots, causing the animal to drop instantly, without causing stress before the animal dies (Cheney, 2015; Hoffman & Wiklund, 2006). If animals are then bled immediately and the carcasses refrigerated soon afterwards, the meat is generally of excellent flavour and quality (Cheney, 2015). According to Hoffman (2015), apart from hunting methods, an animal's age can also influence meat quality. The ideal age to crop animals, in terms of meat quality, is between six months and a year, but hunters seldom hunt animals at this age (Hoffman, 2015; Bekker *et al.*, 2011). Since hunters usually pay a fixed price per animal instead of per kilogram, they usually shoot the largest animal possible (Hoffman, 2015). This leads to game meat often coming from older animals, creating a poor perception among consumers concerning game meat's quality (Bekker *et al.*, 2011).

When tested by evaluatory panels and through physical analysis, game meat is proven not to be tougher than red meat from domestic livestock (Bothma & Du Toit, 2016). Based on the shear values for impala, its tenderness is similar to that of pork (Bekker *et al.*, 2011). Negative attributes ascribed to game meat include dryness, novelty, and special preparation requirements (Radder & Grunert, 2009). In the case of venison, consumers perceived its preparation as time consuming (Radder, 2003). While some consumers perceived it to be expensive compared to other meat and only available in winter time (Bekker *et al.*, 2011; Radder, 2002). Determining the attitudes that South African consumers hold toward game meat can identify common misconceptions that limits its use. The identification of consumer attitudes toward specific product attributes can play a major role in creating a positive image of game meat and motivate its use among South

Africans. Research on the attitudes of South African consumers should, therefore, include the perceived sensory characteristics and consumer ideas about aspects concerning production methods, promotion, price, availability and preparation methods regarding game meat.

### **3.2.4 Exports**

Game meat destined for export must meet the strict processing procedures, standards of hygiene and public and animal health requirements as set by the importing country (Bothma & Du Toit, 2016). Exports may be suspended if these set stipulations are not met; these requirements change from time to time, but current information can be obtained from the Directorate of Animal Health in South Africa (Bothma & Du Toit, 2016). Animal diseases, such as foot-and-mouth disease, Rift Valley fever and African Swine fever, pose risks to human health and are the main limiting factor in international trade of animal products (Rich & Perry, 2011). Therefore, sporadic disease outbreaks in areas of South Africa can limit exports, causing a loss of income. Diseases with the potential to impact negatively on the economies of an entire country or region are internationally controlled in the strictest ways possible (Bothma & Du Toit, 2016). Meat for export to European Union countries must originate from ranches located in foot-and-mouth disease free zones, or outside any disease restricted area, and may not be harvested from a hunting area where there were Animal Health restrictions during the last 60 days before harvesting due to disease outbreak (Bothma & Du Toit, 2016). A list of restricted diseases can be obtained from the Office Internationale des Epizooties (OIE) in France. The OIE gives official recognition of country or zone freedom for four diseases, namely, rinderpest, contagious bovine pleuropneumonia, bovine spongiform encephalopathy (BSE) and foot-and-mouth disease (DAFF, 2011). During times when exports of animal products are prohibited, the industry needs an established local market to prevent major loss of potential income from game meat.

The potential for game meat in international markets is considerable and, therefore, it is worthwhile to invest in game meat production (Dry, 2011; Botha, 2010b). South Africa needs to market its game meat more efficiently in order to profit from the increasing global demand for organic meat (Smith, 2009). The potential market for game meat in Western Europe alone amounts to more than 100 000 tons of meat annually and the demand for organic products is increasing consistently (Dry, 2011; Smith, 2009). In most African countries rising incomes and urbanisation increases the demand for meat, while these countries are mostly importers of meat (Rich & Perry, 2011). Currently, South Africa only

exports approximately 600 to 2 000 tons of game meat per annum (Dry, 2011). While the game meat export market holds major potential, the possibility of disease outbreaks and consequent bans on the movement contributes to its risk, especially if there is no established local market to absorb products (Cloete *et al.*, 2015; Janovsky, 2015).

### **3.2.5 Local Market**

South African consumers' consumption patterns have changed with an increased demand seen for high protein foods, especially meat, as rising wealth has caused a growing middle class (Kotze & Rose, 2015). However, it is estimated that only 8% of formally processed South African game meat is sold locally (Cloete *et al.*, 2015). The species most utilised locally include springbok, blesbok, impala, greater kudu and gemsbok (Swanepoel, Leslie, & Hoffman, 2014). Some of the major limiting factors in the development of a local game meat market are the South African legislation pertaining to slaughtering animals and meat safety (Cloete *et al.*, 2015). According to the Meat Safety Act (Act no. 40 of 2000), abattoirs may not accept dead animals for slaughtering, which is highly impractical when applied to game meat (Cloete *et al.*, 2015; Janovsky, 2015). However, meat cannot be sold for human consumption, if it hasn't been slaughtered at an approved abattoir (Bothma & Du Toit, 2016). The industry is currently exploring options to address practical factors which limit the legal slaughter of game animals in abattoirs in order to open doors for large scale game meat processing (Cloete *et al.*, 2015; Janovsky, 2015).

The local market for game meat has clearly not been tapped to its full potential. The industry has announced its plans to promote game meat production in South Africa (Oberem, 2012). Different opinions feature with regard as to what is necessary to promote the use of game meat in South Africa.

Gouws (2012c) believes that the promotion of game meat is insufficient, that game meat is not readily available in small retail outlets, that it is seldom used in the catering industry, that the industry lacks organised structures and that game ranchers have lost control over the marketing of their product. Bothma and Du Toit (2016) agree that marketing of game meat in South Africa seems to be lacking, since the majority of consumers in a local study indicated that they have never seen promotional material for the consumption and preparation of game meat. According to Smith (2009), the potential in the local market is considerable, as long as meat of high quality is presented to consumers. Oberem (2011b)

believes that game ranchers should work towards the production of a constant supply of game meat and a product that is consistent in quality and convenient to prepare.

Kriel-Combrink (2009) feels that South Africans do not eat enough game meat due to insufficient exposure, the limited availability of game meat and misconceptions concerning its preparation. According to Van Rooyen (2009), thorough planning is necessary to market a form of game meat consistently, whether it is fresh, canned, or dried. Hoffman *et al.* (2009b) believe that South African consumers need to be educated to realise the nutritional value and health benefits of game meat and to rectify common misconceptions regarding meat quality if they are to become regular consumers. Bothma and Du Toit (2016) believe that if the South African wildlife meat market is to develop into a major enterprise, it needs to invest in research and planning concerning the presentation, preparation and health benefits of the meat to consumers.

Based on the information given above, it seems that one of the greatest needs in the industry is to develop deliberate marketing strategies for game meat in the local market. Through increased exposure to game meat of consistent and high quality, and consumer education regarding its beneficial attributes, its use among South African consumers could possibly be increased. Therefore, information is required regarding South African consumers and their attitudes toward game meat to market game meat effectively to the local market.

### **3.3 THEORETICAL FRAMEWORK**

To understand why consumer attitudes are important for the promotion of a product, as in this case game meat, an understanding is required of the important role attitudes play in terms of consumer decision-making. An attitude is defined as “a learned predisposition to behave in a consistently favourable or unfavourable way with respect to a given object” (Egan, 2015; Schiffman & Wisenblit, 2015). Consumer attitudes form a crucial part of the consumer’s psychological field in the decision-making process (Schiffman & Wisenblit, 2015). The decision-making process is explained in more detail below in order to shed light on the role of attitudes, as a psychological factor, in consumer decisions. The characteristics of attitudes and the measurement of attitudes toward multiple attributes of a product through the use of the Fishbein’s attitude-toward-the-object model are also discussed which forms the theoretical framework for this study.

### 3.3.1 The Role of Attitudes in Consumer Decision-Making

Consumers have to engage in a decision-making process when dealing with the marketing environment and making purchases (Solomon, 2013). The Model of Consumer Decision-Making (Figure 3.1), as adapted from Schiffman and Wisenblit (2015), aids in the understanding of the factors that influence a consumer's decisions in general and is used in this study. In this model, decision-making is divided into three stages: the input, process and output stages of decision-making. Attitudes form part of the consumer's psychological field which influences the process stage of consumer decision-making and plays a central role in the evaluation of alternatives (Schiffman & Wisenblit, 2015; Betsch & Haberstroh, 2012).

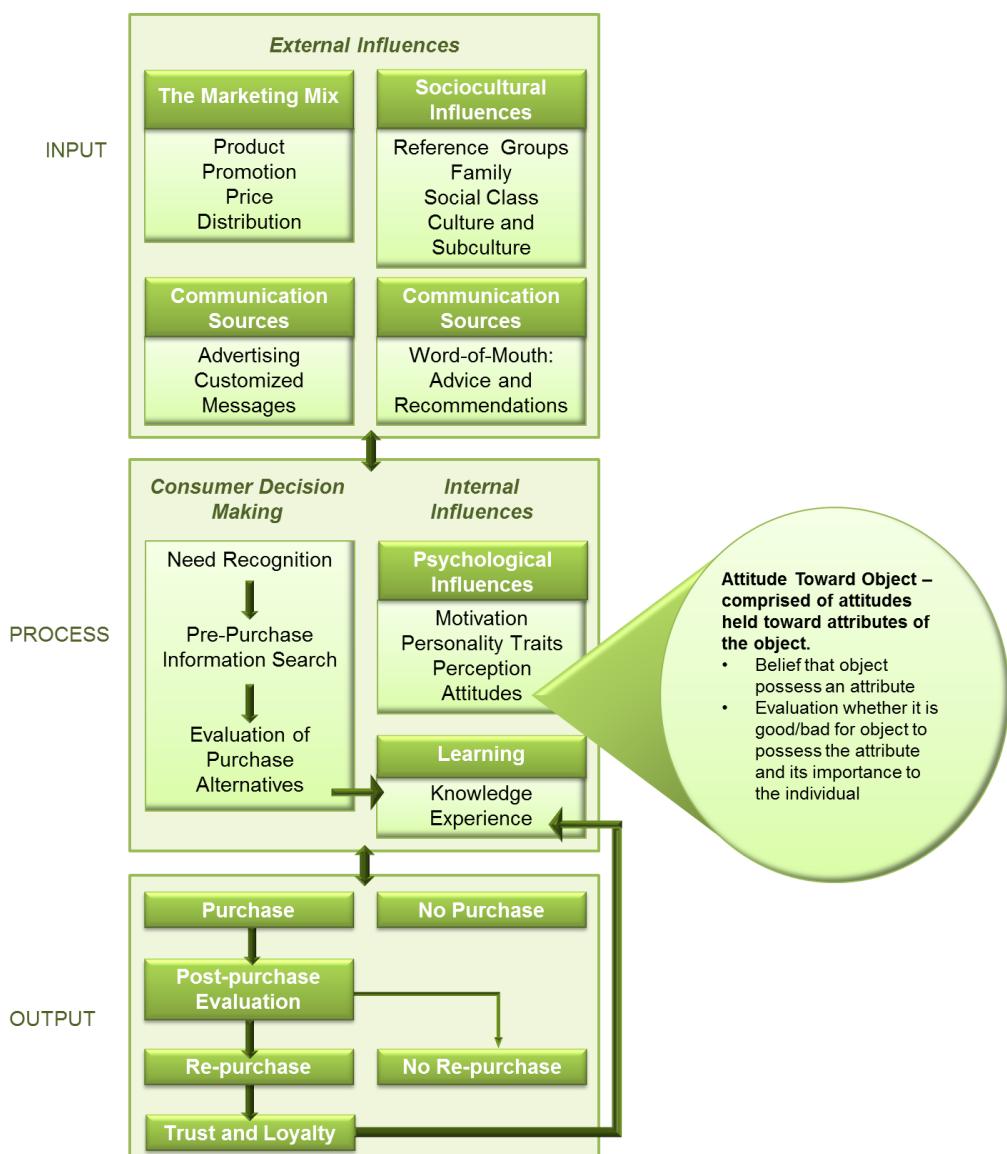


Figure 3.1: Consumer Decision-Making Process (Schiffman & Wisenblit, 2015)

The input stage consists of three external information sources, namely the marketing mix sociocultural influences and communication sources, which influence the consumer's decision to purchase and what product they will choose to purchase (Schiffman & Wisenblit, 2015; Milner & Rosenstreich, 2013). The sociocultural environment includes the influence of family members, important reference groups, culture and social class on the individual's decision to consume game meat. For example, if it is a family tradition to serve roast game meat on special occasions, or if kudu biltong is considered a cultural delicacy, the sociocultural environment might play a major role in influencing the individual's decision to consume game meat. It might cause the individual to have a positive attitude towards game meat and the individual may believe that it is something special and sought-after. On the other hand, if important reference groups in individuals' sociocultural environment believe that game meat is of inferior quality and taste; individuals might be influenced to choose not to consume game meat, often without testing for themselves if these beliefs are accurate. The negative connotation to game meat and the reluctance to consume inferior meat may contribute negatively to their attitudes toward game meat.

The marketing efforts of the producer can have a strong influence on the consumer's decision. This aspect includes the marketing mix of the product itself, as well as the promotion, price and channels of distribution of the product (Milner & Rosenstreich, 2013). The attributes of the product itself is important during marketing, since consumers' evaluation of a product's attributes can account for most of their attitude toward the product (Solomon, 2013). McDaniel and Gates (2013) maintain that the more favourable the attitude of a consumer toward a product, the higher the incidence of product usage and the less favourable the attitude, the lower the incidence of product usage. Therefore, the product attributes cannot be underestimated in marketing efforts of game meat. In the present study, the attitudes toward the product attributes that will be explored include the sensory characteristics, health benefits, ethical considerations, animal welfare standards and the safety of game meat for human consumption. As mentioned earlier, very few marketing efforts for game meat have been encountered by South African consumers. Consumers' attitudes toward the marketing efforts, as found in the input stage, of game meat will also be explored. By exploring attitudes toward the product attributes, its promotion, price and distribution (including availability), this study aims to create an improved understanding of these crucial aspects of game meat to assist in its marketing efforts.

The communication source used to carry messages across to the consumer from the marketing mix and sociocultural influences form the third influence during the input phase of decision-making (Schiffman & Wisenblit, 2015). This includes the advertising and messages used during marketing efforts as well as word-of-mouth advice and recommendations from socio-cultural influences. As mentioned previously (Section 3.2.3), there seem to be various misconceptions among consumers regarding the attributes of game meat which could largely have been formed by the messages carried across to consumers by sociocultural influences, demonstrating that these communication sources can play an important role in consumer decision-making.

During the output stage, consumers evaluate their behaviour after making the decision to purchase the product (Schiffman & Wisenblit, 2015). Consumers decide if they are satisfied with the product. This post-purchase evaluation of satisfaction results in forming stronger attitudes toward the product based on experience, which is used in future decisions (Milner & Rosenstreich, 2013). The consumers have now tried the product and their experience will contribute to their attitudes in future decisions to consume game meat. Based on the experience, consumers may decide not to re-purchase the product in the future, or they may choose to re-purchase the product, leading to trust and loyalty to a product (Schiffman & Wisenblit, 2015). The experience continues to be fed into the cycle of decision-making (Milner & Rosenstreich, 2013). Consequently, consumer satisfaction with a product becomes important to the producer as it will influence repeat purchase intentions (Kimmel, 2013).

The process stage, portraying how consumers make decisions, contains the process of need recognition, the pre-purchase search and the evaluation of alternatives and how the process is influenced by the individual's psychological field (Schiffman & Wisenblit, 2015; Milner & Rosenstreich, 2013). Consumers will recognise their basic need for food, but the need recognition phase includes more than just the recognition for food to sustain life. Once the need is recognised, consumers may search for products that they believe can meet their needs (Milner & Rosenstreich, 2013). If more than one product can be identified, consumers need to evaluate which alternative they will prefer that will best meet their need (Aaker, Kumar, Leone & Day, 2013). A consumer's preferences regarding a product are shaped by carefully considering its features and evaluating the features according to the consumer's needs (Kimmel, 2013). In the case of game meat, consumers might recognise a need for meat to sustain a balanced diet. Therefore, they will search for meat products and evaluate the alternative meat products available to them – for example, game meat, beef, mutton, chicken or pork. They might recognise the need

for healthy protein, in contrast to just any protein, and search for alternative healthy protein sources – for example, lean beef, game meat, or even protein-containing legumes. They could also have a need to serve meat at a specific occasion and, therefore, need to find a portion of meat that will be considered appropriate – for example, a leg of lamb, roasted venison, beef fillet for a family dinner, lamb chops or beef steak for a braai, or game biltong as a snack. As mentioned earlier, the manner in which consumers conduct this process and what they decide is ultimately strongly influenced by the consumer's psychological field. The psychological field consists of the individual's motivation, perception, learning, personality and attitudes (Schiffman & Wisenblit, 2015). The consumer's learning is comprised of knowledge, entailing all the information that the individual possess about the object, as gathered from external sources, such as the marketing efforts and sociocultural influences, and internal sources of information, such as past experience (Schiffman & Wisenblit, 2015; Aaker *et al.*, 2013). Although the different elements in the psychological field are intangible and cannot be measured directly, they determine how the inputs will be understood by the individual and how it will influence the individual's decision and can be inferred from their consequences (Aaker *et al.*, 2013). Experience gained from previous decisions and the evaluation of alternatives will again be reinstated in the person's psychological field for future decisions (Schiffman & Wisenblit, 2015; Kimmel, 2013; Milner & Rosenstreich, 2013). This is where the study comes to attitudes itself. Since attitudes form the main part of this study, it will be studied in greater detail below. By keeping the context within which attitudes function in mind, one can determine which attributes of game meat are likely to encourage consumers to consume the product and consequently how to market the product to them.

### **3.3.2 Characteristics of Attitudes**

Attitudes refer to consumers' preferences, inclinations, views, or feelings towards a product (Iacobucci & Churchill, 2010). Attitudes can be learnt in various ways, including direct experience of the product, word-of-mouth, or exposure to other information sources without actual experience of the product (Schiffman & Wisenblit, 2015). Solomon (2013) describes the characteristics of consumer attitudes in the following way: Attitudes have an object; so, by definition, consumers can only hold attitudes toward something. When studying consumer attitudes, the object must be carefully defined, since it can be a general or specific, abstract or concrete object. In this study, game meat will be considered the object towards which attitudes will be determined. Further, Solomon (2013) maintains that attitudes are complex to measure, because a consumer might have a favourable attitude towards the general concept, but a negative attitude toward a

specific dimension of the object. He also believes that attitudes have direction and intensity and can be either favourable or unfavourable towards an object (Solomon, 2013). If an attitude is strongly held by a consumer, whether favourable or unfavourable, it is very difficult for marketers to change (Egan, 2015; Iacobucci & Churchill, 2010). Therefore, once attitudes are formed, they usually endure (Clow & James, 2014), and the longer they are held, the more resistant they become to change.

Psychologists ascribe three components to attitudes, often referred to as the tri-component attitude model (Schiffman & Wisenblit, 2015; Aaker *et al.*, 2013). The first component is referred to as the *cognitive component* (Clow & James, 2014). This refers to the consumer's beliefs regarding the product, as comprised of the individuals' knowledge and perception of the product and its attributes, as well as the relative importance of its attributes to the consumer (Kimmel, 2013; Solomon, 2013). It is important to note that the cognitive component refers to what the consumer believes to be true about the product (Solomon, 2013), and is based on the individuals' beliefs of the object. Therefore, it is subjective and may or may not be based on experience. In this study, it is assumed that consumer respondents' attitudes will be based on experience; however, non-consumer respondents' attitudes may or may not be based on actual experience and could potentially change after exposure to game meat as their attitudes may be strongly influenced by their own perceived ideas or thinking. Secondly, attitudes have an *affective component*, referring to the consumer's favourable or unfavourable feelings toward the overall product, or towards its different attributes (Kimmel, 2013; Solomon, 2013). The affective component in this study is described as positive or negative attitudes toward product attributes, or the product as a whole. The third component is referred to as the *conative* or *intention component*, which refers to the consumer's intentions towards a certain behaviour toward a product in the future, or whether to purchase it or not (Kimmel, 2013; Solomon, 2013). While the *cognitive* and *affective* components of attitudes play a role in the intention to behave in a certain manner towards the object and were explored in this study, the *intentional* component regarding game meat purchases was not directly determined since it was outside the scope of the study.

Attitudes have motivational qualities that are capable of propelling a consumer towards, or repelling a consumer away from a specific behaviour (Egan, 2015; Schiffman & Wisenblit, 2015; Iacobucci & Churchill, 2010). To market a product effectively to a consumer, the consumer needs to have a positive attitude towards the product (Clow & Baack, 2014). The more favourable the attitudes of consumers are toward a product, the higher the likelihood of product usage; the less favourable consumers' attitudes toward a product,

the more likely they are to stop using it (Clow & Baack, 2014; McDaniel & Gates, 2013; Iacobucci & Churchill, 2010). Attitudes that are based on actually trying and experiencing a product were found to predict consumer behaviour quite well, but when attitudes are merely based on advertising, this consistency was significantly reduced (McDaniel & Gates, 2013). In some cases, consumer attitudes do not predict purchase behaviour, since consumers may hold favourable attitudes toward a product, but other inhibiting factors, like availability, cost or utility, may prevent their purchase of it (Egan, 2015; Solomon, 2013). Although there might not be a perfect correlation between attitudes and behaviour, marketing managers have often found that designing an effective marketing mix based on consumer attitudes is often the best tool available to sell a product (McDaniel & Gates, 2013). Assuming that the design most preferred in attitude research testing will sell the best, marketing managers often attempt to measure attitudes towards products (McDaniel & Gates, 2013).

### **3.3.3 Fishbein's Attitude-toward-the-Object Model**

Attitudes toward a specific product can be studied in order to bring the “right” product to the marketplace (McDaniel & Gates, 2013). To measure attitudes in more detail, attitudes toward specific attributes of an object can be studied to determine which attributes are regarded as favourable and which are unfavourable (Solomon, 2013). Although consumers’ overall evaluation of a product sometimes accounts for most of their attitude, it may become more complex than merely whether consumers like the product or not (Solomon, 2013). A product may be composed of many attributes and some of these may be more important than others to individuals (Clow & Baack, 2014; Solomon, 2013; Yosini, 2011). Based on individual preferences and attitudes, consumers can classify some product attributes as being important in their decision to consume the product, while less important attributes may be compromised to obtain the important attributes when selecting a product (Solomon, 2013). In order to measure consumer attitudes toward multiple attributes of a product, a researcher can use a multi-attribute attitude model.

Among the multi-attribute attitude models, Fishbein’s attitude-toward-object model proves to be the most useful for a study on South African respondents’ attitudes towards game meat. In essence, the model maintains that consumers evaluate individual attributes of products as favourable or unfavourable (Ahamed *et al.*, 2015; Mollah *et al.*, 2015; Schiffman & Wisenblit, 2015). Consequently, they have favourable attitudes towards products that they consider possess adequate levels of positive attributes and unfavourable attitudes towards products that they believe possess insufficient positive

attributes or too many negative attributes (Schiffman & Wisenblit, 2015). This model is helpful in studying attitudes toward game meat since it has been established that South Africans consider a variety of different attributes of game meat, such as sensory characteristics, health benefits, production methods, meat safety and quality, availability, price and preparation required, as positive or negative and may base their consumption behaviour on those attitudes. By using a multi-attribute model that focuses on a specific object, the research will be able to evaluate the attitudes of consumers and non-consumers of game meat toward multiple attributes of game meat (the object).

Mowen and Minor (1998) gives one of the clearest descriptions of Fishbein's attitude-toward-the-object model and demonstrate how to apply it in research. Although Mowen and Minor described Fishbein's attitude-toward-the-object model in 1998, it is still relevant, since the model is the same and even now current sources (Schiffman & Wisenblit, 2015; Solomon, 2013), recommend this model to determine consumer attitudes toward an object. The model identifies three major factors that are predictive of attitudes. These factors are based on the individual's personal beliefs and not necessarily on experience and are, therefore, subjective. Firstly, the model identifies the salient beliefs that a person has about an object (Solomon, 2013; Mowen & Minor, 1998). Salient beliefs are the beliefs that are activated in memory when attention is focused upon an object and tends to include the attributes that are most important to the consumer (Mollah *et al.*, 2015; Solomon, 2013; Mowen & Minor, 1998). The second component is the strength of the belief that an object possesses the particular attribute in question (Mollah *et al.*, 2015; Mowen & Minor, 1998). It involves the extent to which the individual believes that the object possesses the attribute and can vary in intensity (Solomon, 2013). The third component of the model evaluates each of the salient attributes and provides an assessment of the goodness or badness of the salient attributes (Mollah *et al.*, 2015; Mowen & Minor, 1998).

Fishbein's attitude-toward-the-object model makes no direct attempt to measure the importance of individual attributes, but the importance of each attribute is determined by the evaluation ratings (Ahamed *et al.*, 2015; Solomon, 2013; Mowen & Minor, 1998). Researchers have found that the evaluation ratings become more extreme as the importance of an attribute increases (Yosini, 2011; Mowen & Minor, 1998). If an attribute is, therefore, not important, the evaluation rating is close to zero – which is equivalent to rating the attribute as having low importance (Yosini, 2011; Mowen & Minor, 1998). Therefore, recent sources, (Clow & Baack, 2014; Solomon, 2013) accept that the

evaluation of the goodness or badness of the attribute is also an accurate measurement of the importance of the attribute to the consumer.

Fishbein's attitude-toward-the-object model has been found useful in a variety of other studies where the role of specific attributes of a product were studied to determine consumer preferences and needs. Yosini (2011) used it to find the most dominantly preferred attributes of local and imported fruits in Indonesia to determine consumer needs with regard to fruit. Moon *et al.* (2005) used the model to determine consumers in the United States of America's attitudes toward soy products and to determine the importance of difference attributes in their behaviour. In Bangladesh, Mollah *et al.* (2015) used it to understand which attributes were important to attract and retain consumer loyalty regarding shampoo products, while Ahamed *et al.* (2015) used the model to identify attributes that are important to consumers regarding e-commerce sites.

By selecting the best combination of product attributes and using those attributes to market a product, a marketing manager can advertise the product by highlighting its important attributes. However, in order to do this, the manager will need to analyse which attributes of the product are perceived by the consumer as important. Therefore, to market game meat purposefully and to direct consumer decisions in a favourable direction, game meat's different attributes must be carefully analysed through a multiattribute approach. The next section provides the specific attributes of game meat selected for this exploratory study and why it is considered important as described by other research findings.

### **3.3.4 Product Attributes Explored**

#### *3.3.4.1 Sensory Characteristics*

The sensory characteristics of food such as flavour, texture, appearance and aroma are considered important in consumer acceptance of a product and play an important role in food selection (Brown, 2015). Various recent studies have highlighted the importance of sensory characteristics of food to consumers. Mascarello, Pinto, Parise, Crovato and Ravarotto (2015) found that Italian consumers find the pleasure of eating important and, therefore, consider the sensory characteristics of food, in particular taste, appearance and freshness to be key aspects in food choice. Rekhy and McConchie (2014) established that taste, texture, smell and colour play a key role in the consumption of fruit and vegetables, while Falguera, Aliguer and Falguera (2012) believe taste to be the most important attribute to consumers.

The sensory characteristics of food are often more important in food selection than other criteria (Brown, 2015). Flavour and texture, including tenderness and juiciness, are considered key indicators of meat quality to consumers (Hoffman *et al.*, 2009a) and were also considered important in meat derived from wildlife such as bison *Bison bison* and elk *Cervus canadensis* (Steiner *et al.*, 2006). Radder (2002) stated that consumers dislike the taste of venison. However, poor harvesting and handling methods of venison, especially adrenaline discharged by stressed animals, are considered the main causes of a wild, gamey, or unappetizing taste and tough texture in venison (Radder & Le Roux, 2005). Therefore, consumers might find the taste and texture of game meat acceptable, if animals are harvested without unnecessary stress and the meat handled correctly. The appearance of a product is regarded as an important quality cue to consumers, since it is often the only visible sensory characteristic of the meat whereby they can judge the perceived wholesomeness of the meat (Leick *et al.*, 2011; Manchini & Hunt, 2005; Resurecccion, 2003). Meat colour is often used by consumers as an indicator of freshness (Manchini & Hunt, 2005). Radder and Le Roux (2005) found that although appearance and texture of red meat are considered important by consumers, aroma was also often used to judge the quality of meat (Radder & Le Roux, 2005). Since consumers' attitudes toward the sensory characteristics of a product are often based on their experience of the product itself, respondents in the non-consumer category could have based their responses either on past experiences and decided not to consume game meat anymore, or on their perceptions and expectations of what they believe regarding the sensory characteristics of game meat without personal experience of the product.

### 3.3.4.2 Health Benefits

Health benefits was selected as one of the attributes to be studied in this research as a result of the widely held belief that consumers worldwide are becoming more concerned with the healthy eating and consequently increasingly tend toward leaner meat (Cloete, 2015). In a Canadian study (Steiner *et al.*, 2006), it was found that health benefits, such as the low fat and low cholesterol content, of bison meat were considered important by consumers and influenced their choice to consume bison positively. Research is not available to describe South African consumers' current attitudes towards the health benefits of game meat and how it relates to their choice to consume game meat. It was necessary to determine whether South Africans also displayed the trend of selecting leaner meat and whether it was considered important to the extent that it would play a role in their actual choice of meat products. In 2005, Hoffman *et al.* indicated that consumers considered the fat content important when selecting meat, with a preference for lean

meat. However, in the same year Radder and Le Roux (2005) stated that South African consumers displayed a high preference for red meat, but a low preference for venison, despite the high incidence of coronary diseases in the population. They attributed this trend to either a lack of concern for health implications of meal choices among South Africans, or uncertainty among consumers regarding the nutritional quality of different types of meat (Radder & Le Roux, 2005). Hoffman *et al.* (2005) indicated that consumers were rather unfamiliar with the health benefits of game meat. Due to the uncertainty regarding the extent to which attitudes toward health benefits of game meat currently contribute to South African consumers' choice to consume game meat, the health benefits were considered an important attribute to include in this research.

#### **3.3.4.3 Availability**

Availability of game meat to consumers was considered an important attribute to include, since various other studies showed its importance in consumer choices. Radder (2003) indicated that year-round availability, at places that are convenient to the consumer, could affect consumer interest in a product. In venison studies done in Canada and Australia, it was found that the lack of availability was the main reason for consumers not to purchase elk and kangaroo meat, while the availability of a variety of cuts was considered important in bison meat (Steiner *et al.*, 2006). Apart from the general availability of the product and whether the available cuts met consumer needs, the seasonality and place of purchase were also found to be important factors to consumers in previous studies (Bekker *et al.*, 2011; Radder & Le Roux, 2005; Radder, 2003). According to Radder (2003), the seasonal availability of game meat has created a negative opinion among consumers in the past.

#### **3.3.4.4 Price**

The attitudes toward the price of game meat were included in this research to consider its possible role in the consumption of game meat. The price of meat was found to be important in studies concerning bison and kangaroo (Ampt & Owen, 2008; Steiner *et al.*, 2006). In the case of kangaroo meat (Ampt & Owen, 2008), it was considered slightly more expensive than other red meat, but Australian consumers would still purchase it when they preferred. Yet, they were willing to shop around extensively in order to purchase it at the most affordable price, indicating some price sensitivity among consumers. According to Radder and Grunert (2009), price seemed to play a role in consumers' decision to consume venison. Hoffman *et al.* (2005) and Radder (2003) considered venison to be expensive, luxury meat for high income groups and believed

that consumers would not be willing to pay a premium for it compared to other types of red meat.

#### *3.3.4.5 Preparation*

In 2005, Radder and Le Roux stated that South Africans lack experience and knowledge to prepare venison and that poor preparation could influence the taste of venison negatively, with 55% of their respondents not knowing how to prepare venison. Similarly, Steiner *et al.* (2006) found the lack of preparation experience of elk among Canadians, was regarded as the main reason hindering its consumption. In the United States, unfamiliarity with the preparation of venison, regarded as exotic meat, was considered a universal problem, leading to low sales (Radder, 2003). Consumers' uncertainty regarding preparation of kangaroo meat was found to discourage consumers and limit its consumption (Ampt & Owen, 2008). Resureccion (2003) believe that the changing lifestyles of consumers led to an increasing demand in food products, including meat, that are convenient to prepare, requiring less planning and preparation time. Consequently, preparation was considered an important attribute to study.

#### *3.3.4.6 Promotion*

Promotion of a product can play a major role in its consumption, since mere exposure to a product is regarded as the simplest way to increase consumer preference for the product (Tom, Nelson, Srzentic & King, 2007). According to South African restaurant managers and chefs' opinions, unfamiliarity with the product and a lack of promotion were considered the reason for a lack of interest in venison (Radder, 2002). Similarly, Steiner *et al.* (2006) indicated the lack of promotion of elk to be an important reason limiting its purchase among Canadians. It was considered necessary to determine whether producers of game meat are effectively promoting game meat to consumers and what attitudes are held by consumers regarding these promotional efforts.

#### *3.3.4.7 Food Safety*

Food safety has become an important consideration for consumers worldwide. The BSE crisis in the United Kingdom caused consumers to reconsider meat safety seriously and to insist on improved safety control measures, traceability and more information on meat production (Verbeke *et al.*, 2010). Since production standards differ between countries, the origin and reliable traceability are considered important aspects of food safety by consumers (Radder & Le Roux, 2005). In venison products, such as elk (Steiner *et al.*,

2006), consumers indicated that traceability is an important consideration when they purchase elk meat due to safety concerns. Consumers are concerned about zoonotic diseases which could be transmitted to humans through the use of wild animals and concerns regarding potential diseases were considered the fourth most important reason for Canadians not to purchase elk (Bekker *et al.*, 2011; Steiner *et al.*, 2006). The consumption of bison meat also has been negatively affected by this perceived risk among consumers (Nganje *et al.*, 2005). South African respondents, however, showed confidence in local red meat producers and considered red meat from shops to be safe for human consumption (Radder & Le Roux, 2005). Unfortunately, regarding game meat, it has been found in the past that the varying quality of game meat products sold in South Africa by different producers has created an expectation among consumers that game meat is of poor quality (Hoffman *et al.*, 2004). Consumers increasingly seem to prefer meat that is organic (free from growth hormones, antibiotics, and pesticides) and were in some cases willing to pay a premium for those attributes (Ampt & Owen, 2008, Steiner *et al.*, 2006; Radder & Le Roux, 2005). Consumers also indicated a preference for fresh meat, rather than frozen meat, since it is easier to judge the quality visibly on fresh meat (Steiner *et al.*, 2006). Since food safety has become such an important issue in meat products, it was considered an important aspect to include in research on game meat.

#### *3.3.4.8 Animal Welfare*

In 2009, Radder and Grunert established that sensory characteristics, convenience and price may influence consumers' choice of wildlife meat, but they could not determine the role of animal welfare in consumer choice. Verbeke *et al.* (2010) found that high levels of animal welfare were considered a good indicator of meat safety and high quality by consumers. Internationally and locally, a trend is visible among consumers indicating a preference for meat from animals that were treated humanely throughout the entire production process and requiring some reliable certification for it (Steiner *et al.*, 2006; Radder & Le Roux, 2005), making it an important attribute to consider.

#### *3.3.4.9 Ethical Production Methods*

Consumers are increasingly concerned with environmental and ethical concerns regarding meat production and are placing increased pressure on producers to provide meat in a sustainable manner while adhering to socially acceptable environmental practices (Verbeke *et al.*, 2010). Limited research is available on the issue of consumer attitudes and preferences relating to the harvesting of animals from wild or managed

populations of indigenous wildlife. However, ethical considerations applicable to meat derived from indigenous wildlife has been explored extensively in the utilisation of kangaroo meat in Australia and provided valuable insights to consider during this study. In the case of kangaroo meat, consumers found the source of meat to be important. Kangaroos are mostly harvested from wild populations; however, more than 70% of consumers believed that the meat originated from well managed farms, or extensive free-range stations (Ampt & Owen, 2008). Consumers displayed serious concern regarding sustainability claims and species conservation upon discovering that kangaroos are wild harvested, rather than specifically bred for meat (Ampt & Owen, 2008). However, kangaroos have long been considered an agricultural pest in Australia and farmers in the past often tried to overcome this by destroying habitat which is favoured by kangaroos to reduce their numbers (Ampt & Baumber, 2006). Better management options had to be found to prevent habitat destruction and reduce agricultural losses while still conserving species in an ecologically, economical and socially acceptable manner (Ampt & Baumber, 2006). Australia opted for sustainable use of kangaroos to create incentive for their and their habitats' conservation, creating value for kangaroos through meat harvesting, transforming the perception of kangaroos from a being a liability to an asset (Ampt & Baumber, 2006). The knowledge that kangaroos were a feral and agricultural problem and that harvesting them for meat formed part of a sustainable environmental management plan created a more positive attitude among consumers regarding the ethical use of kangaroo meat (Ampt & Owen, 2008). Therefore, it could be concluded that although consumers seem to prefer natural, organically produced meat from free-ranging animals, they are concerned about harvesting wildlife from wild populations and require some assurance that it is done sustainably, or preferably, that meat is derived from animals kept in well managed extensive systems and specifically bred for meat production. Other ethical considerations that surfaced from research on consumers and kangaroo meat is the fact some consumers felt that it is not ethical to consume meat from wildlife that forms part of their natural heritage, while others felt that it is a unique and valuable resource that should be utilised and still others felt that as long as animals were harvested responsibly and humanely, it was ethical to utilise their meat (Ampt & Owen, 2008). It was clear though, that retailers were not willing to sell kangaroo meat if producers were not completely transparent regarding the production processes and if it was not conducted in a manner which meets the ethical requirements of consumers (Ampt & Owen, 2008). Based on this information, it became important to explore South African respondents' attitudes toward ethical considerations of game meat production. While it is important for producers to be transparent regarding production methods, it is

equally important to understand what respondents deem to be socially acceptable and ethical to ensure that those requirements are met.

### **3.4 CONCLUSION**

Game meat could potentially contribute to global and local food security as a healthy source of protein. However, misconceptions, as well as challenges to both the export and local markets have caused it to remain an underdeveloped product. The South African wildlife industry is searching for solutions to overcome practical challenges, such as disease and regulations, to game meat production. However, it has been identified that a proper marketing strategy must be developed in order to promote the use of the product. The industry needs to understand consumer decision-making with regard to game meat. Since attitudes play a crucial role in consumer decisions, it becomes important to understand South African consumers' attitudes toward game meat if it is to be marketed effectively. The Fishbein's attitude-toward-the-object model allows researchers to gain a deeper understanding of consumer attitudes toward a product and its different attributes, making it the ideal model for this research to explore the different attributes of game meat. The research methodology will be described in more detail in the following chapter.

## **CHAPTER 4**

### **RESEARCH METHODOLOGY**

*This chapter describes the methodology used for the study. It includes the paradigm applied in this study, the research design, sampling techniques utilised, the questionnaire design and data analysis methods.*

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#### **4.1 INTRODUCTION**

The previous chapter presented a literature review on factors influencing the game meat sector as well as the importance and application of attitudes within consumer decision-making and how it pertains to this study. The importance of the attributes of game meat that were included in this research were also described. In this chapter, the paradigm which underpins this study and the research design are discussed. The geographic location of the study is identified; the respondent profile and the sampling strategies used are described. Methods to measure attitudes are identified and the questionnaire design is explained. Thereafter, the operationalisation of the study and the data analysis method is presented.

#### **4.2 RESEARCH PARADIGM**

The paradigm, or research approach, is used as a framework to approach a research problem and serves as a guide during the inquiry process (Shannon-Baker, 2015). A quantitative approach was used to explore the attitudes of South African respondents toward game meat. The quantitative research approach, or paradigm, utilises data in a numerical format, providing a structured approach to gain results that are considered to be objective (Clow & James, 2014). It seeks to explain patterns of behaviour, describe trends, or compare groups by quantifying results (Egan, 2015; Maree, 2012) and often investigates constructs such as attitudes (Remler & Van Ryzin, 2011). A quantitative approach requires that variables are measured to determine how often a variable is present (Wimmer & Dominick, 2014). These qualities make it the desirable approach to utilise for this study, since the study aimed to compare the trends in respondent attitudes between consumers and non-consumers of game meat.

Within the quantitative paradigm, specific research techniques are applied in order to obtain quantifiable data. Techniques used emphasise measuring something (Egan, 2015). The measurement of attitudes - as required in this study - is typically conducted through the use of scales, which are considered a quantitative research method (Egan, 2015).

Furthermore, quantitative research techniques often make use of static questions that are asked to all respondents in the same manner in a self-administered survey (Wimmer & Dominick, 2014; Malhotra, 2012) and are applied as such in this study through measuring respondent attitudes on semantic differential and Likert scales with predefined response choices (Schiffman & Wisenblit, 2015). The application of scales in measuring the attitudes of respondents in this study is described in more detail in Section 4.10.

#### **4.3 RESEARCH DESIGN**

Exploratory research is defined as: “A type of research design that has as its primary objective the provision of insights into and comprehension of the problem situation confronting the researcher” (Malhotra, 2012). Exploratory research is especially valuable when researchers are faced with a problem that is not fully understood and is conducted to gain a greater understanding of the concept (McDaniel & Gates; 2013, Malhotra, 2012). At this stage, the researcher is still attempting to be familiarised with the exact nature of the problem (Churchill, Brown & Suter, 2010). The objective of an exploratory study is the discovery of ideas and insights regarding the research problem when very little or no data is available (Malhotra, 2012; Churchill *et al.*, 2010). Consequently, it is most useful in studies where there are no previous research activities conducted or where very limited research findings are available. Exploratory research is conducted on a non-representative sample and allows for the use of a non-probability sample; therefore, the findings should be regarded as tentative and can be used as building blocks for further research (Malhotra, 2012). Since previous research on the attitudes of South African consumers concerning game meat is limited, it was necessary to design an exploratory study. The aim of this study was to provide insight and an understanding regarding the attitudes of South African respondents toward game meat which makes the application of an exploratory approach useful.

#### **4.4 GEOGRAPHIC LOCATION OF STUDY**

The study was conducted in South Africa and limited to the geographic boundaries of the Republic of South Africa. The aim of the study was to explore respondent attitudes as it pertains to the local South African market for game meat. Therefore, the inclusion of a wider geographic area would include responses which are not considered relevant to the aim of the research and which could potentially provide an inaccurate representation of South African respondents’ attitudes toward game meat by including results from outside the target area.

#### **4.5 RESPONDENTS**

Since the objectives of the study were based on finding the differences in attitudes between consumers and non-consumers of game meat, two groups of respondents were required to determine consumer attitudes toward game meat. By finding the differences in attitudes between these two groups, attitudes toward game meat that potentially contribute to its consumption, as well as attitudes which potentially limit its consumption could be identified.

The first group of respondents were game meat *consumers* and the second group were *non-consumers* of game meat. Game meat *consumers* were defined as those respondents who chose to consume game meat. *Non-consumers* of game meat were defined as those respondents who chose not to consume game meat. Since previous literature already provided potential reasons why individuals chose not to consume game meat (Section 3.2.3) and the study desired flexibility to explore these concepts further, the study did not provide fixed criteria to establish a definition for *non-consumers*. Instead, respondents were self-identified as *consumers* or *non-consumers* based on their own preferences to consume or not to consume game meat. Individuals in the *non-consumer* group may, or may not, have had any experience in the past with game meat to base their responses on, but as mentioned in Section 3.3.2, attitudes are based on an individual's beliefs and are, therefore, subjective. In the case of non-consumer respondents without any experience of game meat, their responses may be characteristic of what they believe or think the product might be characteristic of, which may be the reason why they are abstaining from consuming game meat. Their non-use may not be because of the experience, but because of the conjured assumptions of what the product means to them. These beliefs may also be the result of hearsay and exaggeration, which has resulted in their non-consumption of the product. It is important to also include these respondents as non-users, although they might not be specifically identified as a particular category of consumers in this study. These respondents might be intertwined in the non-consumer group of respondents. For statistical purposes, it was also not feasible to only include non-consumers who have eaten game meat before as it might have resulted in an even smaller sample on non-consumer respondents. Therefore, the choice was made to define a non-consumer as a respondent who is currently not consuming game meat.

These two respondent categories were chosen with the purpose to determine the attitudinal differences and similarities between the two respondent groups. By comparing the key differences in the responses of the two groups, it would be possible to identify

which attitudes toward game meat prevent its consumption in the *non-consumer* category and which attitudes encourage its consumption in the *consumer* category.

Respondents had to reside within the geographical boundaries of the Republic of South Africa, had to be over the age of eighteen years, had to be food shoppers in general who were making their own food choices in order to ascertain that their own attitudes had an influence on their decisions and had to be current consumers of red meat in order to participate in the research for both the consumer and non-consumer category. It is important to note that the study did not include vegetarians. If respondents were vegetarian and did not consume red meat in general, they would fall in the non-consumer category. The purpose of dividing respondents into consumers and non-consumers of game meat was to explore why individuals – who would otherwise choose red meat – did not consider game meat as an option. This would not be possible if a portion of the non-consumer group would choose not to consume any form of red meat, therefore responses from vegetarians were excluded from the study. Therefore, it is expected that all respondents do eat red meat and that non-consumer respondents would potentially consume other red meat, but not game meat.

Respondents for the *non-consumer* group had to meet the above-mentioned inclusion criteria and preferred not to consume game meat - whether it was because of personal choice based on experience, or no experience of consuming game meat. Furthermore, non-consumer respondents did not indicate whether their choice not to consume game meat and their attitudes toward the product were based on past experience of game meat. Therefore, their attitudes are considered subjective, although it is still considered to be their valid attitudes toward game meat, since these subjective attitudes still have a potential influence on their decision-making. Individuals can form attitudes toward objects without actual experience of that object (McDaniel & Gates, 2013) and consequently non-consumer respondents were requested to complete all questions in the survey. If these attitudes were based on actual past experiences, it could be more strongly held and difficult to change than when it is not based on experience (McDaniel & Gates, 2013). If the attitudes of non-consumer respondents were not based on experience, it could possibly still change through actual exposure to game meat.

Apart from the general inclusion criteria which had to be met, respondents in the *consumer* group had to be persons who choose to consume game meat and are currently consuming game meat. No other demographic characteristics were used as limiting factors to be a respondent in this study.

If one of these inclusion criteria was not met, the individual was excluded as a respondent. People who live outside the country, such as tourists who may also be consumers of game meat when they are visiting South Africa, were not considered as respondents for this study. Respondents who did not meet the inclusion criteria for the study were excluded based on their answers to their questions in the demographic section of the survey. The settings for the online survey on Survey Monkey Platinum were designed to exclude respondents who did not meet the inclusion criteria by terminating their session before they could complete the rest of the survey. This was done in order to respect individuals' time so that they did not complete the survey if their responses were to be discarded later.

#### **4.6 SAMPLING STRATEGY**

Two types of sampling strategies that are used in research are probability and non-probability sampling strategies. Probability sampling strategies select respondents in such a way that every member of the population potentially has a known chance to be selected (Schiffman & Wisenblit, 2015). Non-probability samples select respondents from the population group in a non-random fashion based on the convenience, purpose or quota of the researcher (Schiffman & Wisenblit, 2015).

The following four considerations, as described by Wimmer and Dominick (2014), assist the researcher to decide whether to use a probability or a non-probability sample:

- *The aim of the study.* If a study is not designed to generalise results to the population, but rather to collect exploratory data, a non-probability sample will be appropriate.
- *Cost versus value.* The costs of probability samples are usually high and the researcher needs to select samples that produce the greatest value for the investment. If probability samples are too costly for the type and quality of information collected or the purpose of the study, a non-probability sample can be a good alternative.
- *Time constraints.* Since probability sampling is time consuming, a non-probability sample may meet the need more effectively by gathering data faster when time is of the essence.
- *Amount of acceptable error.* In preliminary or exploratory studies, where error control is not a major concern, non-probability samples are adequate.

Based on the above-mentioned information, a non-probability sampling strategy was used for this study. It was found to be appropriate, since it was an exploratory study which did not aim to generalise results to the entire population, but rather to gather insight from any suitable source or respondent who met the inclusion criteria of the study. The budget of the research project was limited and the costs of obtaining a probability sample group could not be justified for exploratory purposes. It was also not possible to pre-empt the best way possible to find large numbers of respondents who met the inclusion criteria and whether a large enough sample would be possible. Therefore, a non-probability sampling strategy was considered feasible to allow for as many respondents who met the inclusion criteria to be sought as possible.

## **4.7 SAMPLING TECHNIQUES APPLIED**

The non-probability sampling strategies that were applied in this study included a combination of convenience, purposive and snowball sampling strategies.

### **4.7.1 Convenience Sampling**

When using convenience sampling methods, the researcher recruits respondents who are accessible in the most convenient and practical way (Zikmund & Babin, 2013; Remler & Van Ryzin, 2011). Convenience sampling allows the researcher to find respondents quickly and in an inexpensive manner (Maree, 2012). It is particularly useful in exploratory studies, where the aim is to gain an overview of a concept in an economic way (Maree, 2012). Convenience sampling also includes self-selection by the respondent when a respondent clicks on a link to an online survey (Clow & James, 2014). Although convenience sampling is suitable for exploratory research, it cannot be assumed to be representative of the target population and results cannot necessarily be extrapolated to the entire population (Clow & James, 2014). However, convenience sampling allows the researcher to include any respondent that the researcher can locate that meets the inclusion criteria of the study (Malhotra, 2012). If the researcher cannot reach a specific respondent that meets the inclusion criteria due to practical reasons, the specific respondent can be omitted without upsetting the entire sampling strategy (Malhotra, 2012). The researcher can, therefore, rely on respondents who are practically accessible and willing to participate (Picardi & Masick, 2014). Therefore, the study made use of convenience sampling in order to ensure that respondents who met the inclusion criteria could take part in the study irrespective of where in South Africa they were based or how they got to know about the study. The recruitment strategy through social media and e-

mail forwarding allowed the researcher to make contact with potential respondents across South Africa in an inexpensive and convenient manner and directed them easily to the online survey. Further detail on the execution of the respondent recruitment process is described in Section 4.8.

#### **4.7.2 Purposive Sampling**

Purposive sampling falls under the non-probability sampling strategy in which the population elements are selected based on the researcher's judgement, or purpose (Malhotra, 2012). According to the researcher, the selection criteria of the sample of elements are representative of the population in interest by possessing the needed characteristics, however, it might not be representative of the larger population (Clow & James, 2014; McDaniel & Gates, 2013; Malhotra, 2012). Respondents are selected because of their relevance to the research, allowing the researcher to reach respondents with specific, predetermined traits as required by the study (Picardi & Masick, 2014). Respondents who do not meet the required criteria are eliminated as respondents (Wimmer & Dominick, 2014). The study had specific inclusion criteria for respondents in both groups which required a purposeful sampling strategy to be implemented. The purposeful sampling strategy was used to recruit the first sample group of respondents who met the specific inclusion criteria of the study. Personal and professional contacts of the researcher, as well as the media relations officers of organisations, magazines, websites and social media groups were requested to complete the survey if they met the inclusion criteria, creating the initial purposive sample. They were also requested to share the survey link with their contacts via social media, however, some respondents preferred to spread it through e-mail forwarding. This allowed the researcher to initiate the next sampling strategy – the snowball sampling strategy - in order to recruit more respondents for the study.

#### **4.7.3 Snowball Sampling**

A snowball sample is a type of purposeful sample (Churchill *et al.*, 2010). Snowball sampling allows the researcher to draw respondents from a target population with special characteristics (McDaniel & Gates, 2013; Zikmund & Babin, 2013; Malhotra, 2012). Finding members with special characteristics may amount to great costs and the researcher is obligated to use a technique such as snowball sampling (McDaniel & Gates, 2013). It might also be impossible to locate groups with special characteristics without referrals (Malhotra, 2012). In snowball sampling, a researcher locates an initial group of

respondents with the desired characteristics, through purposive sampling, and then the initial respondents are asked to refer the researcher to other possible individuals who also belong to the target population of interest (McDaniel & Gates, 2013; Malhotra, 2012; Churchill *et al.*, 2010). As one referral is obtained from another, the sample “snowballs” as more and more possible respondents are identified (Malhotra, 2012; Churchill *et al.*, 2010). The main disadvantage of snowball sampling is the possibility that findings may be biased. According to Zikmund and Babin (2013) and McDaniel and Gates (2013), an individual suggested by someone in the initial sample has a higher probability of being similar to the first person, the results cannot be accepted as representative of the entire target population and results can be biased. The major advantage of snowball sampling is that it substantially increases the likelihood of locating the desired target population (Malhotra, 2012). It is, however, accepted as an appropriate sample of people who meet specific criteria that don't occur frequently, since it may be the only way to develop a sample (Churchill *et al.*, 2010). In this study, once the initial group of potential respondents were approached through convenient and purposive sampling, they were requested to share the link to the online survey with their acquaintances through social media, some respondents and organisations also chose to spread it through e-mail forwarding. This allowed the recruitment of the sample population to snowball and consequently to reach a larger group of potential respondents.

The criteria for each of the respondent categories were critical for the successful completion of the research. Since the inclusion criteria for respondents were very specific within a large geographical area and economic resources for reaching respondents were limited, a non-probability sampling strategy, which included a combination of convenience, purposeful and snowball sampling techniques, were found to be appropriate and effective sampling strategies with which to recruit respondents for the study. Reaching respondents who met all the criteria for both respondent groups proved challenging, especially recruiting respondents for the non-consumer group.

#### **4.7.4 Sampling Size**

The minimum sample size of 510 respondents was set (255 respondents per respondent category), based on what the researcher could manage while still allowing for a large enough sample for the application of statistical analysis (Muller, 2015). The number of questions in the survey was multiplied with the number of response levels per rating scale (Muller, 2015) to arrive at the number of respondents required for the study. The survey consisted of 102 questions - excluding demographic questions - and five-point semantic

differential and five-point Likert scales were used throughout the survey. This provided the minimum sample size that was set at 510 respondents, and divided between the two respondent groups, a minimum sample size of 255 respondents per category were set. No maximum limit was set on the responses; the final sample size was limited by the time frame of the research. The research ultimately had 1406 respondents, of which 1096 respondents were *consumers* and 310 were *non-consumers* of game meat.

#### **4.8 RESPONDENT RECRUITMENT PROCESS**

Recruiting respondents for the study was done through the use of social media and e-mail forwarding. Social media refers to Internet-based applications that allow people to interact through the creation and sharing of user-generated content (Dahl, 2015; Egan, 2015). More specifically, Facebook is a social networking site which allows the construction of public or semi-public profiles for the purpose of sharing content (Dahl, 2015). This can be done between individuals, but also between organizations, community or interest groups and individuals. Online media provides a platform for sharing information among a large audience in an inexpensive and interactive manner (Egan, 2015). The Oxford Internet Institute (2014) found social media a useful tool to conduct research and specifically to measure social trends. It can be utilised as a research tool to recruit and to communicate with potential respondents, thereby saving time and money in comparison to traditional recruitment methods (Royal Children's Hospital, 2015; Finzel, 2013). Social media was found to be a convenient recruitment tool since the potential respondent is already engaged online, allowing the researcher to provide them with a link directing them with minimum effort to the online survey (Finzel, 2013). It is important to keep in mind that results gained through the recruitment of respondents through social media will not necessarily be representative of the population at large (Oxford Internet Institute, 2014). However, the use of social media to recruit respondents is particularly useful to this study since social media allows the researcher to reach niche groups with specific traits which are difficult to reach in significant numbers with traditional recruiting approaches (Finzel, 2013). The use of social media, such as Facebook, to spread knowledge of the research while requesting participation allowed the recruitment of respondents over a larger geographic area, in a shorter time frame, with minimal costs than would have been possible with traditional approaches such as mall intercept surveys.

The researcher created a page for the research on Facebook requesting respondents who met the inclusion criteria to participate as respondents. The link to the online survey on the Survey Monkey Platinum online survey platform was posted on the Facebook page

and respondents were requested to share it with their friends and family. The researcher shared the page with personal and professional contacts, with the request to respond if they met the criteria and were willing to be respondents for the research. They were also requested to share the link with their contacts in order to create a snowball sample. While 3089 persons viewed posts on the Facebook page, 106 persons responded directly to the page in some way, either by sharing it or following the link to the online survey. The manner in which the posts were shared to create a snowball sample cannot be traced further than the initial post on the research page itself, but it seemed quite effective based on the response rates to the survey.

In order to make the efforts on Facebook more effective, the assistance of various South African establishments, like magazines which have regular food inserts and interactive Facebook pages, businesses and organisations with an interest in game or other red meat and other stakeholders were requested. These establishments were requested to post a link to the online survey on their websites or Facebook pages so that readers or viewers who were interested could participate in the survey. Respondents were also requested to share the survey link further, creating a continuous snowball sample. In some instances, some respondents and organisations chose to spread the link to the Facebook page and online survey through e-mail forwarding with their acquaintances. The amount of respondents reached through e-mail forwarding, however, could not be determined, since data on e-mail forwarding cannot be obtained as were possible from the Facebook page. The sampling method proved effective in reaching the necessary respondents.

An important consideration during the use of social interactive networks, such as Facebook, is the need to protect the identity, privacy and confidentiality of all respondents and otherwise interested parties (Royal Children's Hospital, 2015). The research made use of a community interest page on Facebook. This type of page allows the researcher to publicly publish any information relating to the research, and in particular to share the request for participation and the link to the online survey. Any person can access this information, and even like, share, or respond to the link on public posts. However, the administrator of the research Facebook page cannot gain access to individuals' personal profiles or their information based on their interaction with the research page. Neither did the researcher make any attempt to access personal profiles or information of individuals. When a potential respondent followed the link to the online survey, the settings on the online survey platform was set in such a manner that respondents could not be traced

back to their personal Facebook profiles or computers, thus further protecting their anonymity, even from the researcher.

#### **4.9 DATA GATHERING METHOD**

The instrument used to gather data for this research was a questionnaire, distributed as an online survey through Survey Monkey Platinum, an online survey platform. Survey Monkey is survey software which allows a researcher to gather data online in a user-friendly manner (Survey Monkey, 2016). This research made use of the Survey Monkey Platinum Plan which allows unlimited questions and responses, includes data analysis options and allows the researcher to extract data in various convenient formats (Survey Monkey, 2016). The software makes it easy to create online surveys. Due to its web-based nature, respondents in a wide geographical area can complete the survey in an affordable manner. Survey Monkey online surveys have become a popular choice among researchers worldwide as an effective, user-friendly web-based data gathering method to conduct consumer research in a variety of disciplines (Bornman, Bryen, Moolman, Morris, 2016; McCall & McMahon, 2016; Wilson, Withall, Coveney, Meyer, Henderson, McCullum, Webb & Ward, 2016; Engelbrecht, Herbst & Bruwer, 2014; Farsalinos, Romagna, Tsiapras, Kyrzopoulos & Voudris, 2014).

Surveys can be used when the researcher wants to sample a large number of people to ask them a series of questions, as this technique is easy to administer, reliable, and simple (Malhotra, 2012). To increase its convenience, surveys can be conducted online. Web-based data gathering methods, specifically online surveys have become one of the leading research methods due to its convenience (Clow & James, 2014). Surveys are placed on the website of an online survey platform and provide respondents with a link to the survey to complete it (Clow & James. 2014). Online server platforms present the survey to respondents; store their responses in its database and present results to the researcher on spreadsheets (Clow & James, 2014; Malhotra, 2012; Remler & Van Ryzin, 2011). Side-by-side comparisons of online surveys and mail surveys found that online research delivered the same quality of data as mail surveys, but in one eighth of the time and at one eighth of the cost (McDaniel & Gates, 2013). It is more flexible, offers greater interactivity and has greater visual appeal (Malhotra, 2012). It is, therefore, useful to distribute questionnaires via the Internet instead of using more traditional methods of data gathering such as mailed or e-mailed questionnaires. Online data gathering methods have no geographic limitations allowing access to a greater number of respondents via computer, tablet, or smartphone to be completed at a time convenient to respondents

(Ruel, Wagner & Gillespie, 2016; Wimmer & Dominick, 2014). An online survey is fairly simple to complete if the respondent has basic computer skills. To obtain responses from the online survey, potential respondents are directed to the online survey through advertisements, targeted e-mail invitations, or other appropriate methods (Schiffman & Wisenblit, 2015). In this study recruitment was conducted through social media and e-mail forwarding, as mentioned in the previous section.

One drawback of online surveys is the fact that Internet users may not be representative of the entire population. Since only people with access to the Internet can be included in the sample, heavy users of this media have a higher probability of being included in the sample while there is low sample control due to self-selection of respondents (McDaniel & Gates, 2013; Malhotra, 2012). Although the pool of respondents available in cyberspace does not correctly represent the general population, the biases associated with online surveys are becoming less pronounced over time as the percentage of the population connected to the Internet increases (McDaniel & Gates, 2013).

In this study, conducting the online survey was relatively simple once the questionnaire was developed and uploaded onto the Internet. Survey Monkey Platinum, allowed respondents to simply click on the link and complete the survey. The main challenge was to improve survey response rates, but the sampling strategies used allowed many potential respondents to be reached. Conducting an online survey drastically reduced the cost of the research, which is an important consideration for an exploratory study. It also allowed the study to reach respondents from a greater geographical area than would have been possible with for example, mall intercept surveys. Many respondents could be reached at once by referring them to the online link of the survey, thus making it more time-effective for the researcher than personally-conducted surveys through fieldworkers.

#### **4.10 MEASURING ATTITUDES**

The aim of the research was to measure attitudes toward game meat. Interval scales are often used to measure attitudes, where the distance between numbers on the scale is considered to be equal (Clow & James, 2014; Aaker *et al.*, 2013; Maree, 2012). This allows researchers to determine the level of agreement or disagreement with a statement instead of just noticing a general positive or negative response (Clow & James, 2014; Maree, 2012). Both Likert scales and semantic differential scales are interval scales and are often used to measure attitudes (Malhotra, 2015; Clow & James, 2014). When using a Likert scale, the respondent specifies a level of agreement or disagreement with statements expressing either a favourable or unfavourable attitude toward the object

(Schiffman & Wisenblit, 2015; Aaker *et al.*, 2013; McDaniel & Gates, 2013). The scale contains an equal number of agreement and disagreement choices on either side of a neutral choice (Schiffman & Wisenblit, 2015). Respondents are requested to indicate their degree of agreement with the statement by checking the response category that best indicates how they regard the object (Aaker *et al.*, 2013; Malhotra, 2012). The Likert scale is easy to prepare by the researcher and easy for the respondent to understand and answer (Schiffman & Wisenblit, 2015; Malhotra, 2012). On the other hand, semantic differential scales examine attitudes concerning the strengths and weaknesses of an object. It typically consists of a series of bipolar adjectives anchored at the ends of an odd-numbered continuum (Schiffman & Wisenblit, 2015; McDaniel & Gates, 2013). Respondents are asked to evaluate each attribute by checking the point on the continuum that best reflects their feelings or beliefs (Schiffman & Wisenblit, 2015; Aaker *et al.*, 2013). The semantic differential scale is a relatively easily constructed and administered means of examining the strengths and weaknesses of a product in comparison to the respondents' perception of the ideal product (Schiffman & Wisenblit, 2015; McDaniel & Gates, 2013). It has been proven to be sufficiently reliable and valid for decision making, predictions in marketing and behavioural sciences (McDaniel & Gates, 2013). Five-point semantic differential scales were used to measure attitudes toward the sensory characteristics, namely flavour, texture, appearance and aroma, of game meat. Five-point Likert scales were used to test attitude statements on sensory characteristics, health benefits, availability, price, promotion, food safety, animal welfare and ethics pertaining to game meat.

#### **4.11 QUESTIONNAIRE DESIGN**

The questionnaire used for the online survey consisted of nine sections with questions measuring respondents' attitudes toward the different attributes of game meat and a section with basic demographic information to enable the researcher to describe the respondent profile for the study. Each section dealt with a different attribute. As mentioned in the previous section, attitudes are measured on scales. Five-point semantic differential scales and five-point Likert scales were used in the questionnaire to measure attitudes. Most attitudes in the survey were determined with Likert scales. Respondents could specify a level of agreement or disagreement with statements by checking the response category that best indicated how they perceived the object. The same questionnaire was completed by both respondent groups in order to be able to compare results between the different groups. The full questionnaire is available in Appendix A.

In order to use the Fishbein's attitude-toward-the-object model, a questionnaire needs to find two types of information regarding each attribute to be explored in the study: Firstly, the strength of the belief that the object possesses the specific attribute and secondly, the evaluation of the importance of the attribute to the consumer (Holton & Edmondson, 2012; Yosini, 2011). The questionnaire was designed to provide this information for each product attribute, of which a more detailed explanation is provided in the results section of Chapter 5.

Section 1 dealt with sensory characteristics of game meat; specifically flavour, texture, appearance and aroma. Five-point semantic differential scales were used to determine how respondents view the physical attributes of game meat. The terms used in the scale were based on the results of previous perception studies relating to meat and game meat. A five-point Likert scale component was also added to the section to determine whether the way respondents described the sensory characteristics on the five-point semantic differential scale were considered to be positive or negative. In this instance, consumer, as well as non-consumer respondents who had consumed game meat in the past, could rely on recollection of actual experiences of consuming game meat were to complete this section. Non-consumer respondents who had never consumed game meat could express their opinions on what they thought the sensory characteristics of the meat would be according to their subjective beliefs.

Section 2 explored attitudes toward the health benefits of game meat. It made use of a five-point Likert scale that allowed respondents to indicate whether they agree or disagree with the statements provided. These questions determined whether respondents believed that the product possess certain health attributes. It was used to explore whether the fact that the product is healthy actually improved their positive attitude towards it.

Section 3 examined attitudes toward the availability of game meat. Questions attempted to determine when and where respondents believe game meat is available and whether game meat is believed to be available according to respondents' needs.

Section 4 explored respondents' attitudes toward the price of game meat using a five-point Likert scale. It tested whether respondents believed that game meat was affordable, expensive, a luxury, or cheap.

Section 5 dealt with attitudes concerning the preparation of game meat. It determined whether respondents believe that game meat was easy, time consuming, or convenient to prepare, or whether it required special skills to make it appetizing.

Section 6 explored attitudes toward reliable promotional sources of game meat and whether or not it was believed to be promoted sufficiently and to have a positive image.

Section 7 examined the attitudes toward the safety of game meat. A five-point Likert scale was used to test responses concerning safety, food quality, hygiene, production methods and traceability of game meat and to determine to what degree the respondent's attitude towards food safety contribute to their choice to consume game meat.

Section 8 explored to what degree respondents believe that the harvesting and production methods of game meat respects animal welfare.

Section 9 determined respondent attitudes toward the ethical aspects of game meat production, harvesting and utilisation.

The questionnaire was not adapted from another study. The important concepts to consider in a questionnaire on game meat, the correct terminology to use in survey questions, as well as sample questions on how to explore specific concepts were gathered from other studies and were utilised to construct questions regarding the following concepts of game meat:

- Sensory characteristics (Bekker *et al.*, 2011; Hutchison, Mulley, Wiklund & Flesch, 2010; Christos, George & Anastasios, 2009; Hoffman *et al.*, 2009a; Radder & Grunert, 2009; Ampt & Owen, 2008; Hoffman *et al.*, 2007b; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Radder & Le Roux, 2005; Radder, 2003)
- Health benefits (Bekker *et al.*, 2011; Koistinen, 2010; Hoffman *et al.*, 2009a; Radder & Grunert, 2009; Hoffman *et al.*, 2007a; Hoffman *et al.*, 2007b; Hoffman *et al.*, 2005; Radder & Le Roux, 2005; Krystallis, Arvanitoyannis & Kapirti, 2003; Radder, 2003)
- Availability (Bekker *et al.*, 2011; Brunton, 2009; Christos *et al.*, 2009; Feng, Jian, Weisong, Zetian & Xiaoshuan, 2009; Radder & Grunert, 2009; Ampt & Owen, 2008; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Radder & Le Roux, 2005; Radder, 2003)
- Price (Guina & Giraldi, 2012; Brunton, 2009; Christos *et al.*, 2009; Radder & Grunert, 2009; Ampt & Owen, 2008; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Human, 2005; Radder & Le Roux, 2005; Radder, 2003)
- Preparation (Brunton, 2009; Christos *et al.*, 2009; Radder & Grunert, 2009; Steiner *et al.*, 2006; Human, 2005; Hoffman *et al.*, 2004; Radder, 2003; Grunert, 2002)

- Promotion (Guina & Giraldi, 2012; Ampt & Owen, 2008; Steiner *et al.*, 2006; Arvanitoyannis & Krystallis, 2005; Hoffman *et al.*, 2005; Human, 2005; Radder & Le Roux, 2005; Hoffman *et al.*, 2004)
- Food safety (Bekker *et al.*, 2011; Koistinen, 2010; Brunton, 2009; Christos *et al.*, 2009; Feng *et al.*, 2009; Radder & Grunert, 2009; Hoffman & Wiklund, 2006; Steiner *et al.*, 2006; Arvanitoyannis & Krystallis, 2005; Human, 2005; Radder & Le Roux, 2005; Hoffman *et al.*, 2004; Radder, 2003)
- Animal welfare (Bekker *et al.*, 2011; Koistinen, 2010; Brunton, 2009; Christos *et al.*, 2009; Radder & Grunert, 2009; Hoffman & Wiklund, 2006; Steiner *et al.*, 2006; Hoffman *et al.*, 2005; Radder & Le Roux, 2005)
- Ethics (Bekker *et al.*, 2011; Koistinen, 2010; Christos *et al.*, 2009; Ampt & Owen, 2008; Hoffman & Wiklund, 2006; Hoffman *et al.*, 2005; Radder & Le Roux, 2005; Radder, 2003).

#### **4.11.1 Reliability**

In order to ensure reliability of the questionnaire, the measures, or questions, used to gather data were tested using Cronbach's alpha internal consistency reliability tests during the data analysis phase of the research based on the data gathered from all respondents. Questions dealing with the same attribute were tested as sets to check that they reliably measure the common construct (Maree, 2012). High Cronbach's alpha scores indicate reliable measures (Clow & James, 2014). Measures that are not considered to be reliable can be identified and removed from the data set (Clow & James, 2014). Scores close to one indicate high reliability; scores closer to zero indicate little or no reliability (Maree, 2012). A minimum reliability score of 0.7 was set for all measures to be included in the results. The internal consistency reliability of the measures used for the final results is discussed in more detail in Section 5.3.

#### **4.11.2 Validity**

The validity of the instrument relied on face validity and content validity to ensure that it actually measures what it was planned to measure (Maree, 2012). Face validity refers to whether the measure reasonably appears to measure what it is required to (Ruel *et al.*, 2016). The instrument was presented to the research supervisors, who are experts on consumer behaviour, for careful scrutinisation whether it appeared to measure the required constructs as set out in the objectives of the study before it was approved.

Content validity establish whether the measurement is comprehensive and relevant (Ruel et al., 2016). Content validity relies on a literature review, revision by experts, pre-testing the questionnaire on respondents who form part of the target population and, finally, scale reduction through data analysis (Clow & James, 2014). Before the questionnaire was developed, the researcher did an extensive literature research to ensure that each attribute of game meat is measured comprehensively and in a relevant manner. Although the questionnaire was not adapted from another study, questions from similar studies were used as samples to design each question. As mentioned above, it was then presented to the research supervisors for revision, whereafter; it was pre-tested on 8 respondents from the target population. Finally, during the data analysis phase, scales used for the final results were reduced to include only reliable measures through the use of Cronbach's Alpha internal consistency reliability tests as suggested by Clow and James (2014).

#### **4.12 OPERATIONALISATION OF STUDY**

All the questions in the survey dealt with the first and second objectives of the study. The survey, as used on Survey Monkey Platinum, is included in Appendix A. The third objective could only be dealt with during the data analysis stage of the study. The questionnaire for the survey was divided into nine sections with different questions grouped according to the attributes of game meat. The operationalisation of the study allows the researcher to make sure that each objective is aligned to certain questions in the survey. The operationalisation of the study as related to the research objectives are provided in Table 4.1.

Table 4.1: Operationalisation of Study

Operationalisation of Study - Research Objectives			
Research Objective	Method used to attain objective	Sections in survey dealing with objective	Specific survey questions used to attain objective
<b>Objective 1</b> To explore the attitudes of South African respondents toward the following attributes relating to game meat: <ul style="list-style-type: none"> <li>• sensory characteristics</li> <li>• health benefits</li> <li>• availability</li> <li>• price</li> <li>• preparation</li> <li>• promotion</li> <li>• safety of game meat for human consumption</li> <li>• animal welfare</li> <li>• game meat production ethics</li> </ul>	The survey was designed to measure respondent attitudes toward the attributes of game meat with multiple questions for each attribute.	Sensory Characteristics Health Benefits Availability Price Preparation Promotion Safety of Game Meat Animal Welfare Game Meat Production Ethics	Questions 1-23 Questions 24-31 Questions 33-38; 40-43 Questions 44-51 Questions 52-56; 58-59 Questions 61; 66-67 Questions 68-87 Questions 88-89; 91; 93-95 Questions 96-112
<b>Objective 2</b> To find the subjective differences between the attitudes of <i>consumer</i> and <i>non-consumer</i> respondents toward the above-mentioned attributes relating to game meat	The same survey was used for both game meat <i>consumer</i> and <i>non-consumer</i> respondents and both respondent groups completed all questions,	Sensory Characteristics Health Benefits Availability Price	Questions 1-23 Questions 24-31 Questions 33-38; 40-43 Questions 44-51

	providing their subjective responses. This allowed for the comparison between responses from the two respondent groups during data analysis.	Preparation	Questions 52-56; 58-59
		Promotion	Questions 61; 66-67
		Safety of Game Meat	Questions 68-87
		Animal Welfare	Questions 88-89; 91; 93-95
		Game Meat Production Ethics	Questions 96-112
<b>Objective 3</b>  To explore which attributes are important in the consumption of game meat, based on the differences found between the responses of <i>consumer</i> and <i>non-consumer</i> respondents toward the attributes of game meat, using Fishbein's attitude-toward-the-object model	Once the data was analysed and entered into Fishbein's attitude-toward-the-object model, the different factors could be explored to establish whether respondents of both groups believed that game meat possessed each attribute and the importance thereof to the respondent.	Sensory Characteristics	<b>Belief</b> ~ Questions 11-19 <b>Importance</b> ~ Questions 20-23
		Health Benefits	<b>Belief</b> ~ Questions 24-27; 30 <b>Importance</b> ~ Questions 28-29; 31
		Availability	<b>Belief</b> ~ Questions 32-38; 40-41 <b>Importance</b> ~ Questions 42-43
		Price	<b>Belief</b> ~ Questions 44-48 <b>Importance</b> ~ Questions 49-51
		Safety of Game Meat	<b>Belief</b> ~ Questions 68-69; 71; 73-79 <b>Importance</b> ~ Questions 72; 80-87
		Animal Welfare	<b>Belief</b> ~ Questions 88-89 <b>Importance</b> ~ Questions 93-95
		Game Meat Production Ethics	<b>Belief</b> ~ Questions 97-104 <b>Importance</b> ~ Questions 96; 106-108; 110-112

#### **4.13 DATA ANALYSIS**

During data analysis, scale reliability testing was conducted through the use of Cronbach's Alpha coefficients (see Section 5.3 for more detail on the application of Cronbach's Alpha in this study). Any measurements considered unreliable (Cronbach  $\alpha < 0.7$ ) were removed from the final results in order to ensure internal consistency reliability, since the Cronbach  $\alpha$  coefficient regarded as acceptable throughout the research was set at 0.7 or greater (Zaiontz, 2013; Mazzocchi, 2008). Further details regarding the internal consistency on the measures used are presented for each objective in Section 5.3.

The composite frequency distributions for responses were calculated for the measures which were included in the results for the study, based on the Cronbach's Alpha scores. Composite frequency distribution allows the representation of several observations within a given interval in a combined manner that is simple to present (Investopedia, 2016; Malhotra, 2015). It is often used in statistical analysis where responses are indicated at mutually exclusive intervals (Investopedia, 2016), as used in interval scales such as semantic differential and Likert scales (Malhotra, 2015). Responses are split into several different categories and the frequency of responses for each category is displayed, often in a table or bar chart (Investopedia, 2016; Aaker *et al.*, 2013). Frequency distribution tables and graphs are often used to evaluate and present results in consumer research (McCarthy, Liu & Chen, 2016; Davis, Wojtanowski, Weiss, Foster, Karpyn & Glanz, 2016; Niraj & Sanjeev, 2015; Lima Filho, Watanabe, Oliveira & Oliveira e Silva, 2014; Niraj & Sanjeev, 2014; Sudbury-Riley, Hofmeister-Toth, Kohlbacher, 2014; Ismail, Masood & Tawab, 2012).

Data for all three research objectives were obtained from the same survey questions, but the presentation of the results differed according to each objective. For the first objective, composite frequency tables were calculated for all respondents to provide a general overview of how they evaluated each of the aspects of game meat. The second objective required the responses of the two groups to be split, in order to determine the differences in attitudes. Composite frequency tables were calculated and presented separately for *consumer* and *non-consumer* respondents. During the data analysis phase of the first two objectives, negative questions were reversed as necessary to observe overall trends. The measures used during data analysis of the first two objectives can be found in Table C.1, Appendix C.

In order to apply Fishbein's attitude-toward-the-object model, the questions for each attribute had to be divided between those measuring the *belief* that game meat possesses a specific attribute and those evaluating its *importance* to respondents (see Table C.2, Appendix C). Internal consistency reliability was retested for the smaller sets of measures. Internal consistency reliability tests for preparation and promotion did not attain Cronbach  $\alpha$  scores of 0.7 or more on the smaller subsets of data, therefore, these two attributes were excluded from the Fishbein's attitude-toward-the-object model. Responses were split into two groups again – *consumers'* versus *non-consumers'* responses - in order to compare results. Composite frequency tables were calculated separately for each component – *belief* and *importance* – of each attribute. Based on the composite frequency calculations for each component, the component means were calculated for each component - *belief* and *importance* - of each attribute. The means calculated for *belief* under each attribute were used directly in the model. However, the means calculated for *importance* of each attribute had to be converted to a symmetric bi-polar scale (see Table 4.2) in order to be included in the Fishbein's attitude-toward-the-object model algorithm. More detail on the manner in which results were applied within the Fishbein's attitude-toward-the-object model are provided in Section 5.6.

Table 4.2 Conversion of Importance Means from five-point Likert Scales to Bi-Polar Scales

Conversion of Importance Means from Likert Scales to Bi-Polar Scales					
Likert scale	1	2	3	4	5
Bi-polar scale	-2	-1	0	1	2

The results of the data analysis are presented in the next chapter in the form of composite frequency tables, providing the composite scores for all responses. Graphs are used to portray the overall trends for each attribute of game meat. Results for the Fishbein attitude-toward-the-attitude model are presented in a table, showing the differences between the responses of consumer and non-consumer respondents towards game meat.

#### **4.14 CONCLUSION**

The research was conducted within a quantitative paradigm. Its purpose was that of exploratory research. The research was done within the Republic of South Africa and made use of two groups of respondents, namely *consumers* of game meat and *non-consumers* of game meat. In order to reach respondents with the specific characteristics required, non-probability sampling methods, like convenience, purposive and snowball sampling were used. The research had 1406 respondents, of which 1096 were *consumers* and 310 *non-consumers* of game meat. Respondents were recruited through the use of social media, such as Facebook, and e-mail forwarding to complete the online survey through Survey Monkey Platinum. The questionnaire used for the online survey was designed specifically for this study. The data analysis was adapted specifically for each research objective. The results of the research are presented in the next chapter.

## **CHAPTER 5**

### **RESULTS AND DISCUSSION**

*This chapter presents the results of the research, as set out in the aim and objectives of the study, through means of tables and figures followed by a brief discussion of the results.*

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#### **5.1 INTRODUCTION**

The aim of this study was to explore South African respondents' attitudes toward game meat. In order to present results from this study, this chapter will include the demographic information of the respondents, as well as the Cronbach's Alpha scores which were used to ensure the internal reliability of the survey. The results of the first two objectives will follow. Thereafter, the results for the third objective that deals with the Fishbein's attitude-toward-the-object model will be presented. Overall trends in data are represented through graphs, while results for specific statements on the product attributes related to the first two objectives are presented in composite frequency tables. The results are discussed and findings from other relevant studies are presented to indicate an agreement or difference between current literature and the results of this study. Firstly, the demographic data of this study will be presented.

#### **5.2 RESPONDENT DEMOGRAPHICS**

The first section in the survey questionnaire required respondents to provide demographic information. This section was followed by the main survey questions which dealt with the attributes of game meat (See Appendix A). The demographic section included questions which required information on whether respondents are consumers of game meat or not, respondents' gender, age, population group, confirmation of the country and province of residence, average monthly household income, their level of influence and involvement in meal choices and whether they are vegetarian.

Based on the inclusion criteria for the two respondent groups (consumers and non-consumers), data was only gathered from respondents over the age of 18 years, who reside in South Africa and are not vegetarian. Screening questions in the demographic section of the survey determined whether respondents were over 18 years old, were residing in South Africa and were not vegetarian. Based on their responses, the online survey was designed to end the data gathering sessions of respondents who did not meet these inclusion criteria instead of directing them to the rest of the survey questions. The

reasons for these criteria, as provided in Section 4.5, were to ensure that respondents were involved in making their own food choices; that they form part of the South African consumer market; and that they consume red meat in general. Respondents were divided into two groups, namely consumers and non-consumers of game meat, based on their response to Question 3, which asked them to identify themselves as consumers or non-consumers. Since some attributes of game meat have already been identified from literature as potential reasons for the non-consumption of game meat, respondents were not expected to expand on the reasons for their choice. Their self-selected category was accepted irrespective of their reason for including themselves as non-consumers.

The demographic information of respondents is presented in Table 5.1 below. The respondent demographics are provided in order to recognize and describe the characteristics of the respondents of the study so that results can be interpreted within the appropriate context of the sample of respondents used in this study. Table 5.1 includes the different sections of demographic criteria used to compile the demographic profile of the respondents. The characteristics of respondents, along with the number of respondents in each characteristic group, as well as the percentage it represents of the total number of respondents in the sample are provided.

Table 5.1: Respondent Demographics

Demographic Criteria	Percentage (%)	Number of Respondents (n)
<b>Consumption of Game Meat</b>		
Consumers	78%	1096
Non-Consumers	22%	310
<b>Gender</b>		
Male	56%	791
Female	44%	615
<b>Age</b>		
18-39 years	46%	641
40-64 years	47%	665
65+ years	7%	100
<b>Population Group</b>		
African	5%	73
Coloured	1%	14
Indian/Asian	1%	19
White	92%	1290
Other	1%	10
<b>Province</b>		
Eastern Cape	3%	43
Free State	3%	47
Gauteng	39%	553
KwaZulu Natal	5%	72
Limpopo	9%	122
Mpumalanga	9%	128
North-West Province	4%	53
Northern Cape	2%	27
Western Cape	26%	361
<b>Income</b>		
R0 - R15 000	17.5%	246
R15 001 – R19 000	9.9%	139
R19 001 – R30 000	18.8%	264
R30 001 – R40 000	16.3%	229
R40 000+	37.6%	528

A large portion (78%; n = 1096) of the total number of respondents were consumers of game meat, while 22% (n = 310) were non-consumers. The gender groups were comprised of 56% (n = 791) male and 44% (n = 615) female respondents. During research on steaks, Leick, Behrends, Schmidt and Schilling (2012) found males to be more willing than females to participate in the study, due to a higher interest in the

product. Since males were also found to consume on average 9% more red meat than women (Hayley, Zinkiewicz & Hardiman, 2015), it could explain the higher interest among males in a game meat study and the higher number of male respondents in relation to female respondents. Most respondents fell within two age group categories, of which 46% ( $n = 641$ ) of the respondents fell within the 18-39 year age category and 47% ( $n = 665$ ) fell within the 40-64 year age category, with only 7% ( $n = 100$ ) falling within the 65+ year age category. More white respondents (92%;  $n = 1290$ ) took part in the study than any other population group in South Africa which were also represented by African (5%;  $n = 73$ ), coloured (1%;  $n = 14$ ), Indian/Asian (1%;  $n = 19$ ) and other (1%;  $n = 10$ ). The majority of the respondents came from the Gauteng Province (39%;  $n = 553$ ) and the Western Cape (26%;  $n = 361$ ); with other provinces represented in this study in smaller numbers such as Mpumalanga with 9% ( $n = 129$ ), Limpopo with 9% ( $n = 122$ ), KwaZulu Natal with 5% ( $n = 72$ ), North-West Province with 4% ( $n = 53$ ), the Free State with 3% ( $n = 47$ ), the Eastern Cape with 3% ( $n = 43$ ) and the Northern Cape with 2% ( $n = 27$ ). The respondents in this study were leaning more towards the R40 000+ (37.6%;  $n = 528$ ) monthly household income bracket, with smaller numbers of respondents earning between R19 001–R30 000 (18.8%;  $n = 264$ ) per month, R0–R15 000 (17.5%;  $n = 246$ ) per month and R30 001–R40 000 (16.3%;  $n = 229$ ) per month, with very small numbers of respondents earning between R15 001–R19 000 (9.9%;  $n = 139$ ) per month. The results point towards the fact that a larger proportion of respondents were more affluent. However, according to Masemola, Van Aardt and Coetze (2012), data available from the latest South African census conducted in 2011, shows that this trend is different from national household income distributions, which indicated more households falling in lower income categories in the national household income distribution.

The next demographic question required respondents to indicate the level of influence they have over meal decisions in their household in order to determine if the choice of food they consume is their own decision or determined by other influences. Since attitudes were found to influence decision-making (Schiffman & Wisenblit, 2015), the attitudes of decision-makers, or shared decision-makers, in household meal choices would be expected to have a greater influence on the utilisation of game meat in the household, as opposed to respondents who had little influence over household meal decisions. The results are presented in Table 5.2.

Table 5.2: Level of Influence in Meal Decisions

Level of Control	Percentage (%)	Number of Respondents (n)
Complete Control	48%	676
Shared Influence	47%	656
Little Influence	4%	56

The results in Table 5.2 indicate that the majority of respondents (48%; n = 676) indicated complete control over their meal decisions, or at least shared influence (47%; n = 656), indicating that the research largely dealt with respondents who are decision-makers or have an influencing role in the food they consume. A small percentage (4%; n = 56) of the respondents had little influence over their meal decisions. With the shift of gender roles in households, the increased time spent by women in occupations away from home and the changing demographic composition of households, it has been found that men increasingly take responsibility for meal preparation (Smith, Weng Ng & Popkin (2013). Smith *et al.* (2013) found that by 2008, women more than halved the amount of time spent on meal decisions and preparation activities, while men nearly doubled their time and involvement in these activities in relation to a few decades ago around 1965. Since women still spend double the amount of time that men do in meal preparation activities, they still carry the bulk of the responsibility in household food preparation and decisions; however, men play a significantly greater role in meal preparation activities and decisions than in the past (Smith *et al.*, 2013).

Following on the question of involvement over meal decisions was a question that determined how involved the respondent was with meal activities such as the purchase of meals or groceries, meal preparation, or consumption only. The purpose of this question was to establish to what degree respondents could be involved in choosing to purchase, prepare and consume game meat or not.

Table 5.3: Meal Involvement

Level of Meal Involvement	Percentage (%)	Number of Respondents (n)
Limited Involvement	24.4%	343
Moderate Involvement	10.4%	146
High Involvement	65.2%	917

Respondents were requested to indicate their involvement in meal activities. Respondents could choose more than one response among meal activities, since they could potentially be involved in more than one of the listed activities (the purchase of meals or groceries; meal preparation; or consumption only). In order to establish their level of involvement in meal activities, respondents who only indicated involvement in one meal activity were described as having limited involvement, while respondents who indicated involvement in two meal activities were described as being moderately involved and respondents who indicated involvement in all three meal activities were described as highly involved (Table 5.3). The majority of respondents (65.2%; n = 917) indicated a high level of involvement in meal activities, 24.4% (n = 343) indicated limited involvement in meal activities and 10.4% (n = 146) indicated moderate involvement in meal activities. Having described the respondent demographics of the study in this section, the following section provides a short discussion of the application of the internal reliability tests applied to arrive at reliable research results for each objective.

### 5.3 CRONBACH ALPHA INTERNAL CONSISTENCY RELIABILITY TESTS

The first step in the analysis of the data generated from the respondents' responses on each of the attributes was to perform an internal reliability test on the data. It is important to first present this clarification in order to understand fully the integrity of the data presented in the sections to follow. Therefore, the internal consistency reliability of the responses from the online survey was measured on each of the sets of questions used for each attribute (sensory characteristics, health benefits, availability, price, preparation, promotion, food safety, animal welfare, game meat production ethics). By using Cronbach  $\alpha$  coefficients, derived through scale reliability tests, it was verified that the responses truly described the attributes the survey questions intended to measure (Salkind, 2014). Cronbach's  $\alpha$  is particularly suitable for testing reliability in questionnaires using Likert scales (Zaiontz, 2013). In order to verify internal consistency reliability for an attribute, the

value obtained for the Cronbach  $\alpha$  coefficient regarded as acceptable throughout the research was set at 0.7 or greater – Cronbach's  $\alpha$  can vary between 0 and 1 and scores of 0.7 or greater are considered to prove internal consistency reliability (Zaiontz, 2013; Mazzocchi, 2008). If the internal consistency reliability has been verified for an attribute, it implies that the responses obtained for the specific attribute can be used reliably to evaluate and describe the attribute (Zaiontz, 2013; Mazzocchi, 2008). The subsets of data under each attribute of game meat were tested using various combinations to determine which questions should be included in order to obtain the required score (Cronbach's  $\alpha > 0.7$ ) to establish internal consistency reliability. Responses from questions that affected the reliability of the subsets negatively were omitted. Responses to questions that were worded negatively were reversed during the data analysis phase in order to present results accurately. The questions used to arrive at reliable ratings for each attribute in the first two objectives, and consequently used to attain the research results (Table C.1) and the questions that tested reliable for use in the application of the Fishbein attitude-toward-the-object model in objective 3 (Table C.2), are included in Appendix C.

#### **5.4 EXPLORATORY RESULTS FOR ALL RESPONDENTS**

The results of the first two objectives, dealing with the results of all respondents and the consumer and non-consumer respondent groups will be described next. Results for all respondents (Objective 1) are provided briefly, while the results for consumer and non-consumer respondents (Objective 2) are presented in more detail, in order to avoid repetition of the same information for each attribute. The results from similar studies will be presented for each attribute in Section 5.5 after the research results were presented. Thereafter, the Fishbein attitude-toward-the-object model, presented earlier in the theoretical framework, will be applied to the research results and discussed (Objective 3).

In brief, the study set out three objectives to explore South African respondents' attitudes toward game meat.

The first objective was designed to explore the attitudes of South African respondents toward the following attributes of game meat:

- sensory characteristics
- health benefits
- game meat production ethics
- animal welfare
- safety of game meat for human consumption
- availability
- price
- promotion
- preparation

As mentioned in Section 5.2, 78% ( $n = 1096$ ) of the respondents indicated that they are consumers of game meat, while 22% ( $n = 310$ ) indicated that they are non-consumers. Therefore, the overall results of all the respondents' attitudes toward all attributes (presented below in Figure 5.1) are strongly influenced by the consumer group who consume game meat and should be interpreted with this in mind as they made up the largest proportion of the sample for this study. The overall results for all respondents' attitudes on the different attributes are only presented briefly as it gives a general overview in totality of the attitudes towards the attributes, with a more detailed and meaningful description of the results provided in the next section where the two respondent groups (consumers and non-consumers of game meat) are presented separately. Results from similar studies on the above-mentioned attributes are presented in detail under Section 5.5 for each attribute, to avoid repetition between Section 5.4 and Section 5.5. In Figure 5.1 the percentage responses for each attitude variable (indicated as highly negative to highly positive attitudes) out of the total responses are presented against each attribute of game meat, as derived from the combined responses to the questions listed for each attribute in Table C.1. Since the overall attitudes are derived from the average responses combined from different statements on the attributes of game meat, the exact number of respondents for each attribute is not available. Therefore, the average percentages for responses are provided in the figure, but no  $n$  values. Consequently, results discussed below that are derived from this figure does not present  $n$  values either.

### Response Patterns for All Respondents' Attitudes Toward the Attributes of Game Meat

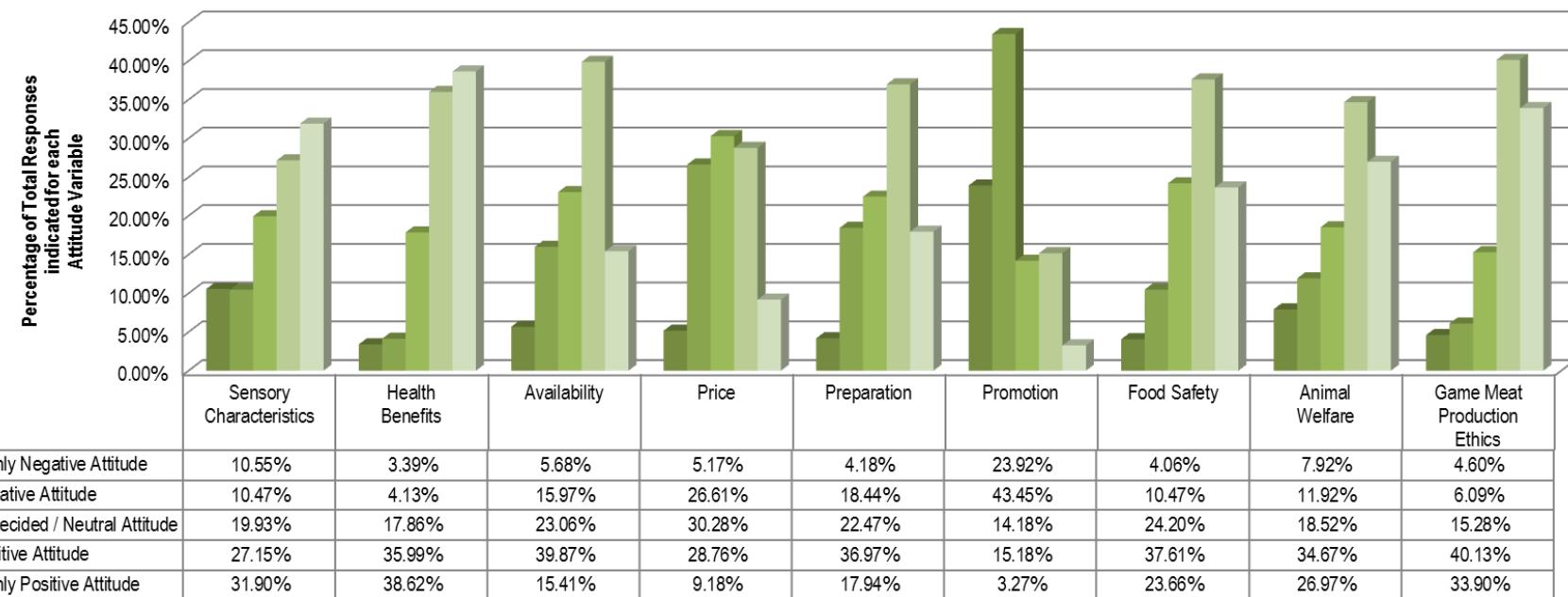


Figure 5.1 Overall results of Attitudes toward Game Meat among All Respondents

As seen from the bar graph in Figure 5.1, the overall attitude held by most of the respondents (59.05%) toward the sensory characteristics of game meat is relatively positive, with 31.90% of attitudes being highly positive and 27.15% of being positive. However, 19.93% of all respondents indicated a neutral or undecided attitude toward the sensory characteristics of game meat. The relatively positive attitudes displayed by most respondents toward the sensory characteristics of game meat indicate that it is a generally liked product among the South African respondents participating in this study.

The majority (74.61%) of respondents' attitudes toward the health benefits of game meat were remarkably positive. While 38.62% of respondents indicated a highly positive attitude and 35.99% a positive attitude toward the health benefits of game meat, 17.86% were undecided and only a small percentage displayed negative attitudes (with 4.13% being negative and 3.39% being highly negative) toward the benefits of game meat. This indicates that most of the respondents believed that game meat is a healthy product with only a relatively small percentage of respondents not being convinced of its health benefits.

The majority of respondents (55.28%) had positive (39.87%) and highly positive (15.41%) attitudes toward the availability of game meat, but there were also a substantial percentage of undecided (23.06%) and negative (>20%) responses regarding game meat availability. Although game meat is available, South African respondents might not find it available throughout the year. It is also possible that, while game meat is available, it is not necessarily available in a manner that is considered convenient for household use.

Respondents' attitudes toward the price of game meat were rather undecided, with 30.28% of responses being undecided or neutral, which is an indication of not being sure if it was expensive or not, whereas 37.94% of the respondents were positive (28.76%) to highly positive (9.18%) about the price of game meat, which may mean that it is priced right and 31.78% being negative (26.62%) to highly negative (5.17%), which may mean that game meat is too expensive. Since prices for game meat currently vary considerably between retailers, or game meat can sometimes be obtained free of charge from family or friends who hunt, respondents might not be sure of the true market value of game meat.

Respondents' attitudes toward the preparation of game meat were more positive overall than negative, but still with a relatively large percentage of respondents undecided to negative regarding the preparation of game meat. The majority (54.91%) of respondents portrayed positive (36.97%) and highly positive (17.94%) attitudes towards the

preparation of game meat, while 22.47% were undecided or neutral toward preparation. Furthermore, 22.62% of respondents had negative (18.44%) and highly negative (4.18%) attitudes toward preparation of game meat. Food preparation skills are influenced by the individual's' knowledge and experience. Therefore, attitudes toward preparation can vary greatly among respondents, as indicated above. Some respondents found game meat preparation easy and convenient; others found it time-consuming and not a product that can be prepared daily; while other respondents were unsure about its convenience and ease of preparation.

A prominent negative trend was visible in attitudes toward the promotion of game meat, with 43.45% of respondents indicating a negative attitude and 23.92% a highly negative attitude towards promotion of game meat. Promotional activities for game meat as a product are considered lacking.

The majority of respondents' attitudes (61.27%) toward the safety of game meat for human consumption were positive; 37.61% of respondents were positive and 23.66% highly positive, while less than 25% of respondents were undecided and less than 15% negative or highly negative regarding its safety. Therefore, respondents generally trusted that game meat is safe to consume, that the production standards comply with food safety guidelines and that personal requirements for a safe product can be met through game meat. However, as mentioned, there were some respondents who were unsure whether game meat is safe for human consumption.

Similarly, the overall attitudes toward animal welfare during production methods were remarkably positive (with 34.67% respondents having positive attitudes and 26.97% respondents having highly positive attitudes) with a relatively large number of undecided responses (18.52%). It indicates that the majority (61.64%) of the sample group believed that game meat can be produced in a manner that respects animal welfare. The proportion of undecided and negative responses (almost 19%) indicates that animal welfare during game meat production are a potentially sensitive issue to respondents.

Finally, the majority of respondents (74.03%) indicated remarkably positive overall attitudes toward game meat production ethics with 40.13% of respondents having positive attitudes and 33.90% having highly positive attitudes. Respondents in general found it ethical to utilise game meat as a valuable local resource to support local industries while also providing an economic incentive to conserve wildlife. Respondents found it ethical to

use wildlife as a source of protein, provided it is harvested sustainably from well-managed, extensive or semi-extensive production systems.

The next section provides more detail on the results, based on the responses from consumers and non-consumers of game meat specifically, as well as results from other studies relating to the attributes described in both this section and the next section.

## **5.5 EXPLORATORY RESULTS FOR CONSUMER AND NON-CONSUMER RESPONDENTS**

The second objective was designed to establish the differences between the attitudes of consumer and non-consumer respondents toward the following attributes of game meat:

- sensory characteristics
- health benefits
- game meat production ethics
- animal welfare
- safety of game meat for human consumption
- availability
- price
- promotion
- preparation

The results on each of these attributes will be discussed in this section. To achieve the second objective, composite frequency tables were calculated for all questions that proved reliable based on the Cronbach  $\alpha$  scores (discussed under Section 5.3) in order to provide a general overview of how respondents evaluated each attribute of game meat. The survey made use of a variety of positively and negatively phrased statements on the Likert scales and rotated the position of positive and negative descriptive words on the poles of the semantic differential scales in order to balance the tendency sometimes found among respondents to simply agree with all statements presented (Aaker *et al.*, 2013; Whitley & Kite, 2013). In cases where survey statements are not stated in the same direction, where agreement with the statements would not imply a similar meaning, the responses to such questions must be reversed during data analysis before any total scores can be calculated and presented (Maree, 2012). During the data analysis phase, responses to statements that were stated in a negative way were reversed in order to ensure the accuracy of the presentation of overall attitude trends. The specific responses that were reversed are indicated in Tables C.1 and C.2 in Appendix C. Responses to

statements were presented in such a manner on the graphs that Disagree Completely indicates a very negative overall attitude, while Agree Completely indicates a very positive overall attitude towards an attribute. The only exception is for the attribute of price (Figure 5.5), which is indicated as having a low price at Disagree Completely and a high price at Agree Completely and should be considered accordingly. As mentioned earlier for Figure 5.1, the overall attitudes presented in the figures in this section (Figures 5.2 – 5.10) are derived from the average responses of different statements pertaining to the attributes of game meat and the exact number of respondents for each attribute is not given. The purpose of these figures are to provide a visual representation of the overall attitude trends for the different respondent groups and the average percentages for responses are provided in the figure, but no *n* values. Consequently, results that are derived from these figures do not present *n* values in the discussion either. The exact *n* values of each statement are presented in the composite frequency tables for each attribute.

### **5.5.1 Respondent Attitudes toward the Sensory Characteristics of Game Meat**

Attitudes toward the sensory characteristics of game meat, which constituted the flavour, texture, appearance and aroma, were tested using five-point semantic differential scales, with bipolar adjectives anchored at the ends of an odd-numbered continuum to test how respondents regarded the flavour, texture, appearance and aroma of game meat. Statements utilising five-point Likert scales were used to indicate the importance of these sensory characteristics to respondents.

The overall trend observed among respondent groups regarding their attitudes toward the sensory characteristics of game meat is presented in Figure 5.2.

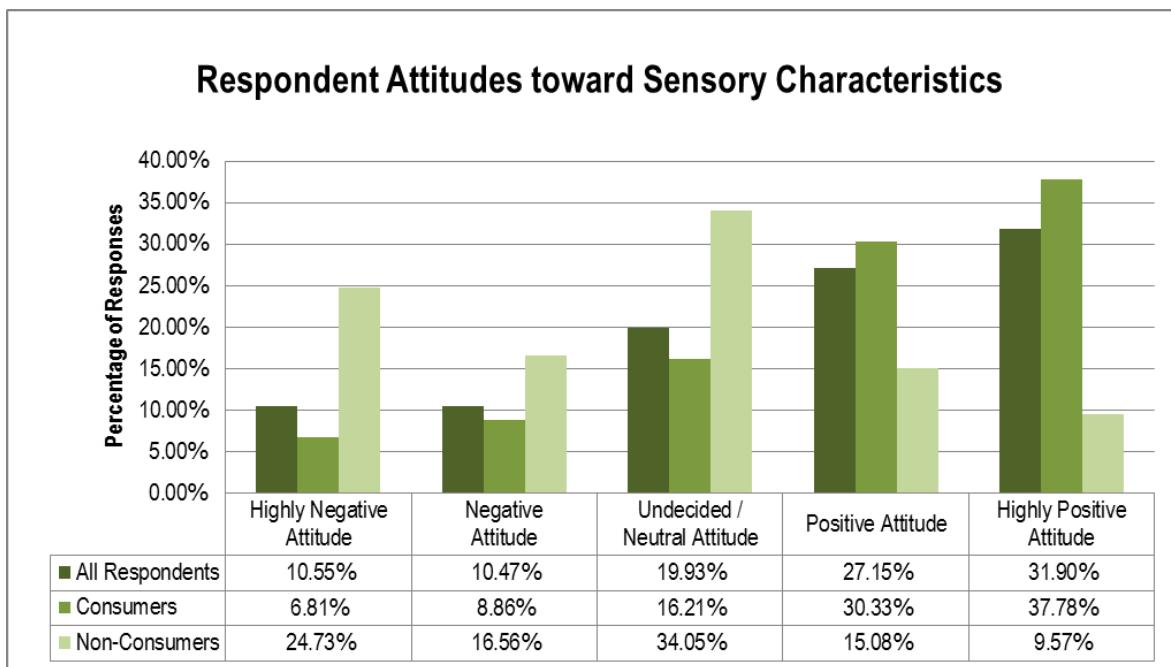


Figure 5.2 Respondent Attitudes toward Sensory Characteristics of Game Meat

The difference in overall attitudes toward the sensory characteristics of game meat is clearly visible in Figure 5.2. The results indicated that while non-consumer respondents had a more negative (with 24.73% highly negative and 16.56% negative) and undecided (34.05%) attitude towards the sensory characteristics of game meat in general, consumer respondents portrayed a highly positive overall attitude (with 30.33% positive and 37.78% highly positive) toward the sensory characteristics of game meat. As mentioned earlier, it is unknown whether non-consumer respondents based these attitudes on actual experience or no experience at all. Therefore, it could either be that they have tried game meat in the past and did not like it, or that their attitudes were based on a general perception among non-consumer respondents that game meat does not have desirable sensory characteristics, as discussed under Consumer Misconceptions in Section 3.2.3. This should be kept in mind when considering the results presented in Figure 5.2.

The composite scores for responses of all respondents in total, consumer respondents and non-consumer respondents for all survey questions on sensory characteristics are provided in Table 5.4. This allows for a visual comparison across the three sets of data. The composite table is first presented, after which each sensory characteristic is presented and the results discussed. In the composite table, the different aspects measured under sensory characteristics – flavour, texture, appearance and aroma – are presented for each respondent group, indicating their level of agreement with each

descriptive word (where five-point semantic differential scales were used). Thereafter, the responses to the statements (measured on five-point Likert scales) whether they like the specific aspects of game meat mentioned above are presented. The composite frequency of responses for each variable in each question is provided as the number of responses for the specific variable, as well as the percentages of the total responses represented by the variable. Specific percentages referred to in the text are highlighted in red. Statements (1 to 4) using five-point Likert scales are also provided in Table 5.4 of which the results are presented under the specific section related to that aspect of the sensory characteristics of game meat.

Table 5.4 Composite Frequency Response Pattern for Respondent Groups on Sensory Characteristics of Game Meat

Attribute		All						Consumer Respondents						Non-Consumer Respondents							
		Disagree completely	Disagree	Undecided	Agree	Agree completely		Tasty	Unappetising	Disagree completely	Disagree	Undecided	Agree	Agree completely		Tasty	Disagree completely	Disagree	Undecided	Agree	Agree completely
Flavour	Unappetising	82 6.24%	47 3.58%	131 9.97%	322 24.51%	732 55.71%		Tasty	Unappetising	10 0.96%	13 1.25%	53 5.10%	278 <b>26.73%</b>	686 <b>65.96%</b>		Tasty	72 <b>26.28%</b>	34 <b>12.41%</b>	78 <b>28.47%</b>	44 16.06%	46 16.79%
Flavour	Gamey / Wild	344 26.18%	301 22.91%	247 18.80%	146 11.11%	276 21.00%	Mild	Gamey / Wild	205 19.71%	268 25.77%	186 17.88%	126 12.12%	255 24.52%		Mild	139 <b>50.73%</b>	33 12.04%	61 22.26%	20 7.30%	21 7.66%	
Flavour	Bland	40 3.04%	39 2.97%	223 16.97%	366 27.85%	646 49.16%	Full, rich taste	Bland	16 1.54%	20 1.92%	112 10.77%	315 <b>30.29%</b>	577 <b>55.48%</b>		Full, rich taste	24 8.76%	19 6.93%	111 <b>40.51%</b>	51 18.61%	69 <b>25.18%</b>	
Texture	Tough	167 12.71%	184. 14.00%	331 25.19%	252 19.18%	380 28.92%	Tender	Tough	79 7.60%	129 12.40%	246 23.65%	232 <b>22.31%</b>	354 <b>34.04%</b>		Tender	88 <b>32.12%</b>	55 <b>20.07%</b>	85 <b>31.02%</b>	20 7.30%	26 9.49%	
Texture	Dry	203 15.45%	238 18.11%	332 25.27%	248 18.87%	293 22.30%	Juicy	Dry	120 11.54%	192 18.46%	235 <b>22.60%</b>	226 <b>21.73%</b>	267 <b>25.67%</b>		Juicy	83 <b>30.29%</b>	46 <b>16.79%</b>	97 <b>35.40%</b>	22 8.03%	26 9.49%	
Appearance	Bright red	85 6.47%	86 6.54%	272 20.70%	368 28.01%	503 38.28%	Dark red	Bright red	66 6.35%	64 6.15%	187 17.98%	318 <b>30.58%</b>	405 <b>38.94%</b>		Dark red	19 6.93%	22 8.03%	85 31.02%	50 <b>18.25%</b>	98 <b>35.77%</b>	
Appearance	Unattractive	76 5.78%	47 3.58%	327 24.89%	302 22.98%	562 42.77%	Attractive	Unattractive	16 1.54%	25 2.40%	211 20.29%	269 <b>25.87%</b>	519 <b>49.90%</b>		Attractive	60 <b>21.90%</b>	22 8.03%	116 <b>42.34%</b>	33 12.04%	43 15.69%	

Attribute		All						Consumer Respondents						Non-Consumer Respondents						
		Disagree completely	Disagree	Undecided	Agree	Agree completely		Dull	Disagree completely	Disagree	Undecided	Agree	Agree completely		Dull	Disagree completely	Disagree	Undecided	Agree	Agree completely
Appearance	Dull	49 3.73%	40 3.04%	319 24.28%	321 24.43%	585 44.52%	Pleasing	Dull	16 1.54%	20 1.92%	184 17.69%	279 <b>26.83%</b>	541 <b>52.02%</b>	Pleasing	Dull	33 12.04%	20 7.30%	135 <b>49.27%</b>	42 15.33%	44 16.06%
Aroma	Bland	66 5.02%	82 6.24%	361 27.47%	349 26.56%	456 34.70%	Appealing	Bland	24 2.31%	50 4.81%	233 22.40%	309 <b>29.71%</b>	424 <b>40.77%</b>	Appealing	Bland	42 15.33%	32 11.68%	128 <b>46.72%</b>	40 14.60%	32 11.68%
Attitude Statements 1-4, measuring attitudes toward the flavour, texture, appearance and aroma of game meat																				
Statement	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree	Undecided	Agree	Agree completely	
Statement 1 I like the overall flavour of game meat	73 5.56%	110 8.37%	134 10.20%	587 44.67%	410 31.20%	9 0.87%	31 2.98%	65 6.25%	529 <b>50.87%</b>	406 <b>39.04%</b>	64 <b>23.36%</b>	79 <b>28.83%</b>	69 <b>25.18%</b>	58 21.17%	4 1.46%					
Statement 2 I like the texture of game meat	64 4.87%	110 8.37%	219 16.67%	574 43.68%	347 26.41%	5 0.48%	38 3.65%	139 13.37%	513 <b>49.33%</b>	345 <b>33.17%</b>	59 <b>21.53%</b>	72 <b>26.28%</b>	80 <b>29.20%</b>	61 22.26%	2 0.73%					
Statement 3 I like the overall appearance of game meat	54 4.11%	95 7.23%	233 17.73%	567 43.15%	365 27.78%	4 0.38%	35 3.37%	145 13.94%	496 <b>47.69%</b>	360 <b>34.62%</b>	50 <b>18.25%</b>	60 <b>21.90%</b>	88 <b>32.12%</b>	71 25.91%	5 1.82%					
Statement 4 I like the aroma of game meat	81 6.16%	127 9.67%	276 21.00%	518 39.42%	312 23.74%	12 1.15%	59 5.67%	196 18.85%	465 <b>44.71%</b>	308 <b>29.62%</b>	69 <b>25.18%</b>	68 <b>24.82%</b>	80 29.20%	53 19.34%	4 1.46%					

#### *5.5.1.1 Consumer vs Non-Consumer Responses on Flavour*

In Table 5.4 the results on flavour indicate that when applying a five-point semantic differential scale with *unappetizing* and *tasty* used as keywords, the majority (92.69%) of consumer respondents were very positive towards the flavour of game meat. Among consumer respondents, 26.73% (n = 278) regarded the flavour of game meat positively and 65.96% (n = 686) indicated it on the extreme positive pole as being *tasty*. However, non-consumer respondents found the flavour of game meat to be *unappetizing*, with 12.41% (n = 34) regarding it negatively and 26.28% (n = 72) regarding it very negatively as *unappetizing*, while 28.47% (n = 78) indicated a neutral or undecided response.

On the five-point semantic differential scale using *gamey/wild* and *mild* as keywords, consumers' responses were spread relatively evenly across the scale, while 50.73% (n = 139) of non-consumer respondents regarded the flavour extremely negatively as *gamey/wild*. In both groups very few respondents found the flavour of game meat to be *bland*, but rather considered it more positively as having a *full, rich taste*, with 30.29% (n = 315) of consumer respondents considering it positively and 55.48% (n = 577) of them considering it extremely positively; 25.18% (n = 69) of non-consumer respondents regarded it extremely positively, but a large percentage of the non-consumer group (40.51%; n = 111) indicated a neutral attitude. The five-point semantic differential scale provided insight on how respondents would agree on the flavour of the meat, but when their attitudes toward the overall flavour of game meat were explored using Statement 1, presented in Table 5.4, on average 89.91% of consumer respondents [50.87% (n = 529) positive and 39.04% (n = 406) very positive] indicated that they liked the overall flavour of game meat, while on average 52.19% of non-consumer respondents [23.36% (n = 64) very negative and 28.83% (n = 79) negative] had a negative attitude toward the overall flavour, while 25.18% (n = 69) were neutral.

#### *5.5.1.2 Consumer vs Non-Consumer Responses on Texture*

Respondents' attitudes toward the texture of game meat were measured using two five-point semantic differential scales with *tough* to *tender* and *dry* to *juicy* as keywords on the poles, as presented in Table 5.4. Consumer respondents perceived the texture positively overall, with an average of 56.35% consumers [22.31% (n = 232) positive and 34.04% (n = 354) very positive] indicating it as *tender*. Of all the consumer respondents, an average of 47.40% [21.73% (n = 226) positive and 25.67% (n = 267) very positive] regarded the texture as *juicy*, with 22.60% (n = 235) of consumer responses being neutral between *dry*

and *juicy*. Non-consumer respondents were more negative regarding the texture of game meat, with an average of 52.28% non-consumers [20.07% (n = 55) negative and 32.21% (n = 88) very negative] indicating the texture as *tough*, and 31.02% (n = 85) being neutral. Further, 47.08% of non-consumer respondents on average [16.79% (n = 46) negative and 30.29% (n = 83) very negative] regarded the meat to be *dry*, with 35.40% (n = 97) being neutral between *dry* and *juicy*. On a five-point Likert scale (using Statement 2 in Table 5.4), an average of 82.50% consumer respondents [49.33% (n = 513) positive and 33.17% (n = 345) very positive] liked the texture of game meat, while an average of 47.81% non-consumer respondents [26.28% (n = 72) negative and 21.53% (n = 59) very negative] perceived the texture negatively and 29.20% (n = 80) of non-consumer respondents indicated a neutral attitude towards texture.

#### 5.5.1.3 Consumer vs Non-Consumer Responses on Appearance

The majority in both respondent groups, with an average of 69.52% of the consumer category [30.58% (n = 318) agree and 38.94% (n = 405) agree completely] and 54.07% of the non-consumer category [18.25% (n = 50) agree and 35.77% (n = 98) agree completely], considered the appearance of game meat to be *dark red* as opposed to *bright red* on a five-point semantic differential scale (Table 5.4). When indicated as *unattractive* or *attractive* on a five-point semantic differential scale, an average of 75.77% consumer respondents [25.87% (n = 269) positive and 49.90% (n = 519) very positive] found the appearance *attractive*. A large number (42.34%; n = 116) of non-consumer respondents indicated a neutral response, but 21.90% (n = 60) regarded the appearance extremely negative as *unattractive*. On a five-point semantic differential scale with *dull* and *pleasing* as keywords at the poles, 26.83% (n = 279) of consumer respondents perceived the appearance positively and 52.02% (n = 541) very positively as *pleasing*, while 49.27% (n = 135) of non-consumer respondents indicated a neutral response. The same overall trend was demonstrated through respondents' responses to Statement 3 (Table 5.4) on whether they liked the appearance of game meat, with 82.31% consumers on average [47.69% (n = 496) positive and 34.62% (n = 360) very positive] having overall positive attitudes and non-consumers being rather neutral (32.12%; n = 88) to negative [40.15% on average, with 21.90% (n = 60) being negative and 18.25% (n = 50) being very negative].

#### 5.5.1.4 Consumer vs Non-Consumer Responses on Aroma

When measuring respondents level of agreement regarding the aroma of game meat on a five-point semantic differential scale (Table 5.4) with *bland* and *appealing* as keywords at the poles, consumer respondent attitudes were found to be rather positive [70.48% on average, with 29.71% ( $n = 309$ ) positive and 40.77% ( $n = 424$ ) very positive], finding it *appealing*. Non-consumer respondents (46.72%;  $n = 128$ ) indicated a rather neutral response on the *bland* to *appealing* scale. However, when asked whether they liked the aroma of game meat in Statement 4 (as presented in Table 5.4), an average of 74.33% of consumer respondents [44.71% ( $n = 465$ ) positive and 29.62% ( $n = 308$ ) very positive] had a positive attitude towards aroma, while 24.82% ( $n = 68$ ) of non-consumer respondents were negative and 25.18% ( $n = 69$ ) very negative.

When considering the findings of other studies, appearance is considered the deciding factor in the purchase of fresh meat (Borgogno, Favotto, Corazzin, Cardello & Piasentier, 2015). However, while consumers show a preference for meat with a bright red colour, the colour of meat is known to change to darker shades of purple or brown during storage (Borgogno *et al.*, 2015). A recent study in Spain, found that consumers preferred samples of venison from deer that were perceived to have good flavour and texture, a pleasant aroma and an attractive colour, once again confirming the importance of these sensory characteristics to consumers (Utrilla *et al.*, 2015). Similar findings were recorded for South Africans in their choice of beef and lamb/mutton (Vermeulen *et al.*, 2015).

Consumers were found to prefer tender and juicy meat when considering pork, beef, or lamb (Font-I-Furnols & Guerrero, 2014). During the sensory evaluation of beef, its tenderness, juiciness, flavour, and overall liking ratings were found to be improved as its fat content increased (Corbin, O'Quinn, Garmyn, Legako, Hunt, Dinh, Rathmann, Brooks & Miller, 2015). However, in comparison, studies between the sensory characteristics of meat from eland and cattle finished under similar conditions, eland was found to score lower on texture, flavour and overall acceptability than beef due to its low levels of intramuscular marbling fat (Bartoň, Bureš, Kotrba & Sales, 2014). Since the taste, juiciness and tenderness of meat improve the overall eating experience for the consumer, it has been positively correlated with consumers' intention to purchase and willingness to pay for these attributes (Font-I-Furnols & Guerrero, 2014).

Similarly, in a venison study, the flavour of reindeer meat was found to be largely dependent on pre-slaughter handling methods (Soriano, Montoro, Vicente, Sánchez-

Migallón, Benítex, Utrilla, & Ruiz, 2016). Reindeer carcasses eviscerated only 4 hours post mortem or later portrayed a livery odour and off-flavours in loin meat, while aging for 72 hours lead to a darker colour (Soriano *et al.*, 2016). Further, the harvesting process and meat handling were found to have a major impact on the sensory qualities of game meat, with stressful cropping practices leading to dark, firm and dry meat (Hoffman & Wiklund, 2006), but age, gender and production region were also found to have influence (Hoffman *et al.*, 2007b). Hunting older animals for trophies and then utilising the meat was found to often lead consumers to believe that game meat is tough, dry, has a gamey taste and is of inferior quality (Bekker *et al.*, 2011). Various studies have found that when harvesting and meat handling practices are conducted with the proper care, the tenderness of game meat was found to be like that of beef or pork while the meat will generally not develop a strong aroma and that quality of game meat can be greatly improved by reducing stress during harvesting of animals, and handling carcasses properly (Bothma & Du Toit, 2016; Bekker *et al.*, 2011; Hoffman *et al.*, 2005).

### 5.5.2 Respondent Attitudes toward the Health Benefits of Game Meat

Respondents' attitudes toward the health benefits of game meat were explored using statements (measured on five-point Likert scales). The trend regarding overall attitudes toward the health benefits of game meat is presented below in Figure 5.3.

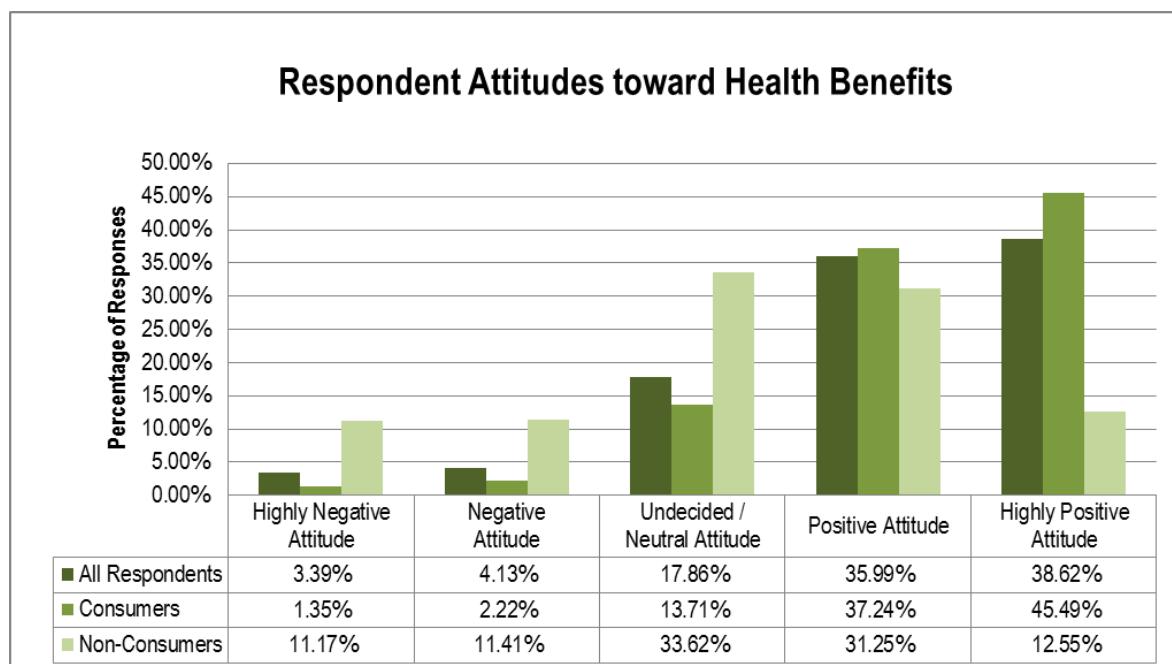


Figure 5.3 Respondent Attitudes toward Health Benefits of Game Meat

Respondents' attitudes toward the health benefits of game meat were more positive in general (with 37.24% positive and 45.49% highly positive among consumer respondents; 31.25% positive and 12.55% highly positive among non-consumer respondents), but a relatively large percentage of non-consumer respondents (33.62%) were still undecided. As seen on the graph in Figure 5.3, neither of the respondent groups displayed a very negative attitude towards the health attributes of game meat (with 2.22% negative and 1.35% highly negative among consumers; 11.41% negative and 11.17% highly negative among non-consumers). More non-consumer respondents, however, were undecided (33.62%) than highly positive (12.55%) regarding the health benefits of game meat.

When considering the responses to individual statements regarding the health benefits of game meat, a more detailed description of respondent attitudes can be attained. Responses to individual statements on health benefits are provided in Table 5.5. The composite frequency responses for each variable for each statement are provided on the table. The results specifically discussed in the paragraphs following the table were highlighted red.

Table 5.5 Composite Frequency Response Pattern for Respondent Groups on Health Benefits of Game Meat

Statement	All						Consumer Respondents						Non-Consumer Respondents			
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	
<b>Statement 5</b> <b>Game meat is a lean product</b>	13 1.03%	20 1.58%	97 7.66%	480 37.88%	657 51.85%	3 0.30%	11 1.10%	43 4.29%	352 <b>35.09%</b>	594 <b>59.22%</b>	10 3.79%	9 3.41%	54 20.45%	128 <b>48.48%</b>	63 <b>23.86%</b>	
<b>Statement 6</b> <b>Consuming game meat lowers your risk of cardiovascular diseases</b>	27 2.13%	46 3.63%	321 25.34%	474 37.41%	399 31.49%	12 1.20%	29 2.89%	212 21.14%	382 <b>38.09%</b>	368 <b>36.69%</b>	15 5.68%	17 6.44%	109 <b>41.29%</b>	92 <b>34.85%</b>	31 <b>11.74%</b>	
<b>Statement 7</b> <b>Game meat is a nutritious source of protein</b>	10 0.79%	8 0.63%	83 6.55%	523 41.28%	643 50.75%	1 0.10%	3 0.30%	27 2.69%	382 <b>38.09%</b>	590 <b>58.82%</b>	9 3.41%	5 1.89%	56 21.21%	141 <b>53.41%</b>	53 <b>20.08%</b>	
<b>Statement 8</b> <b>Game meat is high in iron content</b>	6 0.47%	5 0.39%	288 22.73%	550 43.41%	418 32.99%	2 0.20%	2 0.20%	191 19.04%	431 <b>42.97%</b>	377 <b>37.59%</b>	4 1.52%	3 1.14%	97 36.74%	119 <b>45.08%</b>	41 <b>15.53%</b>	
<b>Statement 9</b> <b>I consume game meat because I believe that it is healthy</b>	65 5.13%	115 9.08%	359 28.33%	382 30.15%	346 27.31%	17 1.69%	51 5.08%	245 24.43%	350 34.90%	340 33.90%	48 <b>18.18%</b>	64 <b>24.24%</b>	114 <b>43.18%</b>	32 12.12%	6 2.27%	
<b>Statement 10</b> <b>I consume game meat because I like it, the health benefits are an added advantage</b>	77 6.08%	73 5.76%	232 18.31%	466 36.78%	419 33.07%	14 1.40%	19 1.89%	131 13.06%	430 <b>42.87%</b>	409 <b>40.78%</b>	63 23.86%	54 20.45%	101 38.26%	36 13.64%	10 3.79%	
<b>Statement 11</b> <b>I do not believe that game meat is as healthy as it is promoted to be</b>	387 30.54%	476 37.57%	281 22.18%	76 6.00%	47 3.71%	352 <b>35.09%</b>	409 <b>40.78%</b>	162 16.15%	42 4.19%	38 3.79%	35 13.26%	67 25.38%	119 <b>45.08%</b>	34 12.88%	9 3.41%	
<b>Statement 12</b> <b>I do not like game meat, therefore its health benefits do not convince me to consume it</b>	646 50.99%	297 23.44%	149 11.76%	76 6.00%	99 7.81%	620 61.81%	252 25.12%	89 8.87%	21 2.09%	21 2.09%	26 9.85%	45 17.05%	60 22.73%	55 <b>20.83%</b>	78 <b>29.55%</b>	

As seen from Statements 5 to 12 in Table 5.5, both respondent groups indicated positive attitudes toward most of the health benefits of game meat, however, non-consumer respondents did not indicate it as a possible motivation to consider its consumption (Statement 9). Among consumer respondents, 94.31% [35.09% (n = 352) agreeing and 59.22% (n = 594) agreeing completely] indicated that game meat is a lean product, 74.78% [38.09% (n = 382) being positive and 36.69% (n = 368) being very positive] indicated that it lowers the risk of cardiovascular diseases, 96.91% [38.09% (n = 382) being positive and 58.82% (n = 590) being very positive] considered it to be a nutritious source of protein and 80.56% [42.97% (n = 431) being positive and 37.59% (n = 377) being very positive] believes it is high in iron content (Statements 5-8). The majority of consumer respondents [75.87% on average, with 40.78% (n = 409) being positive and 35.09% (n = 352) being very positive] believe that the product is as healthy as it is promoted to be according to responses to Statement 11. Although consumer respondents on average regarded the health benefits positively, 83.65% [42.87% (n = 430) agreeing and 40.78% (n = 409) agreeing completely] indicated that they consume the product because they like it and that its health benefits are an added advantage (Statement 10).

Among non-consumer respondents on average 72.34% [48.48% (n = 128) positive and 23.86% (n = 63) very positive] regarded game meat as a lean product, 73.49% [53.41% (n = 141) being positive and 20.08% (n = 53) being very positive] considered it to be a nutritious source of protein and 60.61% [45.08% (n = 119) positive and 15.53% (n = 41) very positive] believed that it is high in iron in Statements 5, 7 and 8. Non-consumer respondents seemed less convinced that game meat can lower one's risk of cardiovascular diseases (Statement 6) with 46.59% [34.85% (n = 92) being positive and 11.74% (n = 31) being very positive] indicating a positive attitude and 41.29% (n = 109) a neutral attitude. Non-consumer respondents seemed undecided (45.08%; n = 119) whether or not game meat is as healthy as it is promoted to be in response to Statement 11. The health benefits of game meat, however does not seem to convince non-consumer respondents to consume it. Among non-consumer respondents, 50.38% [20.83% (n = 55) agreeing and 29.55% (n = 78) agreeing completely] indicated that they do not like the product, therefore, its health benefits did not convince them to consume it (Statement 12). The results did not indicate whether non-consumer respondents responded in this manner because they do not like the product itself, or because they seem undecided whether it is as healthy as it is promoted to be.

The results from other studies related to health benefits of food provide interesting insight to the results of the current study. Research concerning South African consumers' general orientation towards health benefits of foods has shown an increase in their awareness regarding the intrinsic health benefits of food, with protein increasingly being considered important for a healthy diet (BFAP Baseline, 2014). The sale of products considered as natural and healthy are increasingly moving from speciality health shops to general retailers, while foods that are considered beneficial to weight management are becoming more common (BFAP Baseline, 2014). Vermeulen *et al.* (2015) recently indicated that South African consumers generally regard lean meat as quality red meat, indicating an increased concern in the health benefits of the meat they consume. The South African consumer's knowledge seems to have improved since 2004/2005, when consumers were considered ill-informed regarding game meat's health benefits (Hoffman *et al.*, 2005; Hoffman *et al.*, 2004).

However, similar to indications in this study, Falguera *et al.* (2012) have also found that the sensory characteristics of a product are still one of the most important considerations to consumers and can sometimes be considered more important than potential health benefits of a product. Bublitz and Peracchio (2015) found that emphasizing the sensory characteristics parallel to its health benefits could guide consumer food choices in a favourable manner. They also highlighted the importance of presenting healthy foods at competitive prices, packaged in visually appealing ways, in a convenient manner to consumers if their attention is to be directed to healthy products (Bublitz & Peracchio, 2015).

### **5.5.3 Respondent Attitudes toward the Availability of Game Meat**

Respondents' attitudes toward the availability of game meat were explored to see when and where it is available, how conveniently it is available to suit their needs and whether availability plays a major role in their choice. The overall trend regarding respondents' attitudes toward availability are presented in Figure 5.4.

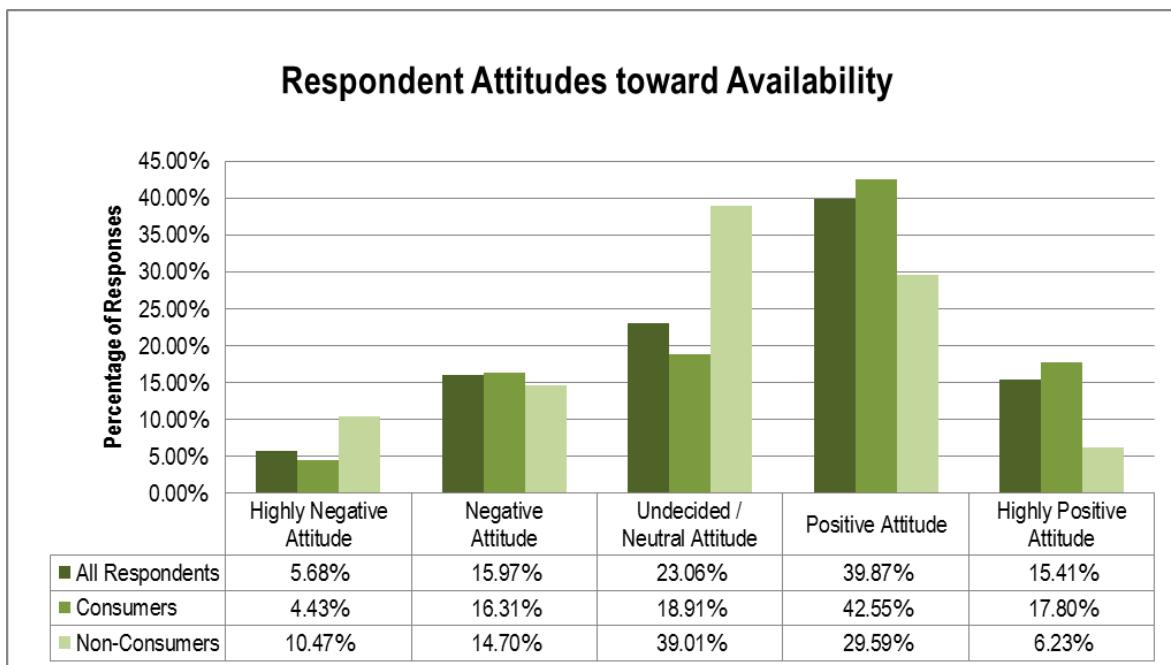


Figure 5.4 Respondent Attitudes toward Availability of Game Meat

Non-consumer respondents seemed rather undecided (39.01%) regarding the availability of game meat, as seen from the graph in Figure 5.4. However, the majority of consumer respondents displayed positive attitudes (with 42.55% being positive and 17.80% being highly positive) toward the availability of game meat. Among non-consumer respondents, 29.59% indicated positive attitudes toward the availability of game meat.

More detail about respondents' attitudes toward the availability of game meat are presented in the discussion after Table 5.6. The composite frequency responses for statements pertaining to the availability of game meat are presented in Table 5.6. The table provides the response patterns for both the respondent groups. While not all the percentages were specifically mentioned below, the results pertaining to the discussion above are highlighted red in the table.

Table 5.6 Composite Frequency Response Pattern for Respondent Groups on Availability of Game Meat

Statement	All					Consumer Respondents					Non-Consumer Respondents				
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely
<b>Statement 13</b> Game meat is available in winter only	193 15.88%	514 42.30%	326 26.83%	170 13.99%	12 0.99%	168 <b>17.43%</b>	440 <b>45.64%</b>	201 20.85%	146 15.15%	9 0.93%	25 9.96%	74 <b>29.48%</b>	125 <b>49.80%</b>	24 9.56%	3 1.20%
<b>Statement 14</b> Game meat is easily available throughout the year	49 4.03%	296 24.36%	341 28.07%	405 33.33%	124 10.21%	31 3.22%	255 <b>26.45%</b>	228 <b>23.65%</b>	336 <b>34.85%</b>	114 11.83%	18 7.17%	41 16.33%	113 <b>45.02%</b>	69 <b>27.49%</b>	10 3.98%
<b>Statement 15</b> Game meat is sometimes available outside the traditional hunting season	31 2.55%	101 8.31%	295 24.28%	676 55.64%	112 9.22%	22 2.28%	81 8.40%	170 <b>17.63%</b>	589 <b>61.10%</b>	102 10.58%	9 3.59%	20 7.97%	125 <b>49.80%</b>	87 <b>34.66%</b>	10 3.98%
<b>Statement 16</b> I can obtain game meat from the local butchery	103 8.48%	309 25.43%	276 22.72%	431 35.47%	96 7.90%	80 8.30%	260 <b>26.97%</b>	186 <b>19.29%</b>	353 <b>36.62%</b>	85 8.82%	23 9.16%	49 19.52%	90 <b>35.86%</b>	78 <b>31.08%</b>	11 4.38%
<b>Statement 17</b> I can obtain game meat from the local supermarket	158 13.00%	425 34.98%	263 21.65%	311 25.60%	58 4.77%	122 12.66%	342 <b>35.48%</b>	180 <b>18.67%</b>	270 <b>28.01%</b>	50 5.19%	36 14.34%	83 <b>33.07%</b>	83 <b>33.07%</b>	41 16.33%	8 3.19%
<b>Statement 18</b> I can obtain game meat from independent producers	47 3.87%	102 8.40%	297 24.44%	630 51.85%	139 11.44%	35 3.63%	86 8.92%	189 <b>19.61%</b>	528 <b>54.77%</b>	126 <b>13.07%</b>	12 4.78%	16 6.37%	108 <b>43.03%</b>	102 <b>40.64%</b>	13 5.18%
<b>Statement 19</b> I can obtain game meat by hunting, or from friends or family members who hunt	72 5.93%	68 5.60%	110 9.05%	486 40.00%	479 39.42%	43 4.46%	53 5.50%	45 <b>4.67%</b>	376 <b>39.00%</b>	447 <b>46.37%</b>	29 11.55%	15 5.98%	65 <b>25.90%</b>	110 <b>43.82%</b>	32 <b>12.75%</b>
<b>Statement 20</b> Game meat is available in a variety of cuts	27 2.22%	166 13.66%	294 24.20%	533 43.87%	195 16.05%	20 2.07%	141 14.63%	182 18.88%	445 <b>46.16%</b>	176 <b>18.26%</b>	7 2.79%	25 9.96%	112 <b>44.62%</b>	88 <b>35.06%</b>	19 7.57%
<b>Statement 21</b> Game meat is packaged conveniently for household use	52 4.28%	210 17.28%	401 33.00%	449 36.95%	103 8.48%	38 3.94%	180 18.67%	268 <b>27.80%</b>	386 <b>40.04%</b>	92 <b>9.54%</b>	14 5.58%	30 11.95%	133 <b>52.99%</b>	63 25.10%	11 4.38%

Statement	All						Consumer Respondents						Non-Consumer Respondents				
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely		
<b>Statement 22</b> <b>I would buy more game meat if it were more readily available</b>	100 8.23%	137 11.28%	224 18.44%	450 37.04%	304 25.02%	33 3.42%	83 8.61%	166 17.22%	393 <b>40.77%</b>	289 <b>29.98%</b>	67 <b>26.69%</b>	54 <b>21.51%</b>	58 23.11%	57 22.71%	15 5.98%		
<b>Statement 23</b> <b>The availability of game meat plays an important role in my choice to consume it</b>	108 8.89%	151 12.43%	255 20.99%	444 36.54%	257 21.15%	37 3.84%	102 10.58%	190 19.71%	396 <b>41.08%</b>	239 <b>24.79%</b>	71 <b>28.29%</b>	49 <b>19.52%</b>	65 25.90%	48 19.12%	18 7.17%		

As indicated on Table 5.6 (Statements 13-22), consumer respondents found that game meat was available outside of the traditional hunting season in winter, but that it was not necessarily easily available throughout the entire year (Statements 13-15). Consumer respondent responses were rather neutral regarding its availability at local supermarkets and butcheries, while independent producers, or family and friends who hunt, were considered better sources of game meat in Statements 16 to 19. They indicated positive [46.16% (n = 445) positive and 18.26% (n=176) very positive] attitudes toward the variety of cuts available as response to Statement 20. On average, 49.58% of consumer respondents [40.04% (n = 386) agreeing and 9.54% (n = 92) agreeing completely] found it packaged conveniently for household use, while 27.80% (n = 268) of consumer respondents were undecided (Statement 21). Although consumer respondents indicated a rather positive attitude towards the availability of game meat, 70.75% on average [40.77% (n = 393) agreeing and 29.98% (n = 289) agreeing completely] indicated that they would consume more game meat if it was more readily available in Statement 22.

Non-consumer respondents were largely undecided regarding when game meat is available in Statements 13 to 15); they also indicated that it is available outside of the traditional hunting season, but not necessarily easily throughout the entire year. Their responses to Statements 16 and 17 were to a large extent neutral [38.86% (n = 90) for butcheries and 33.07% (n = 83) for supermarkets] regarding its availability at local supermarkets and butcheries, with local supermarkets perceived as the least likely source of game meat. Independent producers, or family and friends who hunt (Statements 18-19), were also considered better sources of game meat, but a larger proportion of respondents in this group (43.03%; n = 108 for independent producers and 25.90%; n = 65 for friends and family members who hunt) indicated a neutral response to these two sources as opposed to the consumer group (19.61%; n = 189 for independent producers and 4.67%; n = 45 for family and friends who hunt). Non-consumer respondents indicated neutral (44.62%; n = 112) to slightly positive attitudes (35.06%; n = 88) toward the variety of cuts available in Statement 20. However, 52.99% (n = 133) of non-consumer respondents were undecided regarding its convenience for household use in Statement 21. Although on average 48.20% of non-consumer respondents [21.51% (n = 54) negative and 26.69% (n = 67) very negative] indicated that they would not purchase more game meat if it was more readily available, 23.11% (n = 58) indicated a neutral response and 29% [22.71% (n = 57) positive and 5.98% (n = 15) very positive] indicated that they would (Statement 22). While in response to Statement 23, 65.87% of consumer respondents indicated that availability plays an important role in their choice to consume

game meat [41.08% ( $n = 396$ ) agreeing and 24.79% ( $n = 239$ ) agreeing completely]; 48% of non-consumer respondents indicated that availability did not play an important role in their choice [19.52% ( $n = 49$ ) negative and 28.29% ( $n = 71$ ) very negative].

Based on the responses in this study, it has been established that South African respondents find game meat to be available, but not necessarily as easily and consistently as they would prefer; neither is it necessarily available in a way that is convenient for household use. In similar studies, Vermeulen *et al.* (2015) found that convenience, purchase location, meat cut and the size of cuts were important considerations regarding the availability of red meat among South African consumers; potentially influencing their attitudes toward game meat. Ampt and Owen (2008) indicated that the convenience of portions available to consumers played an important role in the consumption of venison (kangaroo specifically), since consumers preferred to experiment with smaller portions of meat rather than purchasing bulk cuts of novelty meats. Bodnar *et al.* (2014) found that Hungarian consumers purchased venison more frequently directly from hunters than from supermarkets. These above mentioned studies seem to confirm similar results to the results found on game meat in this study.

#### **5.5.4 Respondent Attitudes toward the Price of Game Meat**

Having discussed the results of respondents' attitudes toward the sensory characteristics, health benefits and availability of game meat in the previous sections, this section describes the results for price as an attribute of game meat. The overall trends in attitudes toward the price of game meat among the different respondent groups are presented in Figure 5.5.

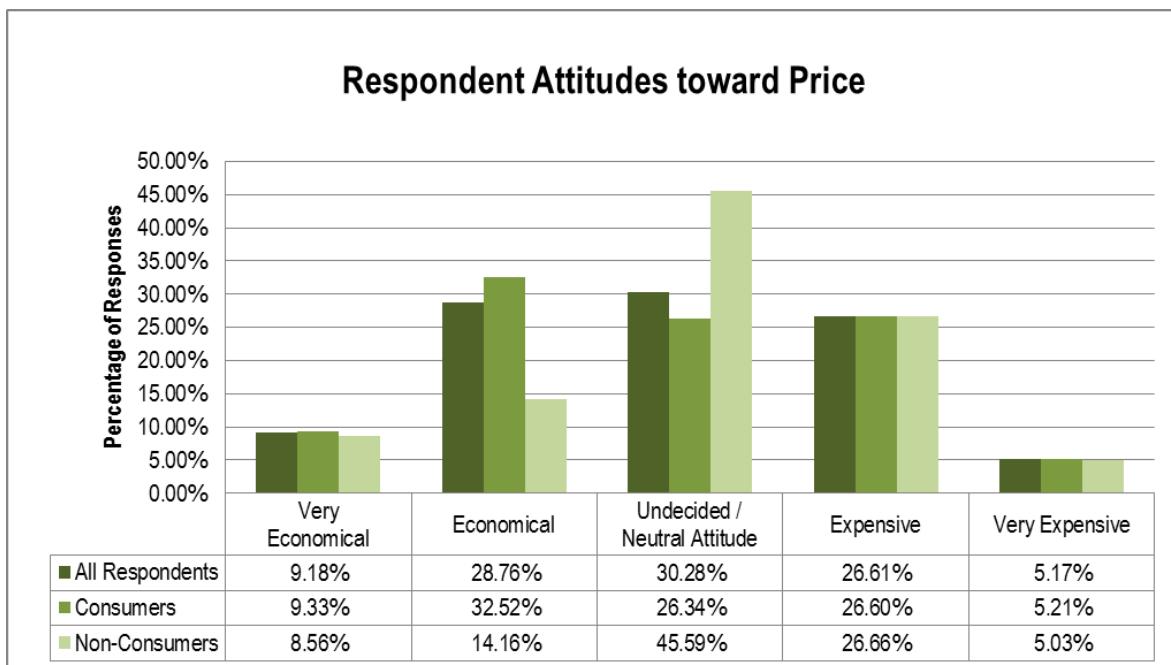


Figure 5.5 Respondent Attitudes toward Price of Game Meat

The results (Figure 5.5) indicated that both respondent groups had an overall undecided attitude toward the price of game meat. While consumer respondents' responses were relatively balanced between economical (32.52%), undecided (26.34%) and expensive (26.60%), non-consumer respondents' responses were mostly undecided (45.59%), whereafter it was considered to be more expensive (26.66%) than economical (14.06%). Neither of the respondent groups found the price of game meat to be very economical, nor very expensive.

Table 5.7 provides the composite frequency patterns for responses on the price of game meat. Important trends were highlighted in red, as discussed below.

Table 5.7 Composite Frequency Response Pattern for Respondent Groups on Price of Game Meat

Statement	All					Consumer Respondents					Non-Consumer Respondents				
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely
<b>Statement 24</b> Game meat is affordable	37 3.14%	297 25.23%	361 30.67%	388 32.97%	94 7.99%	29 3.10%	223 23.82%	240 <b>25.64%</b>	359 <b>38.35%</b>	85 <b>9.08%</b>	8 <b>3.32%</b>	74 <b>30.71%</b>	121 <b>50.21%</b>	29 12.03%	9 3.73%
<b>Statement 25</b> Game meat is a luxury item	66 5.61%	307 26.08%	298 25.32%	431 36.62%	75 6.37%	58 6.20%	277 29.59%	209 <b>22.33%</b>	334 35.68%	58 6.20%	8 3.32%	30 12.45%	89 <b>36.93%</b>	97 <b>40.25%</b>	17 7.05%
<b>Statement 26</b> Game meat is good value for money	17 1.44%	135 11.47%	437 37.13%	471 40.02%	117 9.94%	11 1.18%	95 10.15%	284 <b>30.34%</b>	434 <b>46.37%</b>	112 <b>11.97%</b>	6 2.49%	40 16.60%	153 <b>63.49%</b>	37 15.35%	5 2.07%
<b>Statement 27</b> Game meat is a cheap alternative to other meat	109 9.26%	442 37.55%	394 33.47%	181 15.38%	51 4.33%	88 <b>9.40%</b>	363 <b>38.78%</b>	276 <b>29.49%</b>	163 17.41%	46 4.91%	21 8.71%	79 <b>32.78%</b>	118 <b>48.96%</b>	18 7.47%	5 2.07%
<b>Statement 28</b> Game meat is expensive in relation to other red meat	72 6.12%	287 24.38%	407 34.58%	360 30.59%	51 4.33%	66 7.05%	256 <b>27.35%</b>	294 <b>31.41%</b>	280 <b>29.91%</b>	40 4.27%	6 2.49%	31 12.86%	113 <b>46.89%</b>	80 <b>33.20%</b>	11 4.56%
<b>Statement 29</b> The price of game meat prevents me from consuming it as often as I would like	165 14.02%	391 33.22%	351 29.82%	219 18.61%	51 4.33%	122 <b>13.03%</b>	345 <b>36.86%</b>	245 <b>26.18%</b>	182 19.44%	42 4.49%	43 <b>17.84%</b>	46 <b>19.09%</b>	106 <b>43.98%</b>	37 15.35%	9 3.73%
<b>Statement 30</b> When I select game or red meat, the price of the different products largely determines my choice	123 10.45%	274 23.28%	278 23.62%	399 33.90%	103 8.75%	83 8.87%	236 25.21%	196 <b>20.94%</b>	334 <b>35.68%</b>	87 <b>9.29%</b>	40 16.60%	38 15.77%	82 <b>34.02%</b>	65 <b>26.97%</b>	16 6.64%
<b>Statement 31</b> I can only afford to consume game meat on special occasions	176 14.95%	409 34.75%	325 27.61%	223 18.95%	44 3.74%	127 13.57%	365 39.00%	228 <b>24.36%</b>	181 19.34%	35 3.74%	49 20.33%	44 18.26%	97 <b>40.25%</b>	42 17.43%	9 3.73%

As indicated on Table 5.7, a large proportion [between 20.94% ( $n = 196$ ) to 31.41% ( $n = 294$ ) among consumer respondents and 34.02% ( $n = 82$ ) to 63.49% ( $n = 153$ ) among non-consumer respondents] of responses were undecided regarding price in each statement. Therefore, the otherwise positive or negative responses of consumer and non-consumer respondents are provided below. Among consumer respondents, 47.43% [38.35% ( $n = 359$ ) agree and 9.08% ( $n = 85$ ) agree completely] found game meat to be affordable, 58.34% [46.37% ( $n = 434$ ) agree and 11.97% ( $n = 112$ ) agree completely] found it to be good value for money in Statements 24 and 26. Although the price of meat was considered to be a factor to respondents when choosing meat (Statement 30), game meat was no longer considered a luxury or expensive (Statements 25 and 28) in relation to other red meat. It was not considered to be a cheap alternative either (Statement 27). The price of game meat did not seem to prevent consumer respondents from consuming it on a regular basis (Statement 29). However, among non-consumer respondents, 34.03% [30.71% ( $n = 74$ ) being negative and 3.32% ( $n = 8$ ) being very negative] did not consider game meat to be affordable and 63.49% ( $n = 153$ ) were undecided whether it is good value for money in response to Statements 24 and 26. The price of meat was considered to be a factor to non-consumer respondents when choosing meat (Statement 30) and they considered game meat to be a luxury item, or expensive in relation to other red meat (Statements 25 and 28). However, the price of game meat was not indicated to be a factor which prevents non-consumer respondents from consuming it on a regular basis (Statement 29), indicating that other product attributes might be more important.

In other studies, affordability was found to be one of the most prominent concerns to South African consumers regarding red meat in general (Vermeulen *et al.*, 2015). It was found that, although consumers seemed sensitive to the price of meat, such as beef and lamb, price was also considered to be a quality cue to consumers during their purchase (Vermeulen *et al.*, 2015). While lower prices are usually preferred, price is not always the most important consideration during purchase decisions (Font-I-Furnols & Guerrero, 2014). Consumers are often found to associate price with quality, and while a low price can cause a product to be perceived as a low quality product, a high price may render the product unaffordable to the consumer (Ismail *et al.*, 2012). In the case of lamb meat, Font-I-Furnols and Guerrero (2014) found price to be a limiting factor to its consumption. Similarly, Casini, Contini, Marone and Romano (2013) found price to be a barrier in the purchase of nutritious food among lower socioeconomic groups.

The willingness to pay, and therefore consumer attitudes toward a products' price, are often influenced by other perceived attributes of the product. Among Italian consumers, it was found that consumers are often willing to pay for convenience, but not necessarily for ethical considerations (Carlucci, De Gennaro & Roselli, 2016). Italian consumers were willing to pay more for smaller bottles with convenient caps, but not for bottles manufactured from eco-friendly materials (Carlucci *et al.*, 2016). While Rekhy and McConchie (2014) found that consumers are willing to pay for the desired quality of a product, there comes a point where price determines the final purchase behaviour. Although this study did not investigate the willingness of respondents to pay for convenience or ethical considerations, or the trade-off between price and quality, these perceived attributes could have played a role in their attitudes toward the affordability of game meat.

### 5.5.5 Respondent Attitudes toward the Preparation of Game Meat

Based on the responses from respondents, the preparation requirements of game meat seemed to play an important role in its consumption. Figure 5.6 displays the overall attitudes toward the preparation of game meat.

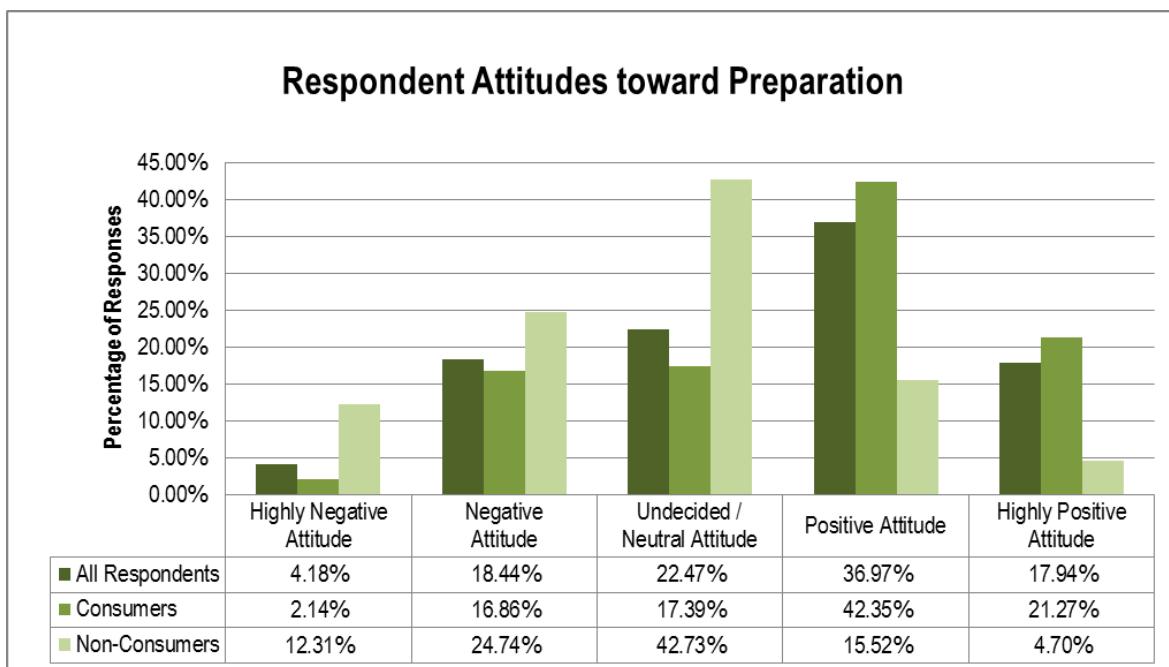


Figure 5.6 Respondent Attitudes toward Preparation of Game Meat

As observed from the graph in Figure 5.6, trends between the attitudes of consumer and non-consumer respondents toward the ease of preparation were quite different. More

consumer respondents seemed positive (42.35% being positive and 21.27% being very positive) regarding game meat preparation than non-consumer respondents, who were largely undecided (42.73%), or negative (24.74% being negative and 12.31% being very negative), regarding the preparation of game meat.

Table 5.8 presents the composite responses to survey statements on preparation and the frequency of the distribution of responses as discussed in the paragraphs following the table.

Table 5.8 Composite Frequency Response Pattern for Respondent Groups on Preparation of Game Meat

Statement	All					Consumer Respondents					Non-Consumer Respondents				
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely
<b>Statement 32</b> I find game meat easy to prepare	46 3.99%	245 21.27%	247 21.44%	459 39.84%	155 13.45%	17 1.85%	169 18.35%	147 15.96%	435 <b>47.23%</b>	<b>16.61%</b>	29 <b>12.55%</b>	76 <b>32.90%</b>	100 <b>43.29%</b>	24 10.39%	2 0.87%
<b>Statement 33</b> The preparation of game meat is time-consuming	91 7.90%	344 29.86%	329 28.56%	351 30.47%	37 3.21%	81 <b>8.79%</b>	327 <b>35.50%</b>	220 23.89%	273 29.64%	20 2.17%	10 4.33%	17 7.36%	109 <b>47.19%</b>	78 <b>33.77%</b>	17 <b>7.36%</b>
<b>Statement 34</b> If properly prepared, game meat is always tasty	23 2.00%	59 5.12%	129 11.20%	559 48.52%	382 33.16%	3 0.33%	27 2.93%	46 4.99%	476 <b>51.68%</b>	<b>40.07%</b>	20 8.66%	32 13.85%	83 <b>35.93%</b>	83 <b>35.93%</b>	13 <b>5.63%</b>
<b>Statement 35</b> I find game meat convenient to use	28 2.43%	151 13.11%	373 32.38%	445 38.63%	155 13.45%	7 0.76%	87 9.45%	247 26.82%	427 <b>46.36%</b>	<b>16.61%</b>	21 <b>9.09%</b>	64 <b>27.71%</b>	126 <b>54.55%</b>	18 7.79%	2 0.87%
<b>Statement 36</b> I can prepare game meat every day	118 10.24%	383 33.25%	374 23.78%	256 22.22%	121 10.50%	57 6.19%	306 <b>33.22%</b>	193 <b>20.96%</b>	246 <b>26.71%</b>	119 12.92%	61 <b>26.41%</b>	77 <b>33.33%</b>	81 35.06%	10 4.33%	2 0.87%
<b>Statement 37</b> Because of its special preparation requirements, I only prepare game meat on special occasions	158 13.72%	388 33.68%	300 26.04%	264 22.92%	42 3.65%	121 <b>13.14%</b>	335 <b>38.55%</b>	196 21.28%	217 23.56%	32 3.47%	37 16.02%	33 14.29%	104 <b>45.02%</b>	47 20.35%	10 4.33%
<b>Statement 38</b> The enjoyment of well-prepared game meat is worth the effort	43 3.73%	34 2.95%	160 13.89%	530 46.01%	385 33.42%	2 0.22%	8 0.87%	72 7.82%	464 <b>50.38%</b>	<b>40.72%</b>	41 17.75%	26 11.26%	88 38.10%	66 28.57%	10 4.33%

As indicated in Statements 32 and 35 in Table 5.8, consumer respondents [63.84% on average, with 47.23% ( $n = 435$ ) agreeing and 16.61% ( $n = 153$ ) agreeing completely] found game meat easy to prepare and convenient to use. On average, 31.81% found its preparation time-consuming [29.64% ( $n = 273$ ) agreeing and 2.17% ( $n = 20$ ) agreeing completely], while 35.50% ( $n = 327$ ) disagreed that its preparation is time-consuming and 8.79% ( $n = 81$ ) disagreed completely with Statement 33. The remaining consumer respondents (23.89%;  $n = 220$ ) were undecided. Although consumer respondents seemed relatively undecided (20.96%;  $n = 193$ ) whether they could prepare game meat every day, it is not considered to be used only for special occasions due to special preparation requirements (Statements 36-37). Among consumer respondents, on average 91.1% [50.38% ( $n = 464$ ) positive and 40.72% ( $n = 375$ ) very positive] indicated that the enjoyment of game meat is worth the effort required during preparation and that game meat is always tasty if prepared properly (Statements 34 and 38).

A large proportion [between 43.29% ( $n=100$ ) and 54.55% ( $n = 126$ )] of respondents in the non-consumer group seemed undecided regarding the ease of preparation and convenience of use of game meat. However, their attitudes were more negative than those of consumer respondents. Among non-consumer respondents, 45.45% [32.90% ( $n = 76$ ) being negative and 12.55% ( $n = 29$ ) being very negative] did not find game meat easy to prepare, 36.80% [27.71% ( $n = 64$ ) negative and 9.09% ( $n = 21$ ) very negative] did not find it convenient to use and 41.13% [33.77% ( $n = 78$ ) being negative and 7.36% ( $n = 17$ ) being very negative] found its preparation to be time-consuming in response to Statements 32, 33 and 35 . Non-consumer respondents indicated that they cannot prepare game meat every day [with 33.33% ( $n = 77$ ) being negative and 26.41% ( $n = 61$ ) very negative] and were largely undecided (45.02%;  $n = 104$ ) whether they would only prepare it for special occasions (Statements 36-37).

Other recent studies found the preparation of a product to be a key factor in its consumption, which may also be relevant in the case of game meat. Borgogno *et al.* (2015) found that familiarity with a product and its preparation reduces uncertainty for the consumer and consequently plays a major role in food selection. If consumers are comfortable to prepare a product, they are more likely to use it. As seen in the results of Reicks, Trofholz, Stang and Laska (2014), the likelihood of consuming fruit and vegetables are positively related to knowledge of its preparation. As observed from the results of non-consumer respondents, uncertainty regarding game meat preparation could also be a limiting factor in the consumption of game meat. Time was also found to be a

significant barrier or a motivator in household meal preparation (Jones, Walter, Soliah & Phifer, 2014). Among American consumers, it was found that the more time people spent working out of the home, the less time was dedicated to food preparation, increasing the importance of convenient products to consumers (Reicks *et al.*, 2014). As seen from the results, a significant portion of respondents found game meat preparation to be time-consuming and not necessarily convenient, which could serve as a limiting factor to its frequency of consumption.

Furthermore, consumers need certain skills for food preparation (Jones *et al.*, 2014) and the presence of these skills can influence the dietary behaviour of a household positively, while a lack of these skills can be a barrier to the preparation of meals (Reicks *et al.*, 2014). Smith *et al.* (2013) established that one of the best ways to improve consumers' overall diets by including a greater variety of healthy foods is to boost their ability to prepare healthy foods that can be prepared in a short amount of time. Consequently, an increased demand for easy to prepare products have been observed (Casini *et al.*, 2013). As mentioned earlier, there seemed to be uncertainty among non-consumers regarding the preparation of game meat which could play a role in their choice not to consume game meat.

Current trends found in South African studies indicate a continued growth in high protein diets with consumers requiring convenient protein products that are easy to prepare (BFAP Baseline, 2014). Radder (2003) found that the preparation of venison could greatly influence its taste and that consumers found venison time-consuming to prepare. Hoffman *et al.* (2004) found that consumers need to be educated regarding suitable preparation methods of game meat. The large number of undecided responses in the current study indicates that non-consumer respondents do not feel comfortable, or familiar, with the preparation of game meat, and they regarded its preparation as difficult, inconvenient and time-consuming.

#### **5.5.6 Respondent Attitudes toward the Promotion of Game Meat**

The overall trend regarding respondents' attitudes toward the promotion of game meat is presented in Figure 5.7.

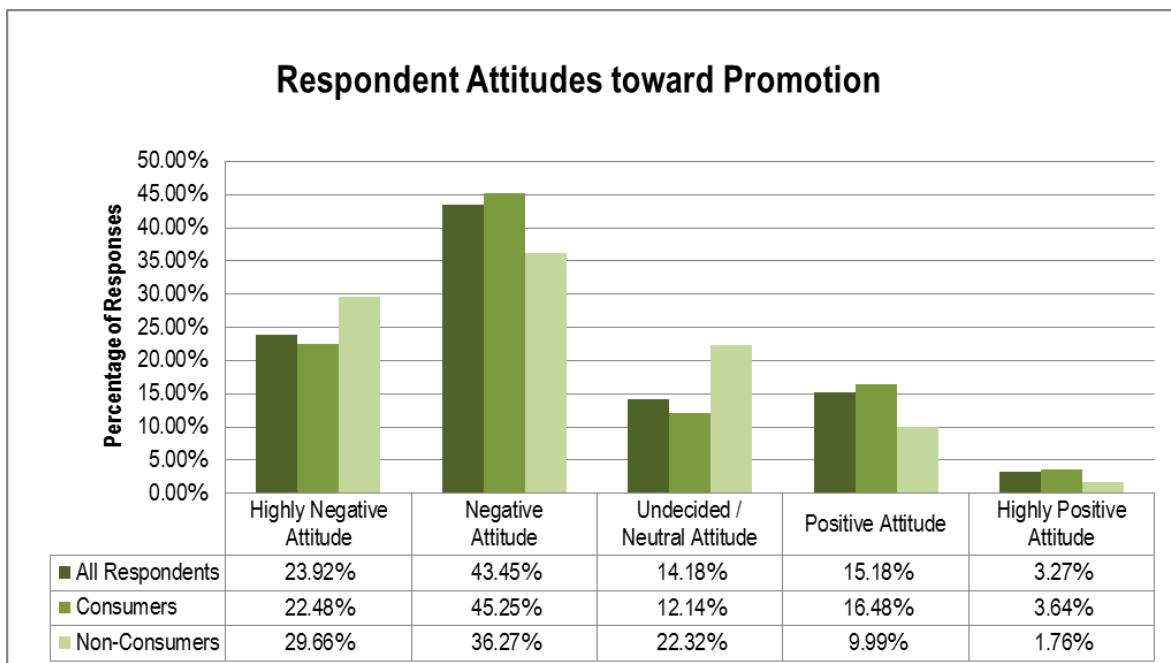


Figure 5.7 Respondent Attitudes toward Promotion of Game Meat

In this study, respondents' overall attitudes to the promotion of game meat tended to be rather negative (see Figure 5.7) with 43.45% of respondents indicating negative attitudes and 23.92% indicating highly negative attitudes toward the promotion of game meat. It could be that the promotion of game meat is either lacking, or ineffective in reaching its target market. Trends observed in both respondent groups were similar.

The specific statements and their responses can be seen in Table 5.9. As mentioned above, the frequency response patterns for consumer and non-consumer respondents were similar.

Table 5.9 Composite Frequency Response Pattern for Respondent Groups on Promotion of Game Meat

Statement	All						Consumer Respondents						Non-Consumer Respondents					
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided
<b>Statement 39</b> Enough information is available about game meat	114 <b>10.06%</b>	571 <b>50.40%</b>	216 19.06%	185 16.33%	47 40.15%	80 8.83%	483 53.31%	139 15.34%	160 17.66%	44 4.86%	34 14.98%	88 38.77%	77 33.92%	25 11.01	3 1.32%			
<b>Statement 40</b> I have seen advertisements for game meat in the past year	356 <b>31.42%</b>	445 <b>39.28%</b>	121 10.68%	177 15.62%	34 3.00%	266 29.36%	369 40.73%	87 9.60%	155 17.11%	29 3.20%	90 39.65%	76 33.48%	34 14.98%	22 9.69%	5 2.20%			
<b>Statement 41</b> I have seen promotional offers on game meat in the past year	343 <b>30.27%</b>	461 <b>40.69%</b>	145 12.80%	154 13.59%	30 2.65%	265 29.25%	378 41.72%	104 11.48%	133 14.68	26 2.78%	78 34.36%	83 36.56%	41 18.06%	21 9.25%	4 1.76%			

Responses presented in Table 5.9 indicate that among all respondents, 60.46% [50.40% ( $n = 571$ ) negative and 10.06% ( $n = 114$ ) very negative] indicated that there was not enough information available regarding game meat (Statement 39). On average 70.88% of all respondents indicated that they have seen neither advertisements [39.28% ( $n = 445$ ) negative and 31.42% ( $n = 356$ ) very negative] for, nor promotional offers [40.69% ( $n = 461$ ) negative and 30.27% ( $n = 343$ ) very negative] on game meat in the past year (Statements 40-41).

The same trends were also found by other researchers in the past. In 2005, Hoffman *et al.* indicated that producers are not doing enough to promote game meat. They indicated that 88% of their respondents were not aware of marketing efforts of game meat in shops or restaurants. Similarly, Radder and Le Roux (2005) found that only 9.3% of their respondents were effectively reached by marketing efforts for venison.

As seen below from results of other studies, the promotion of a product can be done through formal marketing strategies or through referrals from important reference groups, but are not limited to those influences. Information about a product can be presented to consumers through marketing strategies that are designed to create specific quality expectations in a consumers' frame of reference which will influence their purchasing decisions (Font-I-Furnols & Guerrero, 2014). Similarly, reference groups, like family and friends can influence purchase decisions through the guidance and opinions they provide, making them an important element in the promotion of a product (Ismail *et al.*, 2012). Negative experiences with a product are shared among friends, and can prevent consumers from purchasing it; however, direct experiences with a product, whether good or bad, were found to be perceived as more reliable to individuals than either formal marketing communications or reference groups (Ismail *et al.*, 2012).

### **5.5.7 Respondent Attitudes toward Safety of Game Meat for Human Consumption**

In this study, respondents' concerns regarding the safety of game meat as a food were explored with a few general statements, statements relating to whether they consider game meat to possess certain qualities, as well as how important respondents consider those qualities to be when purchasing meat. The overall attitudes can be seen in Figure 5.8.

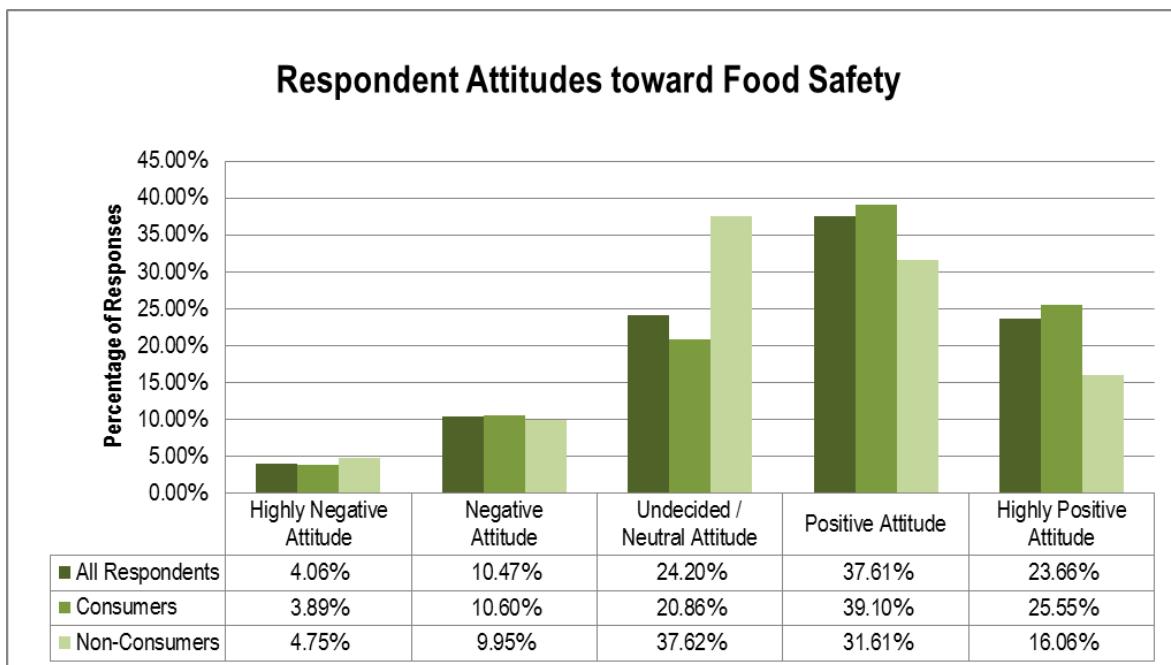


Figure 5.8 Respondent Attitudes toward Safety of Game Meat for Human Consumption

Both respondent groups had relatively positive attitudes toward the safety of game meat for human consumption and also found food safety an important consideration when purchasing any type of meat (with 39.10% being positive and 25.55% being highly positive among consumer respondents and 31.61% being positive and 16.06% being highly positive among non-consumer respondents). As seen in the Figure 5.8, a large percentage of non-consumer respondents (37.62%) were also undecided regarding the food safety aspects of game meat.

The responses to the specific survey statements on safety of game meat are provided in the composite frequency response table below (Table 5.10).

Table 5.10 Composite Frequency Response Pattern for Respondent Groups on Safety of Game and Red Meat

Statement	All					Consumer Respondents					Non-Consumer Respondents				
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely
<b>Statement 42</b> Game meat is safe for human consumption	3 0.27%	9 0.81%	92 8.30%	467 42.11%	538 48.51%	3 0.34%	2 0.23%	37 4.17%	351 <b>39.53%</b>	495 <b>55.74%</b>	0 0.00%	7 3.17%	55 <b>24.89%</b>	116 <b>52.49%</b>	43 <b>19.46%</b>
<b>Statement 43</b> Game meat is of good quality	2 0.18%	17 1.53%	182 16.41%	477 43.01%	431 38.86%	1 0.11%	6 0.68%	91 10.25%	386 <b>43.47%</b>	404 <b>45.50%</b>	1 0.45%	11 4.98%	91 <b>41.18%</b>	91 <b>41.18%</b>	27 <b>12.22%</b>
<b>Statement 44</b> The hygienic aspects of game meat concern me	182 16.41%	432 38.95%	268 24.17%	189 17.04%	38 3.43%	166 <b>18.69%</b>	370 <b>41.67%</b>	181 <b>20.38%</b>	145 16.33%	26 2.93%	16 <b>7.24%</b>	62 <b>28.05%</b>	87 <b>39.37%</b>	44 19.91%	12 5.43%
<b>Statement 45</b> I trust that production standards of game meat complies with food safety regulations	15 1.35%	77 6.94%	255 22.99%	596 53.74%	166 14.97%	7 0.79%	57 6.42%	173 19.48%	503 <b>56.64%</b>	148 <b>16.67%</b>	8 3.62%	20 9.05%	82 <b>37.10%</b>	93 <b>42.08%</b>	18 <b>8.14%</b>
<b>Statement 46</b> I purchase game or red meat only from a reputable outlet	46 4.15%	106 9.56%	266 23.99%	450 40.58%	241 21.73%	31 3.49%	98 11.04%	188 21.17%	377 <b>42.45%</b>	194 <b>21.85%</b>	15 6.79%	8 3.62%	78 35.29%	73 <b>33.03%</b>	47 <b>21.27%</b>
<b>I believe that game meat products generally possess the following characteristics:</b>															
<b>Statement 47</b> • Organic production methods	19 1.71%	72 6.49%	251 22.63%	489 44.09%	278 25.07%	12 1.35%	54 6.08%	156 17.57%	411 <b>46.26%</b>	255 <b>28.72%</b>	7 3.17%	18 8.14%	95 <b>42.99%</b>	78 <b>35.29%</b>	23 <b>10.41%</b>
<b>Statement 48</b> • Free from growth hormones	11 0.99%	51 4.60%	165 14.88%	528 47.61%	354 31.92%	5 0.56%	36 4.05%	86 9.68%	436 <b>49.10%</b>	325 <b>36.60%</b>	6 2.71%	15 6.79%	79 <b>35.75%</b>	92 <b>41.63%</b>	29 <b>13.12%</b>
<b>Statement 49</b> • Free from antibiotics	12 1.08%	63 5.68%	199 17.94%	503 45.36%	332 29.94%	8 0.90%	44 4.95%	111 12.50%	418 <b>47.07%</b>	307 <b>34.57%</b>	4 1.81%	19 8.60%	88 <b>39.82%</b>	85 <b>38.46%</b>	25 <b>11.31%</b>
<b>Statement 50</b> • Free from pesticide residues	12 1.08%	90 8.12%	265 23.90%	472 42.56%	270 24.35%	7 0.79%	67 7.55%	168 18.92%	397 <b>44.71%</b>	249 <b>28.04%</b>	5 2.26%	23 10.41%	97 <b>43.89%</b>	75 <b>33.94%</b>	21 <b>9.50%</b>

Statement	All						Consumer Respondents						Non-Consumer Respondents			
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	
<b>Statement 51</b> • Sufficient industry standards and regulations	24 2.16%	140 12.62%	390 35.17%	419 37.78%	136 12.26%	16 1.80%	116 13.06%	270 <b>30.41%</b>	361 <b>40.65%</b>	125 <b>14.08%</b>	8 3.62%	24 10.86%	120 <b>54.30%</b>	58 <b>26.24%</b>	11 <b>4.98%</b>	
<b>Statement 52</b> • Traceability of the product	60 5.41%	257 23.17%	421 37.96%	281 25.34%	90 8.12%	46 5.18%	220 24.77%	305 <b>34.35%</b>	239 26.91%	78 8.78%	14 6.33%	37 16.74%	116 <b>52.49%</b>	42 <b>19.00%</b>	12 <b>5.43%</b>	
<b>Statement 53</b> • The expiry date indicated on the packaging	31 2.80%	131 11.81%	478 43.10%	372 33.54%	97 8.75%	22 2.48%	111 12.50%	352 <b>39.64%</b>	320 <b>36.04%</b>	83 <b>9.35%</b>	9 4.07%	20 9.05%	126 <b>57.01%</b>	52 <b>23.53%</b>	14 <b>6.33%</b>	
<b>To what extent will you consider the following factors every time you purchase game or red meat?</b>																
	Highly unlikely	Unlikely	Undecided	Likely	Highly likely	Highly unlikely	Unlikely	Undecided	Likely	Highly likely	Highly unlikely	Unlikely	Undecided	Likely	Highly likely	
<b>Statement 54</b> • Organic production methods	95 8.57%	172 15.51%	289 26.06%	358 32.28%	195 17.58%	77 8.67%	140 15.77%	218 <b>24.55%</b>	288 <b>32.43%</b>	165 <b>18.58%</b>	18 8.14%	32 14.48%	71 <b>32.13%</b>	70 <b>31.67%</b>	30 <b>13.57%</b>	
<b>Statement 55</b> • The use of growth hormones	107 9.65%	173 15.60%	217 19.57%	327 29.49%	285 25.70%	88 9.91%	139 15.65%	153 17.23%	275 <b>30.97%</b>	233 <b>26.24%</b>	19 8.60%	34 15.38%	64 <b>28.96%</b>	52 <b>23.53%</b>	52 <b>23.53%</b>	
<b>Statement 56</b> • The use of antibiotics	104 9.38%	172 15.51%	218 19.66%	327 29.49%	288 25.97%	86 9.68%	137 15.43%	153 17.23%	276 <b>31.08%</b>	236 <b>26.58%</b>	18 8.14%	35 15.84%	65 <b>29.41%</b>	51 <b>23.08%</b>	52 <b>23.53%</b>	
<b>Statement 57</b> • Residues of pesticides	98 8.84%	157 14.16%	225 20.29%	334 30.12%	295 26.60%	82 9.23%	127 14.30%	156 17.57%	281 <b>31.64%</b>	242 <b>27.25%</b>	16 7.24%	30 13.57%	69 <b>31.22%</b>	53 <b>23.98%</b>	53 <b>23.98%</b>	
<b>Statement 58</b> • Industry standards and regulations	44 3.97%	95 8.57%	244 22.00%	463 41.75%	263 23.72%	33 3.72%	82 9.23%	189 21.28%	373 <b>42.00%</b>	211 <b>23.76%</b>	11 4.98%	13 5.88%	55 <b>24.89%</b>	90 <b>40.72%</b>	52 <b>23.53%</b>	
<b>Statement 59</b> • The traceability of the product	56 5.05%	126 11.36%	274 24.71%	431 38.86%	222 20.02%	44 4.95%	106 11.94%	216 <b>24.32%</b>	350 <b>39.41%</b>	172 <b>19.37%</b>	12 5.43%	20 9.05%	58 <b>26.24%</b>	81 <b>36.65%</b>	50 <b>22.62%</b>	

Statement	All						Consumer Respondents						Non-Consumer Respondents					
	Highly unlikely	Unlikely	Undecided	Likely	Highly likely	Highly unlikely	Unlikely	Undecided	Likely	Highly likely	Highly unlikely	Unlikely	Undecided	Likely	Highly likely			
<b>Statement 60</b> • The expiry date indicated on the packaging	28 2.52%	36 3.25%	150 13.53%	401 36.16%	494 44.54%	22 2.48%	31 3.49%	112 12.61%	344 <b>38.74%</b>	379 <b>42.68%</b>	6 2.71%	5 2.26%	38 <b>17.19%</b>	57 <b>25.79%</b>	115 <b>52.04%</b>			
<b>Statement 61</b> I consider other factors to be more important than the above mentioned factors	90 8.12%	215 19.39%	519 46.80%	189 17.04%	96 8.66%	70 7.88%	189 21.28%	390 <b>43.92%</b>	164 18.47%	75 8.45%	20 9.05%	26 11.76%	129 <b>58.37%</b>	25 11.31%	21 9.50%			

In order to present the results on food safety from Table 5.10 in a concise and clear manner, the percentages of positive and very positive attitudes, and negative and very negative attitudes respectively were combined and presented as average percentages. Consumer respondents' attitudes toward the safety of game meat seemed to be mostly positive with an average of 95.27% (n = 846) consumer respondents indicating that it is safe for human consumption and an average of 88.97% (n = 790) indicating that it is of good quality (Statements 42-43). Although an average of 60.36% (n = 536) of consumer respondents were not concerned about the hygienic aspect of the product (Statement 44), 20.38% (n = 181) were undecided about the hygiene of game meat. Among consumer respondents, 73.31% (n = 651) on average trusted that game meat complies with food safety regulations and 64.30% (n = 571) on average found it important to purchase meat from a reputable outlet (Statements 45-46). The majority [72.75% (n = 646) to 85.70% (n = 761) on average] of respondents in the consumer group believed that game meat is produced organically, free from growth hormones, antibiotics and pesticide residues (in response to Statements 47-50). Although, on average 54.73% (n = 486) of consumer respondents believed that there are sufficient industry standards and regulations for the game meat sector, 30.41% (n = 270) were undecided in Statement 51. Consumer respondents were rather neutral whether products could be traced to its origin; 39.64% (n = 352) were undecided whether the packaging contains expiry dates and 45.39% (n = 403) on average believed that it did (Statements 52-53).

When it came to the role played by these attributes in consumer respondents' choice when choosing meat, the following were observed from Statements 54 to 60. When selecting meat, 51.01% (n = 453) of consumer respondents indicated that organic production methods were important in their choice, while 24.55% (n = 218) were undecided. Consumer respondents felt even stronger regarding the role of growth hormones, antibiotics, pesticide residues, sufficient industry standards and regulations and the expiry date visible on the packaging in their choice of meat, with the majority of them regarding each of these attributes to be important (30.97%; n = 275; to 42.00%; n = 373), or very important (23.76%; n = 211; to 42.68%; n = 379). The traceability of the product seemed important to 58.78% (n = 522) of consumer respondents on average, while 24.32% (n = 216) were undecided. However, 43.92% (n = 390) of consumer respondents seemed undecided whether food safety aspects were the most important attribute when considering which meat to purchase (Statement 61).

As indicated on Table 5.10, respondents from the non-consumer group seemed more undecided and slightly less positive regarding the safety of game meat in general. Although 71.95% (n = 159) of non-consumer respondents on average believed that game meat is safe for human consumption (Statement 42), 24.89% (n = 55) were undecided. An average of 53.40% (n = 118) non-consumer respondents indicated that game meat is of good quality (Statement 43), but 41.18% (n = 91) were undecided. Responses regarding hygienic aspects of game meat among respondents in the non-consumer group in Statement 44 varied, 25.34% (n = 56) were concerned about the hygiene, 39.37% (n = 87) were undecided and 35.29% (n = 78) were not concerned about its hygienic aspects. Among these non-consumers, 37.10% (n = 82) were undecided whether game meat complies with food safety standards (Statement 45), while on average, 50.22% (n = 111) believed it does comply. However, 54.30% (n = 120) of them on average indicated that they only purchase meat from reputable outlets (Statement 46). A relatively large percentage of non-consumer respondents were undecided whether game meat really had the following qualities (Statements 47-53): organic production methods (42.99%; n = 95), free from growth hormones (35.75%; n = 79), antibiotics (39.82%; n = 88) and pesticide residues (43.89%; n = 97), sufficient industry standards and regulations (54.30%; n = 120), traceability (52.49%; n = 116) and the expiry date on the packaging (57.01%; n = 126). However, their attitudes were more positive than negative and on average they positively indicated that game meat possesses the following attributes: organic production methods (45.70%; n = 101), free from growth hormones (54.75%; n = 121), antibiotics (49.77%; n = 110) and pesticide residues (43.44%; n = 96), sufficient industry standards and regulations (31.22%; n = 69), traceability (24.43%; n = 54) and the expiry date on the packaging (29.86%; n = 66).

When it came to the importance of these attributes to non-consumer respondents when selecting meat (Statements 54-60), a relatively large percentage of respondents [17.19% (n = 38) to 31.22% (n = 69)] were undecided, but the lack of growth hormones (47.06%; n = 104), antibiotics (46.61%; n = 103) and pesticide residues (47.96%; n = 106) were observed to be important to non-consumer respondents when selecting meat; an average of 45.24% (n = 100) among non-consumer respondents regarded organic production methods to be important, while 64.24% (n = 142) considered sufficient industry standards and regulations to be important; 59.27% (n = 131) considered traceability to be important and 77.83% (n = 172) regarded the expiry date indicated on the packaging to be important. The majority of non-consumer respondents (58.37%; n = 129), however, was

undecided whether food safety was their most important consideration when purchasing meat (Statement 61).

Modern society has been found to become increasingly health-conscious, demanding food from safe and natural origins (Bothma & Du Toit, 2016). Food safety has become important to consumers, as seen from the findings of recent studies, as well as from the results of this study. Falguera *et al.* (2012) found consumers to be increasingly critical and anxious regarding food safety and that their trust in agricultural production systems was undermined by recent food scandals. Similarly, to Falguera *et al.* (2012), the Bureau for Food and Agricultural Policy Baseline Report in 2014 found that consumers are increasingly demanding clear traceability and higher quality control of products due to numerous recent food scares (BFAP Baseline, 2014). According to Ergönül (2013), the use of pesticides, antibiotics, hormones and food additives, as well as contamination, form the base of consumer concerns. Consumers need assurance that meat products are obtained from healthy animals and that strict safety and hygiene measures are adhered to during processing (Bothma & Du Toit, 2016). Consumers worldwide are increasingly concerned with zoonotic diseases and if poor safety measures prevail during the production of meat derived from wildlife, it could lead to negative publicity and economic losses (Gadaga, Etter, Mukamuri, Makwangudze, Pfukenyi & Matope, 2016; Thulin, Malmsten & Ericsson, 2015; Bodnar *et al.*, 2014).

The large-scale adulteration of meat products experienced recently (as seen with the substitution of other types of meat, such as meat derived from horse, kangaroo, or vulnerable species, labelled as game meat in South Africa) has become a serious concern for governments, the food industry and consumers, causing consumers to expect some sort of reliable authentication and labelling of meat products (Wang *et al.*, 2015; D'Amato, Alechine, Cloete, Davison & Corach, 2013). Unfortunately, D'Amato *et al.* (2013) found the reliability of commercial labelling on game meat to be poor in South Africa, leading to negative publicity for game meat. During a recent study on South African consumers' preferences when purchasing red meat, such as lamb/mutton and beef, food safety aspects such as traceability, the expiry date on the packaging and organic production methods without the use of hormones and antibiotics were found to be important to consumers (Vermeulen *et al.*, 2015). Consumers indicated a preference for products with quality cues such as certification marks (Vermeulen *et al.*, 2015).

However, it has been established that attributes such as sensory appeal, price and convenience can negatively impact on consumers' intention to purchase organically

produced foods (Dowd & Burke, 2013). While consumers indicate a willingness to pay for organic labels, the amount they are willing to pay is not always considered sufficient to cover the costs and loss in productivity involved (Falguera *et al.*, 2012). The high prices of organic products have been found to be barriers to the purchase and consistent repeat purchases of such products (Marian, Chrysochou, Krystallis, & Thøgersen, 2014). During times of economic recession, the demand for organic products are severely affected since the difference in price of the conventional product is considered too large to justify (Falguera *et al.*, 2012). Therefore, studies show that despite the perceived benefits held by organic products and a positive attitude toward organic production methods, consumers will not necessarily purchase it at any cost (Marian *et al.*, 2014). A typical study demonstrating this is that of Young & McCoy (2016), who found a significant discrepancy between the positively expressed attitudes toward organically produced, Fair Trade, environmentally friendly chocolate among Belgian consumers and their actual willingness to pay a higher price for the product.

#### **5.5.8 Respondent Attitudes toward Animal Welfare in Game Meat Production**

The results about the importance of food safety in game meat to respondents have been discussed in the previous section; this section presents the attitudes of respondents to animal welfare in game meat production. The overall attitude trends toward animal welfare in game meat production are presented in Figure 5.9.

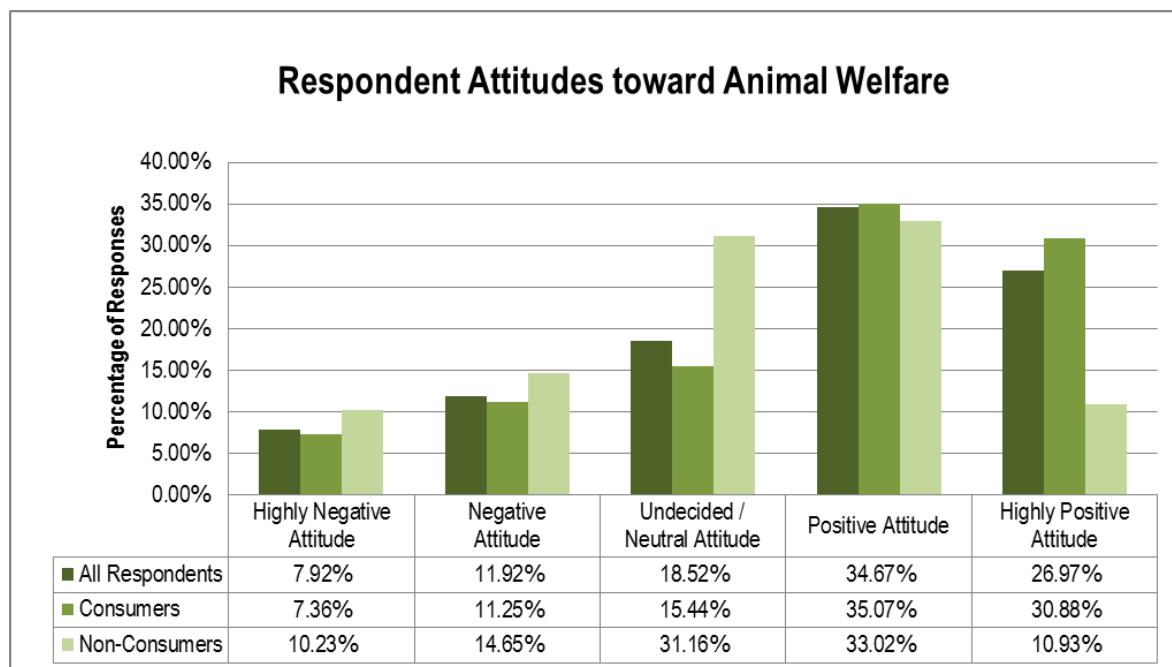


Figure 5.9 Respondent Attitudes toward Animal Welfare in Game Meat Production

In this study, the trends regarding attitudes toward animal welfare, and whether it is sufficiently respected during game meat production methods were relatively positive among both consumer respondents (with 35.07% positive and 30.88% highly positive) and non-consumer respondents (with 33.02% positive and 10.93% highly positive). However, as found above in food safety, a relatively large percentage of non-consumer respondents (31.16%) indicated neutral or undecided attitudes toward animal welfare in game meat production.

Composite responses to individual animal welfare statements are presented in Table 5.11. The percentages used to arrive at the combined percentages in the discussion below are highlighted red.

Table 5.11 Composite Frequency Response Pattern for Respondent Groups on Animal Welfare in Game Meat Production

Statement	All					Consumer Respondents					Non-Consumer Respondents				
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely
<b>Statement 62</b> Game meat can be produced in a manner that respects animal welfare	13 1.18%	28 2.55%	113 10.29%	525 47.81%	419 38.16%	3 0.34%	16 1.18%	59 6.68%	421 <b>47.68%</b>	384 <b>43.49%</b>	10 4.65%	12 5.58%	54 25.12%	104 <b>48.37%</b>	35 <b>16.28%</b>
<b>Statement 63</b> I believe animal welfare is sufficiently respected if animals are harvested in a quick and humane manner	12 1.09%	36 3.28%	105 9.56%	518 47.18%	427 38.89%	5 0.57%	22 2.49%	54 6.12%	408 <b>46.21%</b>	394 <b>44.62%</b>	7 3.26%	14 6.51%	51 23.72%	110 <b>51.16%</b>	33 <b>15.35%</b>
<b>Statement 64</b> I believe the free-ranging nature of game meat production is a desirable attribute	12 1.09%	21 1.91%	119 10.84%	519 47.27%	427 38.89%	4 0.45%	15 1.70%	61 7.25%	415 <b>47.00%</b>	385 <b>43.60%</b>	8 3.72%	6 2.79%	55 25.58%	104 <b>48.37%</b>	42 <b>19.53%</b>
<b>Statement 65</b> I believe that only humane, non-lethal methods of predator management are acceptable on game ranches	161 14.66%	180 16.39%	251 22.86%	285 25.96%	221 20.13%	154 17.44%	159 18.01%	183 20.72%	218 24.69%	169 19.14%	7 3.26%	21 9.77%	68 31.63%	67 31.16%	52 24.19%
<b>Statement 66</b> I believe that lethal methods of predator control are acceptable, if non-lethal methods of predator management have failed to reduce losses on game ranches	77 7.01%	105 9.56%	275 25.05%	418 38.07%	223 20.31%	56 6.34%	84 9.51%	189 <b>21.40%</b>	345 <b>39.07%</b>	209 <b>23.67%</b>	21 9.77%	21 9.77%	86 <b>40.00%</b>	73 <b>33.95%</b>	14 <b>6.51%</b>
<b>Statement 67</b> I consider humane methods of predator control on a farm / ranch to be important when choosing game or red meat	120 10.93%	124 11.29%	357 32.51%	310 <b>28.23%</b>	187 <b>17.03%</b>	110 12.46%	110 12.46%	269 30.46%	241 27.33%	153 17.33%	10 4.65%	14 6.51%	88 40.93%	69 32.09%	34 15.81%

The percentages of statements where respondents agreed and agreed completely were once again combined in the discussion in order to present it in a concise manner. The trends between the two respondent groups indicated on Table 5.11 were relatively similar, with non-consumers being slightly more undecided than consumers. The majority of consumer respondents (91.17%; n = 805) and non-consumer respondents (64.65%; n = 139) believed that game meat can be produced in a way that respects animal welfare (Statement 62); 90.83% (n = 802) of consumer respondents and 66.51% (n = 143) of non-consumer respondents indicated that animal welfare can be respected during harvesting, if animals are harvested in a quick and humane manner (Statement 63). The free roaming nature of game meat production (Statement 64) was indicated as a desirable attribute by 90.60% (n = 800) of consumer respondents and 67.90% (n = 146) of non-consumer respondents. Although most respondents from both groups seemed to prefer non-lethal methods of predator control during game meat production, 62.74% (n = 554) of consumer respondents and 40.46% (n = 87) of non-consumer respondents believed that lethal methods of predator control were acceptable where non-lethal methods have failed; 21.40% (n = 189) of consumer respondents and 40.00% (n = 86) of non-consumer respondents were undecided regarding the use of lethal methods (Statements 65-66). Among all respondents, 45.26% (n = 497) indicated that humane predator control methods were important to them when choosing meat in response to Statement 67.

Several European animal welfare studies, from dairy, meat, to poultry production (Gocsik, Brooshoof, De Jong & Saatkamp, 2016; Hansson & Lagerkvist, 2015; Jacques, 2014), found that consumers are increasingly concerned about the living conditions of animals in agricultural production systems. They prefer to know the conditions under which animals are kept and whether they are treated humanely (Risius & Hamm, 2017). It is increasingly found that consumers in urban areas prefer animals to be raised in natural conditions (Jacques, 2014). However, improved animal welfare production practices are known to increase meat production costs and farmers can often only improve animal welfare if the costs can be recovered, emphasising the importance of the need for the consumer to be willing to pay for animal welfare (Gocsik *et al.*, 2016).

Recent South African studies on red meat, such as beef and lamb, indicate that South Africans perceive certification of animal friendly production practices as cues to the quality of red meat, with a preference for meat from free-ranging animals (Vermeulen *et al.*, 2015). Bekker *et al.* (2011) found that consumers expect game meat to be from wild, free

roaming animals in a natural environment. Results from this current study similarly indicate a preference for game meat to be from free roaming wildlife.

### 5.5.9 Respondent Attitudes toward Game Meat Production Ethics

Finally, in this section, results regarding respondents' attitudes toward game meat production ethics are presented, whereafter the next section will present results based on Fishbein's attitude-toward-the-object model. Respondents' overall attitudes towards ethics of game meat production are displayed in Figure 5.10.

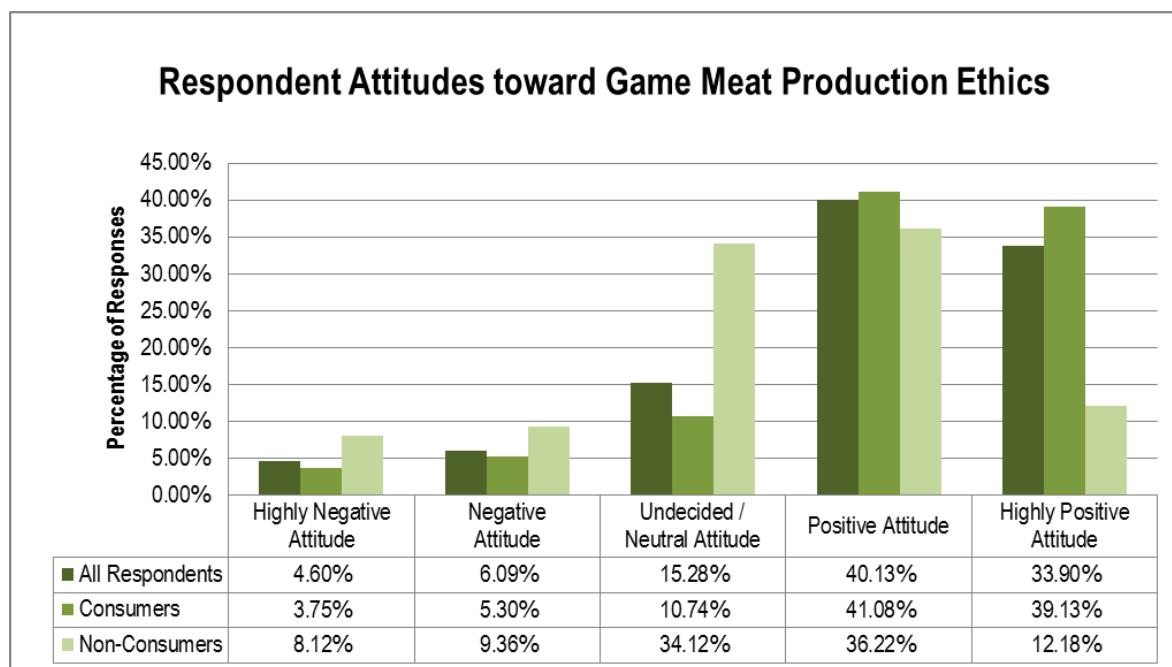


Figure 5.10 Respondent Attitudes toward Game Meat Production Ethics

Both respondent groups had positive attitudes toward game meat production ethics (41.08% among consumer respondents and 36.22% among non-consumer respondents). However, consumer respondents also indicated highly positive attitudes (39.16%) while non-consumer respondents indicated a large percentage of undecided (34.12%) attitudes. Neither group portrayed a large percentage of negative attitudes toward game meat production ethics.

The specific statements used to arrive at these overall attitudes are presented in Table 5.12 and thereafter discussed in more detail. The responses to individual survey statements as related to game meat production ethics are provided in Table 5.12

Table 5.12 Composite Frequency Response Pattern for Respondent Groups on Game Meat Production Ethics

Statement	All						Consumer Respondents						Non-Consumer Respondents						
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	
<b>Statement 68</b> I believe that sustainable harvesting of game is ethical	9 0.83%	23 2.13%	98 9.07%	499 46.16%	452 41.81%	2 0.23%	10 1.15%	48 5.51%	397 <b>45.58%</b>	414 <b>47.53%</b>	7 3.33%	13 6.19%	50 <b>23.81%</b>	102 <b>48.57%</b>	38 <b>18.10%</b>				
<b>Statement 69</b> I believe game meat production is in harmony with nature	11 1.02%	44 4.07%	184 17.02%	500 46.25%	342 31.64%	1 0.11%	27 3.10%	101 11.60%	419 <b>48.11%</b>	323 <b>37.08%</b>	10 4.76%	17 8.10%	83 <b>39.52%</b>	81 <b>38.57%</b>	19 <b>9.05%</b>				
<b>Statement 70</b> Game meat production is environmentally friendly	12 1.11%	36 3.33%	205 18.96%	493 45.61%	335 30.99%	2 0.23%	22 2.53%	122 14.01%	408 <b>46.84%</b>	317 <b>36.36%</b>	10 4.76%	14 6.67%	83 <b>39.52%</b>	85 <b>40.48%</b>	18 <b>8.57%</b>				
<b>Statement 71</b> Game meat production is in accordance with sustainable land use practices	10 0.93%	41 3.79%	228 21.09%	489 45.24%	313 28.95%	2 0.23%	24 2.76%	131 15.04%	418 <b>47.99%</b>	296 <b>33.98%</b>	8 3.81%	17 8.10%	97 <b>46.19%</b>	71 <b>33.81%</b>	17 <b>8.10%</b>				
<b>Statement 72</b> The utilisation of game meat provides an economic incentive to conserve our wildlife	14 1.30%	37 3.42%	153 14.15%	458 42.37%	419 38.76%	4 0.46%	22 2.53%	77 8.84%	375 <b>43.05%</b>	393 <b>45.12%</b>	10 4.76%	15 7.14%	76 <b>36.19%</b>	83 <b>39.52%</b>	26 <b>12.38%</b>				
<b>Statement 73</b> Game meat is a valuable natural resource to support local industries	13 1.20%	21 1.94%	141 13.04%	512 47.36%	394 36.45%	4 0.46%	11 1.26%	62 7.12%	428 <b>49.14%</b>	366 <b>42.02%</b>	9 4.29%	10 4.76%	79 <b>37.62%</b>	84 <b>40.00%</b>	28 <b>13.33%</b>				

Statement	All						Consumer Respondents						Non-Consumer Respondents			
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	
<b>Statement 74</b> <b>Game meat is a valuable natural resource to enhance the local economy</b>	11 1.02%	19 1.76%	128 11.84%	530 49.03%	393 36.36%	3 0.34%	7 0.80%	57 6.54%	440 <b>50.52%</b>	364 <b>41.79%</b>	8 3.81%	12 5.71%	71 <b>33.81%</b>	90 <b>42.86%</b>	29 <b>13.81%</b>	
<b>Statement 75</b> <b>Game meat is a valuable natural resource to increase employment opportunities</b>	16 1.48%	29 2.68%	144 13.32%	531 49.12%	361 33.40%	5 0.57%	15 1.72%	79 9.07%	436 <b>50.06%</b>	336 <b>38.58%</b>	11 5.24%	14 6.67%	65 <b>30.95%</b>	95 <b>45.24%</b>	25 <b>11.90%</b>	
<b>Statement 76</b> <b>Game meat is a valuable natural resource to ensure food security</b>	16 1.48%	55 5.09%	180 16.65%	495 45.79%	335 30.99%	6 0.69%	38 4.36%	99 11.37%	414 <b>47.53%</b>	314 <b>36.05%</b>	10 4.76%	17 8.10%	81 <b>38.57%</b>	81 <b>38.57%</b>	21 <b>10.00%</b>	
<b>Statement 77</b> <b>It is not ethical to use wildlife for food</b>	564 52.17%	319 29.15%	115 10.64%	51 4.72%	32 2.96%	518 <b>59.47%</b>	249 <b>28.59%</b>	51 5.86%	33 3.79%	20 2.30%	46 <b>21.90%</b>	70 <b>33.33%</b>	64 30.48%	18 8.57%	12 5.71%	
<b>Statement 78</b> <b>I believe it is ethical to utilise game that are harvested from wild populations</b>	28 2.59%	57 5.27%	211 19.52%	452 41.81%	333 30.80%	15 1.72%	37 4.25%	134 <b>15.38%</b>	373 <b>42.82%</b>	312 <b>35.82%</b>	13 6.19%	20 9.52%	77 36.67%	79 <b>37.62%</b>	21 <b>10.00%</b>	
<b>Statement 79</b> <b>I believe it is ethical to utilise game that are kept on large game ranches, allowing animals to remain wild and free-ranging</b>	14 1.30%	10 0.93%	114 10.55%	502 46.44%	441 40.80%	3 0.34%	3 0.34%	57 6.54%	405 <b>46.50%</b>	403 <b>46.27%</b>	11 5.24%	7 3.33%	57 27.14%	97 <b>46.19%</b>	38 <b>18.10%</b>	

Statement	All						Consumer Respondents						Non-Consumer Respondents			
	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	Disagree completely	Disagree	Undecided	Agree	Agree completely	
<b>Statement 80</b> <b>I believe it is ethical to utilise game that are kept in fenced camps, similar to cattle production methods</b>	186 17.21%	248 22.94%	268 24.79%	252 23.31%	127 11.75%	136 <b>15.61%</b>	203 <b>23.31%</b>	198 22.73%	215 <b>24.68%</b>	119 <b>13.66%</b>	50 <b>23.81%</b>	45 <b>21.43%</b>	70 <b>33.33%</b>	37 17.62%	8 3.81%	
<b>Statement 81</b> <b>I believe it is ethical to utilise game that are kept in intensive production units</b>	365 33.77%	318 29.42%	203 18.78%	123 11.38%	72 6.66%	299 <b>34.33%</b>	260 <b>29.85%</b>	140 16.07%	105 12.06%	67 7.69%	66 <b>31.43%</b>	58 <b>27.62%</b>	63 <b>30.00%</b>	18 8.57%	5 2.38%	
<b>Statement 82</b> <b>Since game form part of our unique wildlife heritage, it should not be harvested</b>	452 41.81%	344 31.82%	171 15.82%	66 6.11%	48 4.44%	420 <b>48.22%</b>	284 <b>32.61%</b>	95 10.91%	44 5.05%	28 3.21%	32 <b>15.24%</b>	60 <b>28.57%</b>	76 36.19%	22 10.48%	20 9.52%	
<b>Statement 83</b> <b>Since game numbers must occasionally be reduced in fenced areas, I do not have a problem with harvesting them</b>	29 2.68%	44 4.07%	135 12.49%	467 43.20%	406 37.56%	18 2.07%	24 2.76%	68 7.81%	383 <b>43.97%</b>	378 <b>43.40%</b>	11 5.24%	20 9.52%	67 31.90%	84 <b>40.00%</b>	28 <b>13.33%</b>	
<b>Statement 84</b> <b>As long as game is harvested in a humane manner, I do not have a problem with eating game meat</b>	32 2.96%	20 1.85%	130 12.03%	409 37.84%	490 45.33%	8 0.92%	5 0.57%	71 8.15%	333 <b>38.23%</b>	454 <b>52.12%</b>	24 11.43%	15 7.14%	59 28.10%	76 36.19%	36 17.14%	

As in food safety and animal welfare, to present responses to related statements in a concise and clear manner in order not to distract from the overall trends discussed, some percentages where respondents disagreed completely and disagreed, or agreed completely and agreed were combined respectively. The detailed response patterns can be seen in Table 5.12.

Consumer respondents' attitudes regarding ethical aspects of game meat production and utilisation were remarkably positive; 93.11% (n = 811) of consumer respondents believe that the sustainable harvesting of game meat is ethical and 88.17% (n = 768) believe that the utilisation of game meat provides an economic incentive for wildlife conservation (Statements 68 and 72). On average, 81.97% (n = 714) to 85.19% (n = 742) of consumer respondents believe that game meat production is in harmony with nature, is environmentally friendly and is in accordance with sustainable land use practices (Statements 69-71). Based on their responses to Statements 73 to 76, an average of consumer respondents considered game meat as a valuable resource to support local industries (91.16%; n = 794), to enhance the local economy (92.31%; n = 804), to increase employment opportunities (88.64%; n = 772) and to ensure food security (83.58%; n = 728). Consumer respondents found it ethical to use wildlife for food (Statement 77), even though it forms part of the South African wildlife heritage (Statement 82), since game numbers need to be reduced in fenced areas from time to time (Statement 83). The majority of consumer respondents (90.35%; n = 787) had no ethical problem with eating game in Statement 84, as long as animals are harvested humanely. However, it is important to take note of consumer respondents' attitudes towards the origin of game utilised for meat as indicated in Statements 78 to 81; 78.63% (n = 685) believe that harvesting game from wild populations are ethical, while 15.38% (n = 134) are undecided; 92.77% (n = 808) of consumer respondents consider it to be ethical to utilise game from large game ranches where game are free roaming; only 38.34% (n = 334) of consumer respondents believe that it is ethical to keep game in fenced camps similar to cattle production on farms, with 38.92% (n = 339) believing it is not ethical; 64.18% (n = 559) of consumer respondents believe that it is unethical to keep game in intensive systems. Consumer respondents prefer meat from free roaming game on extensive game ranches and the more restrictive animal movement and the more intensive game meat production becomes, the less likely they are to believe it to be ethical. However, they portray a preference for meat from game from managed populations in extensive systems to meat from game in wild, unmanaged populations (Statements 78-79).

Amongst non-consumer respondents, a large number of responses were undecided regarding game meat production ethics. When asked in Statements 69 to 71 whether they believed that game meat production is in harmony with nature, environmentally friendly and in accordance with sustainable land use practices, 39.52% (n = 83) to 46.19% (n = 97) of non-consumer respondents were undecided, while on average, many believed that it was in harmony with nature (47.63%; n = 100), environmentally friendly (49.05%; n = 103) and in accordance with sustainable land use practices (41.91%; n = 88). Among non-consumer respondents, 51.90% (n = 109) believe that utilisation of game meat provides an economic incentive for wildlife conservation, while 36.19% (n = 76) are undecided; 66.67% (n = 140) believe that sustainable harvesting of game is ethical, but 23.81% (n = 50) are undecided (Statements 68 and 72). Non-consumer respondents considered game meat as a valuable resource to support local industries (53.33%; n = 112), to enhance the local economy (56.67%; n = 119), to increase employment opportunities (57.14%; n = 120) and to contribute to food security (48.54%; n = 102), while 30.95% (n = 65) - 38.57% (n = 81) were undecided (Statements 73-76). Although 55.23% (n = 116) of non-consumer respondents agree that it is ethical to use wildlife for food (Statement 77), when asked whether it is ethical to harvest game, since it forms part of the South African wildlife heritage (Statement 82), only 43.81% (n = 92) of non-consumer respondents still agreed that it was ethical. When adding the practical aspect that game needs to be reduced in fenced areas from time to time (Statement 83), 53.33% (n = 112) agreed that it was ethical to harvest game. Indicating that South African respondents do not believe that it is totally unethical to utilise game for meat, but they are sensitive to the ethical use of their wildlife heritage. Further, 47.62% (n = 100) of non-consumer respondents believe that it is ethical to harvest game from wild populations, while 36.67% (n = 77) are undecided; 64.29% (n = 135) believe that it is ethical to utilise game from extensive game ranches where wildlife are free-roaming (Statements 78-79). In contrast, 45.24% (n = 95) of non-consumer respondents believe that it is unethical to utilise and keep game in fenced camps similar to cattle production on farms, 33.33% (n = 70) are undecided (Statement 80). Non-consumer respondents feel very strongly regarding the use of game kept in intensive systems as indicated from their responses to Statement 81, with 59.05% (n = 124) of respondents in this group finding it unethical and 30.00% (n = 63) being undecided. Non-consumer respondents are not totally against the use of wildlife for food based on ethical reasons, but that they do not find fenced camp systems and intensive systems ethically acceptable for game meat production. Similar to consumer respondents, non-consumer respondents portray a preference for meat from

animals that are from sustainably managed populations rather than meat from wild, unmanaged populations.

Findings from other recent studies indicate that consumers increasingly demand meat that is produced ethically and without harming the environment (Bothma & Du Toit, 2016; BFAP Baseline, 2014). The sustainable utilisation of wildlife is becoming a common management plan to provide incentive and funding for wildlife conservation, while at the same time controlling wildlife populations (Ljung, Riley & Ericsson, 2015). Consumers are, however, sensitive to the conditions in which game meat is produced and make a clear distinction between meat produced in intensive or semi-intensive systems, with the potential use of vaccinations, supplements and growth enhancers, and meat produced in natural, extensive and free-range conditions (Bothma & Du Toit, 2016).

On a global scale, consumers experience increased pressure to take responsibility for the consequences of their food consumption behaviour (Grunert, 2015). However, consumer tolerance in South Africa of paying premiums for products that are considered ethical, or 'green' is relatively weak and in some cases considered wasteful (McEwan, Hughes & Bek, 2015). Research conducted on ethical products and consumer behaviour in the Western Cape suggest that spending thrift is emerging as a dominant ethical consideration in consumptive behaviour among middle-class South African consumers (McEwan *et al.*, 2015). Consumers were found to prioritise family obligations, making it challenging to promote socially and environmentally friendly ethical decisions among them (McEwan *et al.*, 2015). Although consumers do care about ethical production methods, as seen from the studies above, South Africans are not necessarily willing, or able, to pay a premium for it. The previous sections presented the results of the first two objectives for this study; in the next section, the application of the Fishbein attitude-toward-the-object model, as set out in the third objective, to the research results will be presented.

## **5.6 RESULTS OBTAINED BY FISHBEIN'S ATTITUDE-TOWARD-THE-OBJECT MODEL**

The third objective was designed to explore which attributes are key in the consumption of game meat, based on the differences found between the responses of consumer and non-consumer respondents of game meat, using Fishbein's attitude-toward-the-object model. The section that follows presents the adaptation of the model as it is used in this

study, before the differences between consumer and non-consumer respondents are described.

### **5.6.1 Adaptation of the Model to the Current Study**

The Fishbein attitude-toward-the-object model was originally designed to measure attitudes toward different attributes of similar objects, such as different cars, and then to compare the results of the different objects to find which attributes consumers considered important. For the purpose of this research, the model was adapted to test respondents' attitudes toward the different attributes of one object, game meat. The respondents were divided into two groups, consumers and non-consumers of game meat and the results of these two groups were compared. The main goal in using the model in this research was to find the differences in attitudes between the two groups of respondents toward the different attributes of the product, in order to determine which attributes play a role in South African respondents' choice to consume, or not to consume game meat.

The model required two types of questions, those that measure the respondents' belief that a product actually possesses an attribute and those that measure the respondents' evaluation of goodness/badness of the attribute, or the importance to respondents that a product possesses an attribute. Each of the selected attributes of game meat had both types of questions in the survey. The internal consistency reliability of the responses was again measured on each of the smaller subsets of data used for the Fishbein attitude-toward-the-object model using Cronbach  $\alpha$  coefficients to ensure that the responses truly described the attribute the questions intended to. The internal consistency and reliability for all attributes, except for the evaluation of importance of promotion and preparation, could be established. As mentioned in Section 5.3, in order to verify internal consistency reliability for an attribute, the value obtained for the Cronbach  $\alpha$  coefficient regarded as acceptable throughout the research was set at 0.7 or greater. Responses for promotion and preparation, when divided into subsets to determine belief that an object possess an attribute and to evaluate its importance to the respondent rendered values of 0.8 for promotion belief and 0.7 for preparation belief, but only 0.04 for promotion evaluation of importance and 0.20 for preparation evaluation of importance. Therefore, promotion and preparation were excluded when the model was applied, since the internal reliability for those two attributes could not be verified on the smaller subsets of responses. On the larger sets of data, as used for the first two objectives, promotion and preparation did, however, test reliable and those results were presented and discussed in the previous section. The questions used to arrive at belief and evaluation of importance ratings for

each attribute, as well as the Cronbach  $\alpha$  score for each subset of responses are listed in Table C.2 in Appendix C.

Based on the questions selected according to the Cronbach  $\alpha$  coefficients, composite frequency tables were calculated for both the belief and evaluation of importance components for each attribute. The means were calculated for each component for each attribute for consumer and non-consumer respondents separately. The means of each belief ( $b$ ) component (rated from 1 to 5, with 1 being very negative, 5 being very positive and 3 being neutral) were used as provided by the original five-point Likert scales. In order to calculate the importance of evaluation ( $e$ ) components, the rating-levels of the five-point Likert scales were converted to a bi-polar scale to obtain a positive/negative rating for these components – see Section 4.13 - with -2 indicating a very negative attitude, 2 a very positive attitude and 0 a neutral or undecided attitude.

### **5.6.2 Differences between Consumer and Non-Consumer Respondents**

As mentioned earlier, Fishbein's attitude-toward-the-object model allows researchers to measure attitudes and to comprehend their role in consumers' decisions better and it was implemented to determine which of these attributes are key in the consumption of game meat, based on the differences found between the responses of consumer and non-consumer respondents (Table 5.13). Firstly, the respondent's belief that the product possesses a certain attribute is measured. On a scale of one to five, one indicates a very negative belief, three indicates that the respondent is undecided and five indicates a very positive belief. Secondly, the respondent's evaluation of the goodness or badness for a product to possess that specific attribute is determined. If a respondent believes that it is good, or important, for a product to possess an attribute, it is stated as a positive number. If an attribute is not considered important to the respondent, the number is negative. Zero indicates that the respondent is indifferent to the importance of the attribute.

The results in Table 5.13 indicate that consumer respondents perceived the attributes of game meat more positively overall than non-consumer respondents, based on the higher total attitude scores indicated for consumer respondents (19.94) than non-consumer respondents (-2.32). Results drawn from the ratings of the belief and evaluation for each attribute of game meat are presented following Table 5.13 below.

Table 5.13 Fishbein's Attitude-toward-the-Object Model

Attribute	Consumer Respondents				Non-Consumer Respondents			
	N	Belief	Evaluation	Belief x Evaluation	N	Belief	Evaluation	Belief x Evaluation
Sensory Characteristics	1015	3.81	1.19	4.53	270	2.77	-0.36	-1.00
Health Benefits	1003	4.26	1.19	5.07	264	3.63	-0.47	-1.71
Availability	964	3.47	0.92	3.19	251	3.17	-0.31	-0.98
Price	936	2.90	-0.21	-0.61	241	3.24	-0.27	-0.87
Food Safety	888	3.88	0.56	2.17	221	3.41	0.50	1.71
Animal Welfare	883	4.32	0.10	0.43	215	3.67	-0.30	-1.10
Ethics	871	4.23	1.22	5.16	210	3.46	0.47	1.63
Total Attitude Score				19.94				-2.32

Fishbein's attitude-toward-the-object model multiplies the belief and evaluation ratings of each attribute in order to find the overall attitudes for each attribute, allowing both the respondents' level of agreement, or belief, that the product possesses an attribute, as well as the evaluation of the attribute's importance to respondents to be taken into consideration when calculating the overall attitude toward the attribute.

Based on the results using Fishbein's attitude-toward-the-object model in Table 5.13, consumer respondents seemed undecided (ratings close to 3 are interpreted as undecided) regarding the belief that game meat possesses the attributes of availability (rated 3.47) and price (rated 2.90) in the manner desired. Ratings close to 4 and up to 5 are interpreted as a positive belief that the product possesses the attribute. Therefore, it can be interpreted that consumer respondents believed that game meat possessed the attributes of sensory characteristics (rated 3.81), health benefits (rated 4.26), food safety (rated 3.88), animal welfare (rated 4.32) and ethics (4.23) in a satisfactory manner to meet their requirements. The attributes ethics (rated 1.22), sensory characteristics (rated 1.19), health benefits (rated 1.19) and availability (rated 0.92) of game meat were evaluated as the most important attributes of consideration to consumer respondents, based on ratings with the highest positive scores.

Non-consumer respondents indicated the beliefs regarding animal welfare (rated 3.67) and health benefits (3.63) of game meat positively (with ratings that round off to 4, indicating a belief that the product possess the attribute). However, non-consumer respondents seemed undecided regarding the ethics (rated 3.46), food safety (rated 3.41), price (rated 3.24) and availability (rated 3.17) of the product with ratings close to 3. The sensory characteristics of game meat (rated 2.77) were the attribute deemed lowest in the belief that game meat possesses attributes in a desirable manner. This could be an indication that the sensory characteristics of game meat might play the most crucial role in non-consumer respondents' choice not to consume game meat, since it is the attribute which received the most negative overall attitude rating from non-consumer respondents, while receiving a positive rating from consumer respondents. This has also been observed in 2005 (Hoffman *et al.*, 2005), when respondents listed the flavour of game meat among its most positive and among its most negative attributes, not agreeing on its flavour. Although non-consumer respondents were relatively neutral regarding the importance of different attributes (ratings close to 0), food safety (rated 0.50) was regarded as an important consideration with a positive number which would round off to 1.

Fishbein's attitude-toward-the-object model multiplies the belief and evaluation ratings of each attribute in order to find the overall attitudes for each attribute. This allows both the respondents' level of agreement, or belief, that the product possesses an attribute, as well as the evaluation of the attribute's importance to respondents to be taken into consideration when calculating the overall attitude toward the attribute. Differences in the overall attitudes (derived from the belief x evaluation ratings in Table 5.13) of consumer and non-consumer respondents toward each attribute are visually presented on a graph in Figure 5.11 below.

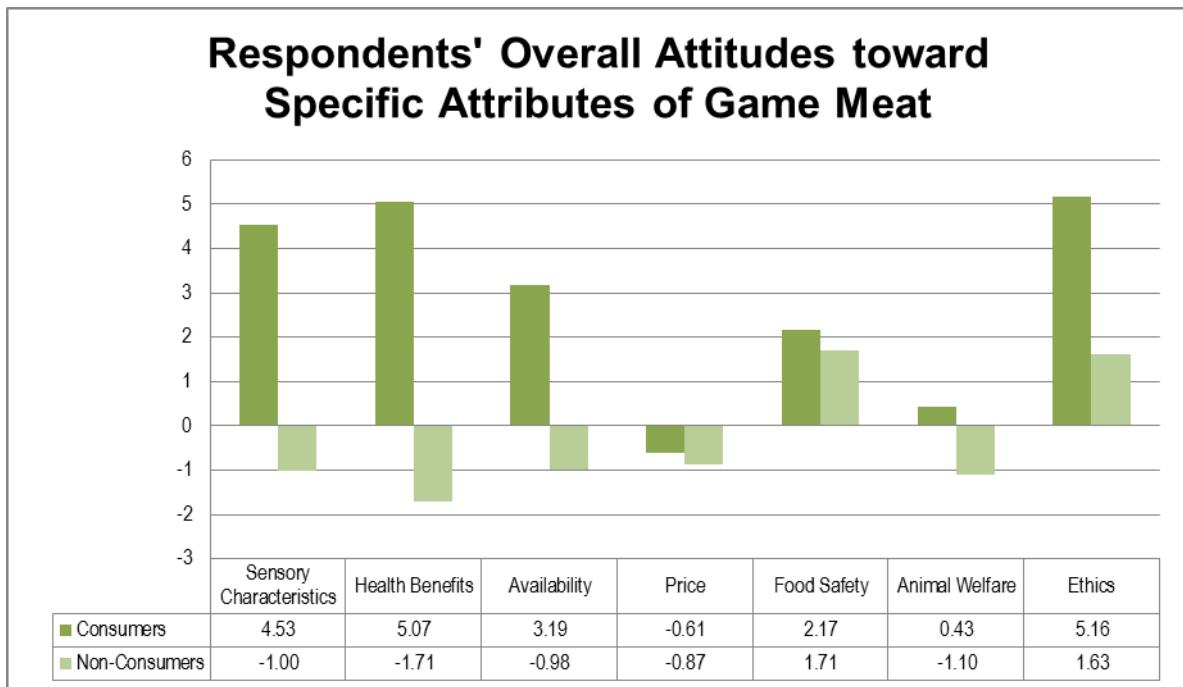


Figure 5.11: Respondents' Overall Attitudes toward Specific Attributes of Game Meat

In Figure 5.11, positive numbers indicate a positive attitude towards the attribute, negative numbers indicate a negative attitude and numbers close to zero indicate that respondents' attitudes were undecided, or neutral regarding the attribute. Therefore, consumer respondents' overall attitudes toward sensory characteristics (4.53), health benefits (5.07), availability (3.19), food safety (2.17) and ethics (5.16) were positive, while price (-0.61) and animal welfare (0.43) were rather neutral or undecided. On the other hand, non-consumer respondents' overall attitudes toward sensory characteristics (-1.00), health benefits (-1.71), availability (-0.98), price (-0.87) and animal welfare (-1.10) were negative to undecided, while their overall attitudes toward food safety (1.71) and game ethics (1.63) were more positive.

The differences between the attitudes of the two respondent groups were ranked (Figure 5.12), based on the absolute differences found between the combined value of the belief that the product possesses the attribute and the evaluation of importance of the attribute to the respondent (as determined by Fishbein's attitude-toward-the-object model in Table 5.13).

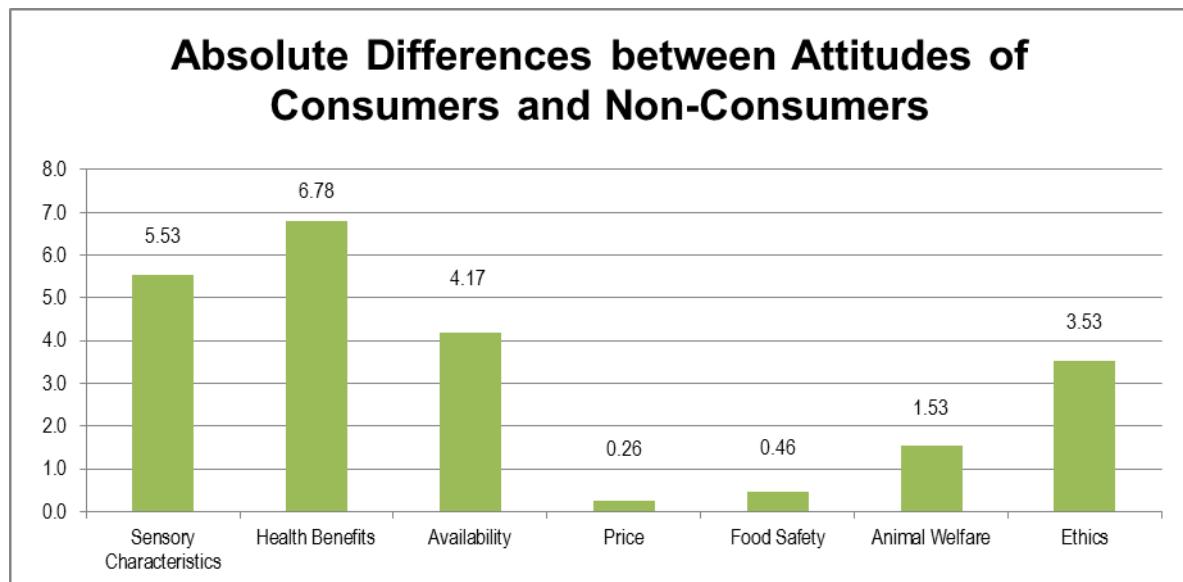


Figure 5.12: Absolute Differences between Attitudes of Consumer and Non-Consumer Respondents

The higher the number for an attribute on the bar graph in Figure 5.12, the greater the absolute difference between the attitudes of consumer and non-consumer respondents; the lower the number, the smaller the difference between the attitudes of consumer and non-consumer respondents. The attributes with the greatest differences between the attitudes of the two respondent groups could indicate the attributes which play the most important roles in consumer respondents' decision with regard to game meat consumption.

Respondent groups differed most in their attitudes regarding the health benefits (absolute difference of 6.78), sensory characteristics (absolute difference of 5.53), availability (absolute difference of 4.17) and ethics (absolute difference of 3.53), which could be considered the most important attributes determining why some people choose to consume game meat while others prefer not to. Interestingly, non-consumer respondents indicated a positive attitude toward the belief (3.63 in Table 5.13) that game meat possessed certain health benefits, however, they considered its importance rather neutral (0.47 in Table 5.13), confirming that the health benefits of the product might not convince

them to consume game meat if they do not otherwise like the product. Non-consumer respondents' attitudes toward the belief (3.46 in Table 5.13) and importance (0.47 in Table 5.13) components of ethics tended to be neutral. However, consumer respondents indicated a very positive attitude (4.23 in Table 5.13) regarding the belief that game meat production possessed socially acceptable ethical characteristics and they also found it to be important (1.22 in Table 5.13). Therefore, they seem confident that the product currently meets an aspect that is important to them and that it is ethical to consume game meat.

As mentioned earlier, with sensory characteristics perceived most negatively of all attributes by non-consumer respondents (2.77 in Table 5.13), it might be the most influential attribute in their choice not to consume game meat, overriding all other considerations. Consumer respondents displayed positive attitudes toward the sensory characteristics (3.81 in Table 5.13), while also finding it important (1.19 in Table 5.13). Both respondent groups were neutral regarding the belief (3.47 for consumer respondents and 3.17 for non-consumer respondents in Table 5.13) that game meat is available, which could indicate that it is not as widely available as they would prefer, but that it is not impossible to obtain. The inclusion of questions regarding the convenience and variety of cuts available to respondents could have had an influence on this rating. It is possible that respondents can obtain game meat, but that it is not always available in a manner that is convenient. Consumer respondents, indicated that availability is important (0.92 in Table 5.13) to them and that they would consume more game meat, if it was readily available. Non-consumer respondents, on the other hand, were neutral (-0.31 in Table 5.13) regarding the importance of availability and the majority indicated that they would not necessarily consume more game meat if it was more readily available; once again indicating that the sensory characteristics could rather play a major role in their choice. According to the BFAP Baseline Report (2014), this trend has been observed in various studies, where it was found that although consumers require healthy and convenient food, they require it to be tasty too. In a study examining whether the perceived health benefits of soy products influenced its consumption positively, it was found that the perceived unappetising taste and inconvenience of the product had a substantially greater impact than health benefits on its consumption (Moon *et al.*, 2005).

The attributes of the product itself are very important during marketing, since consumers' evaluation of a product's attributes can account for most of their attitudes toward the product (Solomon, 2013). The more favourable the attitude of a consumer is toward a product, the higher the incidence of product usage and the less favourable the attitude,

the lower the incidence of product usage (McDaniel & Gates, 2013). Based on attitudes toward individual attributes, respondents can classify some product attributes as important in their decision to consume, or not to consume, the product – in this case game meat.

## **5.7 CONCLUSION**

This chapter presented the respondent demographics, as well as the scale reliability test results as obtained in the research. The results for the first two objectives, dealing with the exploratory section of the research, were given and briefly discussed for each of the identified attributes of game meat while exploring the differences between the attitudes of consumer and non-consumer respondents and presenting relevant findings from other studies. Finally, the Fishbein attitude-toward-the-object model was applied to the research results in order to gain a better understanding of the differences in attitudes between consumer and non-consumer respondents towards specific attributes of game meat. In the next chapter, the recommendations are presented based on the results obtained.

## CHAPTER 6

### RECOMMENDATIONS AND CONCLUSION

*In this chapter, a discussion of the most prominent results according to each objective are presented after which recommendations to the game meat industry are made based on the results of this study. The application of the proposed theoretical framework is presented. Thereafter, the limitations and contributions of the research are provided. Finally, recommendations for further research are proposed.*

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#### **6.1 INTRODUCTION**

In the previous chapter, the results of the research were presented, along with relevant findings from research to support the results of the current study. In this concluding chapter, a discussion of the most prominent results on each attribute of game meat as presented in the previous chapter are provided followed by recommendations to the game meat industry. The application of the theoretical framework used in this study is presented; contributions of the study are highlighted and the limitations described. Finally, suggestions for further research are made in the last section of this chapter.

#### **6.2 DISCUSSION AND RECOMMENDATIONS DERIVED FROM RESULTS**

Objective 1 dealt with the overall attitudes of all respondents toward the identified attributes of game meat and these results were presented in Section 5.4. Objective 2 required finding the differences in attitudes among consumer and non-consumer respondents for each attribute of game meat, for which the results were provided in Section 5.5. Finally, for Objective 3 the greatest differences among the attitudes of consumer and non-consumer respondents had to be determined, using Fishbein's attitude-toward-the-object model, in order to find the key attributes in game meat consumption (see Section 5.6 for the results). The recommendations, based on the research results presented in Chapter 5, are provided below.

##### **6.2.1 Objective 1 Overall Attitudes**

Since the majority of respondents (78%; n = 1096) were consumers of game meat, the overall trends presented under Objective 1 are predisposed in the flavour of consumer respondents' responses.

Overall attitudes toward the sensory characteristics of game meat are relatively positive, indicating that respondents liked the product and confirming that a market probably exists for game meat among respondents. Respondent attitudes toward the health benefits of game meat were remarkably positive. South African respondents believed that game meat is a healthy form of complete protein; therefore, this attribute should be emphasized more specifically during marketing efforts. The positive-to undecided attitudes of respondents toward the availability of game meat may indicate that South African respondents find game meat to be available, but not necessarily to the extent that they would prefer. By improving the availability of game meat by increasing the amount of game meat produced for the retail market, as well as considering the expansion of game meat retail outlets, the local market could still be expanded significantly.

Respondent attitudes toward the price of game meat were vague. Currently, prices for game meat range from expensive to free (from family or friends who hunt). This could indicate that respondents were uncertain regarding the real value of game meat. It is recommended that the price of game meat be researched further to determine an appropriate price range which respondents are willing to pay, while still considering the purchase of game meat as value for money.

The positive attitudes of consumer respondents toward preparation of game meat indicate that it was considered suitable for household use, as opposed to only being consumed in other establishments such as restaurants. However, the relatively large percentage of undecided-to-negative responses among non-consumer respondents toward preparation statements indicates that not all respondents were comfortable with preparing game meat themselves. It is recommended that the industry develop ways to inform consumers on how to prepare game meat that will lead to consumers being more favourable towards the purchase of game meat.

The prominent negative trend visible in respondent attitudes toward the promotion of game meat suggest that more marketing efforts should be invested in the promotion of the product and that not enough is probably done to inform and promote game meat. It was clear from the results that the healthy option game meat offers should be one of the main promotion campaigns the game meat industry should consider. The only way the game meat industry could increase its consumer interest in game meat, would be to negate the negative attitudes with more information on the attributes considered in this study.

Although respondent attitudes toward the safety of game meat for human consumption were mostly positive, the relatively large percentage of undecided responses should not be ignored. The industry needs to uphold strict food safety standards to retain consumer trust in the product. It might also be necessary to provide safety test results to consumers to give consumers the best opportunity to make an informed decision about the safety of game meat.

The overall positive respondent attitudes held toward animal welfare and the remarkable positive attitudes toward production ethics are based on specific conditions that respondents require in order to maintain these positive attitudes. These conditions, and consequently recommendations, are discussed in more detail in the next section.

### **6.2.2 Objective 2 Specific Attributes**

The role of each attribute of game meat in the choice to consume, or not to consume game meat, is discussed below and recommendations are derived, based on the attitudes of consumer and non-consumer respondents.

#### *6.2.2.1 Respondent Attitudes toward the Sensory Characteristics of Game Meat*

As mentioned earlier, attitudes toward the sensory characteristics of game meat are some of the most important attitudes that influence its consumption. There are clear differences between consumer and non-consumer attitudes, with consumer respondents regarding it positively and non-consumer respondents regarding it the most negatively of all attributes. Therefore, it can be concluded that consumer respondents liked the actual product, while non-consumer respondents did not find it to meet their preferences regarding flavour, texture, appearance and aroma. Since harvesting practices which limit stress on animals, correct carcass handling and harvesting animals at the correct age has a major impact on the sensory characteristics of the meat, but are not always adhered to, much can still be done by the industry to improve the product (Bothma & Du Toit, 2016). It is recommended that producers improve the quality of game meat presented to the market. By supplying consistent quality meat to the market, the image of game meat can be improved. Since non-consumer respondents have already formed a rather negative attitude towards the sensory characteristics, changing it will only take place over time through purposeful efforts of the industry to improve the product and through marketing efforts that are aimed at specifically informing consumers that quality game meat does indeed have appealing sensory characteristics. Preparation can also have a definite effect on how respondents

perceive the sensory characteristics of game meat and will be discussed in more detail below.

#### *6.2.2.2 Respondent Attitudes toward the Health Benefits of Game Meat*

The majority of both respondent groups indicated positive attitudes toward the health benefits of game meat as being a lean, high in iron and nutritious source of protein. It seems like game meat is commonly accepted among South African respondents to be a healthy product. It is recommended that producers and retailers continue to promote game meat as healthy protein since respondents perceived it to be one of the positive attributes of the product. However, both respondent groups indicated that it was not their main motivation to consume the product. Consumer respondents liked game meat and found its health benefits to be an added advantage, while non-consumer respondents who did not like the sensory characteristics of the meat indicated that a positive attitude towards its health benefits were not enough to convince them to consume it. Therefore, it is once again recommended that the industry gives serious consideration to the improvement of the quality of meat available to consumers. While marketing the product for its health benefits is good, it will not have the desired effect until consumers trust that the product will consistently have the preferred sensory characteristics every time they purchase game meat. Producers need to design and implement purposeful strategies to ensure that potential South African game meat consumers are not exposed to game meat that is tough, dry, unnecessarily dark in colour, or with a strong unpleasant aroma due to poor harvesting and handling practices. This image of game meat, acquired through consumer exposure to poor quality game meat over the years, has damaged attitudes toward game meat to the extent that other positive attributes of game meat cannot overcome the importance of sensory attributes to non-consumers in promoting its use. As mentioned in Section 3.3.2, once attitudes are formed they are difficult to change; therefore, it is imperative that the industry pays sufficient attention to remedy this aspect of game meat available to consumers as soon as possible and possibly setting out guidelines and standards to game meat farmers to ensure that better harvesting practices are followed. Once consistent quality is available on the market, it will take continuous marketing efforts to make potential consumers aware of the improved quality and to build their confidence in the product to the desired levels.

#### *6.2.2.3 Respondent Attitudes toward the Availability of Game Meat*

Respondent attitudes toward the availability of game meat revealed interesting results. Although consumer respondents were positive regarding the availability of game meat, the majority indicated that they would purchase more game meat if it was more readily available. Among non-consumer respondents, attitudes toward availability were mostly neutral, but 48.20% ( $n = 125$ ) of respondents indicated that they would not buy more game meat, even if it was more readily available. Once again, this could indicate that sensory characteristics play a more important role in non-consumer respondents' purchase behaviour than availability. Non-consumer respondents might have had neutral attitudes toward the availability of game meat because they do not necessarily actively search for it between retail outlets and on the shelves of meat supplying retailers and, therefore, do not necessarily pay that much attention to its availability. It might be in the supermarket or retail outlet, but they do not notice it because of fewer points of purchase advertising or instore advertisements and instore indicators. Merely improving the availability of game meat would not necessarily turn non-consumers into consumers in the short term. However, among consumer respondents, it seems that while they know where to obtain game meat for purchase, they would increase their consumption if it was more available. With 70.75% ( $n = 682$ ) of consumer respondents indicating that their consumption of game meat would increase with increased availability, it seems that game meat is a desirable product and that a market currently exists for game meat among consumer respondents. By increasing its availability, producers can still significantly expand their activities by supplying an already existing market among current consumers. The manner in which game meat is available should also receive attention from producers and retailers. A large proportion of consumer respondents were positive while most of the non-consumer respondents were undecided whether game meat is available conveniently for household use. It is recommended that consumer preferences regarding the required fresh game meat cuts, packaging size and the potential of value-added processed products should be researched in more detail to present game meat in a manner that is convenient to consumers. Including smaller packages of game meat products, instead of only bulk packages, will allow non-consumers to experiment with the product in small quantities, without taking the risk of purchasing a large amount of meat which they are not initially confident that they would enjoy, and can thus increase their exposure to game meat of good quality.

#### *6.2.2.4 Respondent Attitudes toward the Price of Game Meat*

In both respondent groups, the overall attitudes toward the price of game meat were mostly uncertain and contradicting. Currently, prices for game meat vary greatly, which could have caused respondents to be uncertain regarding the true market value of game meat. While the growing South African middle class is moving away from a starch based diet towards a protein based diet, it seems like South Africans' spending on the more expensive meats are declining (Cloete, 2015), making it unlikely that the use of game meat will increase if it is perceived to be a luxury meat. It is, therefore, recommended that research be conducted specifically on the price of game meat to determine a suitable price range that consumers would be willing to spend on game meat products. While the price did not seem to prevent consumer respondents from purchasing game meat, only 47.43% ( $n = 444$ ) of consumer respondents actually found game meat to be affordable, with a relatively large percentage of consumer respondents being undecided (25.64%) or finding it unaffordable (26.92%). Price seemed to be an inhibiting factor among non-consumer respondents, with the majority being uncertain whether it is good value for money. A relatively large percentage of non-consumer respondents (37.76%) found game meat to be a luxury and expensive in relation to other red meat, while (46.89%) were undecided. Neither respondent group viewed game meat to be a cost effective alternative to other red meat. It is, therefore, recommended that game meat is not to be sold at prices significantly higher than other red meat, such as beef. If consumers are undecided regarding the quality and value for money presented by game meat, a high price will simply discourage its purchase. South Africans already seem sensitive to the price of red meat (Cloete, 2015) and would not necessarily take the risk of paying a premium for an unfamiliar product with a history of not meeting their sensory requirements.

#### *6.2.2.5 Respondent Attitudes toward the Preparation of Game Meat*

Consumer respondents appeared to have positive attitudes toward the preparation of game meat, while a large proportion of non-consumer respondents were either undecided or did not find game meat easy to prepare or convenient to use and that its preparation was considered time-consuming. Therefore, it seems that non-consumer respondents did not feel confident, or familiar, with the preparation of game meat. Unfamiliarity with preparation, combined with low sensory attractiveness of products, has been found to be key barriers to product usage (Hoek, Luning, Weijzen, Engels, Kok & De Graaf, 2011). As mentioned earlier, the preparation of game meat can have an influence on the sensory characteristics experienced by consumers during consumption and the sensory

characteristics were found to play an important role in the consumption of game meat. To promote the use of game meat, it is recommended that retailers dedicate a portion of their marketing efforts on familiarising consumers with the preparation of the product. By including recipes and preparation guidelines on the packaging, retailers can develop consumer familiarity with product preparation. As modern lifestyles change, a shift toward convenience of food preparation has been observed, with consumers doing little planning of meals and meal choices happening at the last minute based on the time and ingredients available (Resurecccion, 2003). Consumers require products that are convenient, quick and easy to prepare, but still want what they describe as the ‘feel-good experience’ of preparing the meal themselves (BFAP Baseline, 2014). Therefore, it is recommended that the industry invests in developing ways to present game meat to South African consumers in a convenient way, while boosting consumer confidence that they can prepare the meat in an appetizing way themselves.

#### *6.2.2.6 Respondent Attitudes toward the Promotion of Game Meat*

The promotion of game meat seems to be either ineffective or lacking completely. The majority of respondents in both groups saw neither promotional material, nor promotional offers, pertaining to game meat in the past year. The majority of respondents in both groups believed that there are not enough information available regarding game meat. In order to develop the local market for game meat to its full potential, it is recommended that the industry invest in advertising campaigns, based on the correct marketing mix, to create awareness of the product, to accentuate its positive attributes and to enhance consumer confidence in its preparation.

#### *6.2.2.7 Respondent Attitudes toward Safety of Game Meat*

The majority of respondents in both groups were positive to remarkably positive regarding most of the statements on the safety of game meat, with non-consumer respondents being more uncertain regarding its safety than consumer respondents. Although both respondent groups trust that game meat complies with safety regulations, the majority of non-consumer respondents were undecided (39.37%; n = 87) or concerned (35.29%; n = 78) regarding hygienic aspects of the meat. The majority of respondents from both groups found organic production methods, without the use of growth hormones and antibiotics, no pesticide residues, as well as industry standards and regulations, traceability of the product and the expiry date on the packaging to be important in their choice of red meat, including game meat. They were mostly positive that game meat met these requirements.

It is recommended that producers continue to place emphasis on these aspects in game meat production to retain consumer trust in the product. It is also preferable to include certification marks on the product, when it adheres to the mentioned production standards. The industry must be proactive to retain these desired properties of game meat in South Africa. In the case of northern America, venison production developed, similar to the South African situation, from the utilisation of marginal land, but soon changed into small, intensively managed systems with interventions ranging from strategic winter feeding to intensive finishing feeding, with herd vaccination programmes, the use of artificial insemination and growth hormone treatments (Hoffman & Wiklund, 2006). It is recommended that the South African game meat industry act proactively to retain the organic, natural reputation of game meat, especially as consumer demand for their product increase and pressure to produce more game meat intensifies.

#### *6.2.2.8 Respondent Attitudes toward Animal Welfare in Game Meat Production*

The majority of respondents from both groups portrayed rather positive attitudes toward animal welfare in game meat production. They believed that game meat can be produced in a way that respects animal welfare. They accepted that animal welfare is respected during harvesting practices, if animals are harvested in a quick and humane manner without placing unnecessary stress on the animals. Although they preferred non-lethal methods of predator control in game meat production systems, they found humane, lethal methods acceptable if non-lethal methods have failed to control predators. An important point of consideration to the industry as it expands and possibly intensifies production systems is that respondents expected game meat to be from wild animals that are in free-roaming systems. Producers should preferably keep wildlife in extensive conditions, but should also be transparent regarding the type of production systems that meat originates from to avoid damaging publicity to the brand if game meat is to be produced from intensive or camp systems similar to cattle production methods. Respondents seem to define free-range, in the context of wildlife, as animals produced in extensive, sustainably managed systems. Since respondents valued this aspect of game meat production and were currently satisfied that these requirements were being met, it is worth the industry's consideration to keep this reputation untainted.

#### *6.2.2.9 Respondent Attitudes toward Game Meat Production Ethics*

Respondents from both groups generally seemed to believe that the sustainable harvesting of game meat is ethical, that the utilisation of game meat provides an

economic incentive for wildlife conservation, that game meat production is in harmony with nature, environmentally friendly and in accordance with sustainable land use practices and that game meat is a valuable resource to support local industries, to enhance the local economy, to increase employment opportunities and to ensure food security. Therefore, they did not seem to have ethical problems with consuming game meat, even though it forms part of the South African wildlife heritage, as long as animals are treated and harvested humanely in a sustainable manner that does not endanger the conservation status of the utilised species. The one issue that surfaced was the ethical concerns related to the production systems from which game meat originates. Respondents believed that it is more ethical to consume game meat produced on extensive game ranches where animals were wild and free-ranging than from wild, unmanaged populations. Respondents found it less ethical to consume the meat from production systems that are more intensive and animal movement more restrictive. A large proportion of respondents found it unethical to keep game in fenced camps similar to cattle production on farms, with an even greater proportion of respondents strongly condemning the utilisation of game meat from intensive production systems. It is important to note at this point that part of the exclusion criteria for all respondents in the research was to exclude vegetarians from the research. Therefore, this research is based on responses from South African respondents who do eat red meat and do not have a problem with consuming animals in general due to ethical considerations. Non-consumer respondents are still potential consumers in the market, if the product and its attributes could meet their needs and be presented in an acceptable manner to them. It is recommended that the industry takes notice of these ethical concerns of respondents. It is considered inevitable that production systems will intensify as the demand for animal protein increases and the producers must find ways to intensify systems without compromising extensive systems and ethical production methods (Webb, 2013). Producers must also be transparent regarding production systems from which meat originates since most South African respondents simply accept that game meat production occurs in extensive game ranching systems. In the case of kangaroo meat in Australia, consumers believed that animals were produced in well managed, extensive production systems and felt disillusioned and expressed their disgust when they found that in reality kangaroos were harvested from wild populations (Ampt & Owen, 2008). It led to a situation where retailers were unwilling to invest further in the marketing and sale of kangaroo meat, if producers were not transparent regarding the harvesting processes and if consumers did not accept it as ethical (Ampt & Owen, 2008). In order to prevent similar situations in the South African game meat market, it is recommended that

producers take these ethical issues regarding production systems into consideration when considering the intensification of production systems. Respondents were not totally against the use of wildlife for food, but they did not find fenced camp systems and intensive systems ethically acceptable for game meat production. Reliable certification marks and transparency regarding production methods are important to retain consumers' trust in the industry and game meat as an ethical product.

### **6.2.3 Objective 3 Key Attributes**

Based on the key attributes identified through Fishbein's attitude-toward-the-object model, the following recommendations are made for the key attributes identified, namely availability, sensory characteristics, game meat production ethics and health benefits: Availability can be addressed by providing game meat at a larger scale at places that are convenient to consumers and in a variety of cuts. Where the product is already available, consumers can be made aware of its availability through promotions. Respondents found promotion of game meat to be lacking. The sensory characteristics can be improved significantly through better harvesting and correct handling practices in the industry. As discussed in the previous section, sensory characteristics of a product can override all other attributes in a consumer's purchase decision and should, therefore, be given the necessary attention. Further, the industry should ensure that the production of game meat satisfy the ethical requirements of consumers. Products that meet their requirements can be promoted as ethically produced products. The health benefits of game meat are still considered to be a competitive advantage of the product and its marketing as a healthy product should not be neglected. Finally, some non-consumer respondents of game meat indicated their concern regarding the safety of the product for consumption. The industry must ensure that it addresses any such concerns sufficiently, while also indicating to the market that the product meets safety standards. Therefore, to market game meat purposefully and to direct consumer decisions in a favourable direction, the industry should focus specifically on these key attributes.

## **6.3 APPLICATION OF THE THEORETICAL FRAMEWORK TO THE STUDY**

As mentioned in Chapter 3, according to the Model of Consumer Decision-Making (Schiffman & Wisenblit, 2015) attitudes form part of the consumer's psychological field, which influences decision-making. The position of attitudes, specifically as it relates to game meat, within the consumer decision-making framework is depicted in Figure 6.1 whereafter the results are discussed within context of the research theoretical framework.

### Attitudes influencing Consumer Decisions to Consume or Not to Consume Game Meat

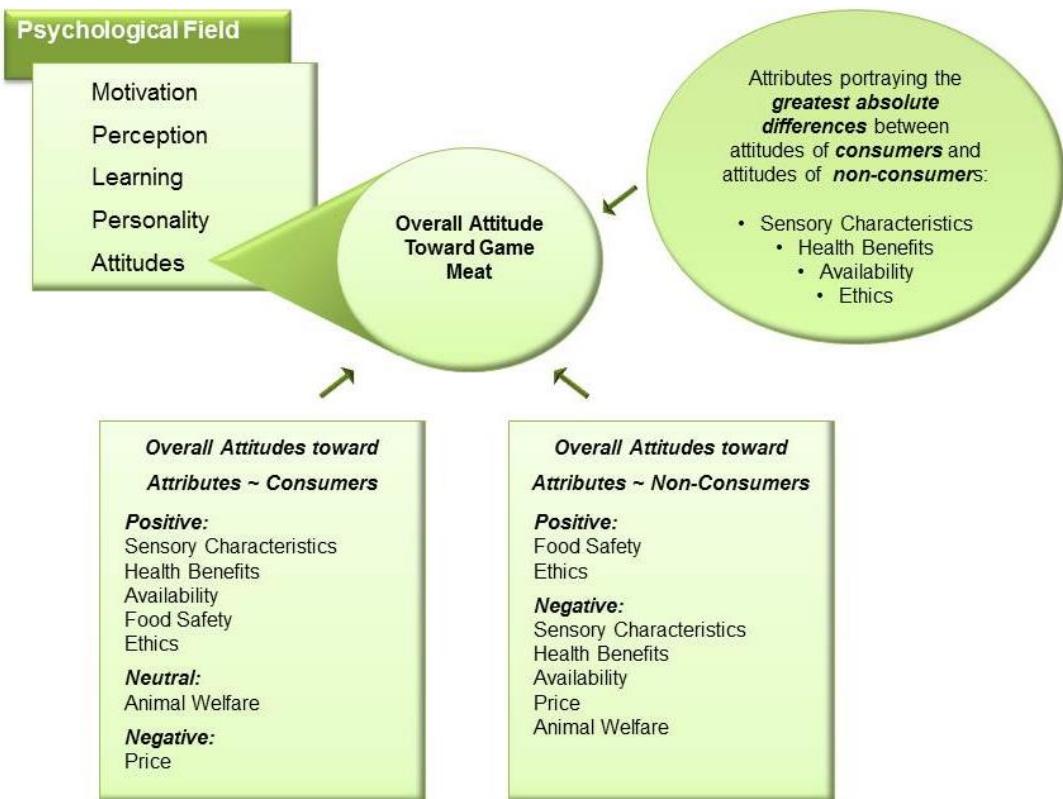


Figure 6.1 Consumer Attitudes within the Theoretical Framework

As discussed in Chapter 3, the consumer's psychological field consists of the individual's perceptions, personality, motivation, learning and attitudes (Schiffman & Wisenblit, 2015) and greatly influences how the individual interprets the product, its attributes and marketing efforts. Therefore, consumer attitudes toward game meat play an important role when South African consumers decide which meat to consume. A consumer carefully considers a product's features and how it will meet personal needs, forming an attitude regarding the product (Kimmel, 2013). These product features, also referred to in this study as attributes of game meat, need to meet consumer needs and expectations in order to promote a positive attitude towards the product. Since attitudes have motivational qualities capable of influencing a consumer's decisions and behaviour, it becomes important that consumers portray positive attitudes toward a product if it is to be marketed effectively (Schiffman & Wisenblit, 2015; Iacobucci & Churchill, 2010). Firstly, the belief whether or not a product holds a certain attribute needs to be established and secondly, the importance of the specific attribute to the consumer has to be determined. Based on the absolute difference between the attitudes of the different respondent groups - *consumer* and *non-consumer* respondents – as determined by the use of Fishbein's

attitude-toward-the-object model (see Section 5.6.2); availability, sensory characteristics, ethics and health benefits were found to be key attributes and important considerations in South African respondents' choice to consume, or not to consume game meat. Although consumer attitudes cannot always precisely predict purchase behaviour, since other inhibiting factors can influence actual purchases, designing a marketing mix based on consumer attitudes are still found to be the most effective way to market a product (McDaniel & Gates, 2013).

The influence of attitudes toward the specific product attributes of game meat as it pertains to the theoretical framework for the study is presented in Figure 6.1. As mentioned in Chapter 3, attitudes form part of the individual's psychological field. Attitudes toward specific attributes of the product comprise the individual's overall attitude toward the product; these attitudes toward specific attributes of game meat are indicated for consumer and non-consumer respondents. Based on the results presented in Figure 5.11 in Chapter 5, consumer respondents portrayed positive attitudes toward the sensory characteristics, health benefits, availability, food safety and ethical attributes of game meat, but neutral attitudes toward animal welfare and neutral to negative toward price. Non-consumer respondents portrayed positive attitudes toward food safety and ethical attributes of game meat and more negative attitudes toward sensory characteristics, health benefits, availability, animal welfare and neutral to negative toward price. The combination of these attitudes toward individual attributes comprised the overall attitudes of consumer and non-consumer respondents. Differences in attitudes between consumer and non-consumer respondents help identify potential key attributes in the consumption of game meat. The greatest absolute differences between the attitudes of the two respondent groups, based on the results presented in Figure 5.12 in Chapter 5, were sensory characteristics, health benefits, availability and game meat production ethics. These overall attitudes of an individual toward a product form part of the psychological framework, which in turn influences the individual's decision making towards game meat purchases.

## **6.4 CONTRIBUTIONS OF THE STUDY**

The study has contributed to provide evidence that South African consumer and non-consumer respondents can benefit if game meat is marketed more effectively locally. The production of game meat allows the sustainable utilisation of an available natural resource to meet consumers' increasing demand for protein products, while contributing to food security. The study has also provided consumer insight as to how these respondents viewed game meat, which to them seemed to be a healthy red meat option. By exposing consumers to a healthy form of red meat, their risk of developing chronic lifestyle diseases can be decreased.

The contribution of the study to game meat producers and processing plants is also meaningful. If producers and processors can adapt their product's image to be more consistent with consumer expectations, it can enhance their product's appeal to the public. Once a strong local market can be established for game meat, producers can diversify their income locally and continue to do business even during times when exports are prohibited or when international markets are benign.

Lastly, this study contributes towards the marketing strategies of meat retailers, including butchers, supermarkets and restaurants, who might find this research most beneficial. If consumer's perceptions and attitudes toward the attributes of game meat can be addressed through a more specific marketing mix for the product, retailers can learn how to market game meat to local consumers more purposefully. If South African consumers would also accept game meat as a regular source of protein as the respondents did, a strong local market for game meat could be established. Knowing the attitudes of South African respondents also allows retailers to develop better marketing strategies to improve consumer perceptions of game meat and consequently improving their attitudes toward the product.

## **6.5 LIMITATIONS OF THE STUDY**

The first limitation of this research is related to the respondent demographics. The nonprobability sampling and recruitment methods used may have influenced the group of respondents who took part in the study. Since the research was exploratory and respondents had to meet specific requirements, all respondents who met the requirements that could be reached through the recruitment strategy and who were willing to complete a survey and were eligible to participate were included at a specific point in time. Some respondents might not have been recruited as they may not have been

exposed to the electronic survey, social media or e-mail forwarding recruitment strategy. The findings cannot be extrapolated to the entire population due to the exploratory nature of the study and non-probability sampling strategies that were followed. During exploratory research, the non-representative samples used are not representative of the population. The recruitment strategy could also have had an influence on the respondents reached. With the use of snowball sampling, the selection of respondents is subjective and the sample will be non-representative of the entire population. The use of an online survey may also influence the population representation. People who have access to the Internet do not represent the entire population. Frequent users of the Internet may have a higher probability to be included in the sample, since they might be more likely to come across links to the survey and might be more inclined and comfortable to complete it than infrequent users of the Internet. As seen from Section 5.2, the final sample did not allow for the dividing respondents into subgroups based on demographics and some population groups, provinces and income groups were under-represented in the study.

Secondly, the results can give reliable insights into respondents' attitudes regarding the different attributes of game meat, allowing producers to identify the strengths and weaknesses of the product, to improve their product to meet these respondents' expectations and to decide on appropriate marketing strategies. However, this approach still cannot assist to predict consumer behaviour. Although attitudes have been found to give a good indication of consumers' behaviour, it is still possible that other factors may influence their choice at the point of purchase. Therefore, the results presented can provide valuable information on respondents' expectations of the product and its attributes to be used for marketing and product development, but the prediction of consumers' intention to behave in a specific manner or their intention to purchase and consume game meat in general will still elude marketers.

## **6.6 FUTURE RESEARCH**

Currently, very little data is available on the extent of the wildlife industry in South Africa. Most animal population numbers and the type of animals available in game meat production systems are mere estimates and vary from source to source. Reliable data is hard to come by, but crucial to determine the feasibility and potential of game meat production in an organised and scientific manner. Consumers want to know that the consumption of game meat is sustainable, without endangering the utilised species, but this cannot be reliably claimed without accurate data.

The extent of the local market for game meat needs to be determined. Currently, very little, if any, data is available on the potential local market for game meat. Availability is one of the concerns that consumer respondents raised which they believe limit their consumption of game meat. Many respondents seem willing to consume more game meat, but cannot always access it, indicating that there is potentially a far greater market for game meat than what producers are supplying. Further studies on the viability of the South African market also need to be commenced in order to enable the expansion of the local market and not only creating an overseas market for game meat from South Africa. Most retailers only sell game meat sporadically as it becomes available and not necessarily as part of a well-planned strategy. In order to develop consumer loyalty to the product, consumers must have access to a consistent and reliable supply of game meat, but for that, both retailers and producers need to understand their market more thoroughly.

Since the sensory characteristics of game meat seem to play an important role in its consumption, it is worthwhile to the industry to invest in more research regarding the improvement of production practices that improves the sensory characteristics of the meat. The industry needs to improve the current image of the sensory characteristics of game meat by ensuring that the best production and meat handling practices are applied consistently by all producers to ensure high quality game meat. South African respondents' attitudes toward the sensory characteristics of game meat vary greatly, possibly because they are often exposed to varying quality when purchasing the product. The industry needs to build consumer confidence in a product to the extent that it can reliably be expected to meet their requirements regarding flavour, texture, aroma and appearance each time they make a purchase.

The industry unfortunately has very little research findings available regarding consumer preferences in relation to game meat. Most decisions are based on information available on red meat from domestic livestock. However, game meat is a unique product and the industry needs to improve its knowledge regarding the expectations of the consumer. It is recommended that research on consumers' choice to consume game meat is expanded using an in-depth qualitative approach. Extensive research is required to determine consumer preferences regarding the available cuts of meat, the variety of products, pricing strategies, the potential of value-added products and presenting a product that is convenient to the consumer. Research is required for both product development and marketing purposes.

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## APPENDIX A      ONLINE SURVEY



**SA Consumers & Game Meat Research**

Thank you for your participation in this research project.

The need to expand the local market for game meat leads to the research question: What are South African consumers' attitudes toward the attributes of game meat? The outcome of the study should arrive at a more comprehensive understanding of South African consumers' attitudes toward game meat. By gaining a better understanding of these attitudes, the study should also contribute to expanding the market for game meat among South Africans. For any queries, please contact Anjolize Wassenaar at [gamemeatsa@gmail.com](mailto:gamemeatsa@gmail.com)

Participation in the research process is voluntary and all information will remain completely confidential and anonymous. Your contribution to this study is extremely important and its success depends on the number of respondents who complete the survey. Completion of the survey would serve as consent to participate in the research activities.

Please answer all the questions in the way that best describes your opinion of game meat. There are no correct or incorrect answers and all responses are equally valuable to the research. All answers are confidential and the researcher will not be able to match individual responses to a specific respondent. The final report produced from this survey will present responses in aggregated form in which no individual respondent will be identifiable. The request for demographic information will in no way enable the researcher to identify individual respondents and will be used for statistical purposes only.

In this survey, the term 'game meat' refers to meat derived from South African buffalo and antelope species, but excludes meat derived from ostrich. Red meat refers to beef, mutton, lamb and pork.



Demographic Information

**Please select your age group:**

- Younger than 18 years
- 18 - 39 years
- 40 - 64 years
- 65+ years

**Do you live within the borders of South Africa?**

- Yes
- No

**Are you a game meat consumer?**

- Yes
- No

**Are you a vegetarian?**

- Yes
- No

**Please select your gender:**

- Male
- Female

**Please select the province in which you live (*If you migrate between different provinces during the year, please indicate the province in which you spend the most of your time during a typical year*):**

- Eastern Cape
- Free State
- Gauteng
- KwaZulu-Natal
- Limpopo
- Mpumalanga
- North West
- Northern Cape
- Western Cape

**Which population group do you belong to?**

- African
- Coloured
- Indian / Asian
- White
- Other

**Please indicate your average monthly household income:**

- R0 – R15 000
- R15 001 – R19 000
- R19 001 – R30 000
- R30 001 – R40 000
- R40 000+

**How would you rate the level of influence you have over the choice of your meals?**

- Complete control
- Shared influence
- Little influence
- No influence

**Please select your areas of involvement in the decision-making concerning meals (select all options that are relevant):**

- Purchase of meals or groceries
- Meal preparation
- Consumption



Sensory Characteristics of Game Meat

Please indicate how you would rate the following attributes of game meat on the scale.

**Flavour**

Unappetising	Neither	Tasty		
<input type="radio"/>				

**Flavour**

Gamey / Wild	Neither	Mild		
<input type="radio"/>				

**Flavour**

Bland	Neither	Full, rich taste		
<input type="radio"/>				

**Texture**

Tough	Neither	Tender		
<input type="radio"/>				

**Texture**

Dry	Neither	Juicy		
<input type="radio"/>				

**Appearance**

Bright red	Neither	Dark red		
<input type="radio"/>				

**Appearance**

Unattractive	Neither	Attractive		
<input type="radio"/>				

**Appearance**

Dull	Neither	Pleasing
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Aroma**

Bland	Neither	Appealing
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**To what extent do you agree or disagree with the following statements?**

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
I like the overall flavour of game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the texture of game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the overall appearance of game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like the aroma of game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## SA Consumers & Game Meat Research

### Health Benefits of Game Meat

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat is a lean product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consuming game meat lowers your risk of cardiovascular diseases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is a nutritious source of protein	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is high in iron content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consume game meat because I believe that it is healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consume game meat because I like it, the health benefits are an added advantage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not believe that game meat is as healthy as it is promoted to be	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not like game meat, therefore its health benefits does not convince me to consume it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## SA Consumers & Game Meat Research

### Availability of Game Meat

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat is available in winter only	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is easily available throughout the year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is sometimes available outside the traditional hunting season	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can obtain game meat from the local butchery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can obtain game meat from the local supermarket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can obtain game meat from independent producers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can obtain game meat by hunting, or from friends or family members who hunt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can only obtain game meat from speciality food shops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is available in a variety of cuts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is packaged conveniently for household use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would buy more game meat if it were more readily available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The availability of game meat plays an important role in my choice to consume it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Price

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat is affordable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is a luxury item	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is good value for money	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is a cheap alternative to other meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is expensive in relation to other red meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The price of game meat prevents me from consuming it as often as I would like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I select game or red meat, the price of the different products largely determines my choice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can only afford to consume game meat on special occasions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Preparation

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
I find game meat easy to prepare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The preparation of game meat is time-consuming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If properly prepared, game meat is always tasty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find game meat convenient to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can prepare game meat every day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would consume game meat more often if packaging included preparation guidelines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because of its special preparation requirements, I only prepare game meat on special occasions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The enjoyment of well-prepared game meat is worth the effort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## SA Consumers & Game Meat Research

### Promotion of Game Meat

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat has an attractive image	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enough information is available about game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat could be promoted more effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Formal marketing strategies are a major influence in my choice to consume game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family and friends are a major influence in my choice to consume game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal preferences are a major influence in my choice to consume game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have seen advertisements for game meat in the past year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have seen promotional offers on game meat in the past year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Food Safety

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat is safe for human consumption	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is of good quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The hygienic aspects of game meat concerns me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I trust that production standards of game meat complies with food safety regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I purchase game or red meat only from a reputable outlet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I believe that game meat products generally possess the following characteristics:**

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Organic production methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free from growth hormones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free from antibiotics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free from pesticide residues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sufficient industry standards and regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traceability of the product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The expiry date on the packaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**To what extent will you consider the following factors every time you purchase game or red meat?**

	Highly Unlikely	Not Likely	Neutral	Likely	Highly Likely
Organic production methods	<input type="radio"/>				
The use of growth hormones	<input type="radio"/>				
The use of antibiotics	<input type="radio"/>				
Residues of pesticides	<input type="radio"/>				
Industry standards and regulations	<input type="radio"/>				
The traceability of the product	<input type="radio"/>				
The expiry date indicated on the packaging	<input type="radio"/>				
I consider other factors to be more important than the above mentioned factors	<input type="radio"/>				



## SA Consumers & Game Meat Research

### Animal Welfare

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat can be produced in a manner that respects animal welfare	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe animal welfare is sufficiently respected if animals are harvested in a quick and humane manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe harvesting practices are too stressful to the animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe the free-ranging nature of game meat production is a desirable attribute	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider animal welfare to be important when choosing game or red meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that only humane, non-lethal methods of predator management are acceptable on game ranches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
I believe that lethal methods of predator control are acceptable, if non-lethal methods of predator management have failed to reduce losses on game ranches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider humane methods of predator control on a farm / ranch to be important when choosing game or red meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## SA Consumers & Game Meat Research

### Ethics

To what extent do you agree or disagree with the following statements?

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
I believe that sustainable harvesting of game is ethical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe game meat production is in harmony with nature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat production is environmentally friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat production is in accordance with sustainable land use practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The utilisation of game meat provides an economic incentive to conserve our wildlife	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is a valuable natural resource to support local industries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is a valuable natural resource to enhance the local economy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Game meat is a valuable natural resource to increase employment opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Disagree Completely	Disagree	Neither Agree nor Disagree	Agree	Agree Completely
Game meat is a valuable natural resource to ensure food security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is not ethical to use wildlife for food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is ethical to utilise game that are harvested from wild populations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is ethical to utilise game that are kept on large game ranches, allowing animals to remain wild and free-ranging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is ethical to utilise game that are kept in fenced camps, similar to cattle production methods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is ethical to utilise game that are kept in intensive production units	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Since game form part of our unique wildlife heritage, it should not be harvested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Since game numbers must occasionally be reduced in fenced areas, I do not have a problem with harvesting them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As long as game is harvested in a humane manner, I do not have a problem with eating game meat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## APPENDIX B CAES ETHICS APPROVAL



2014-07-25

Ref. Nr.: 2014/CAES/121

To:

Student: A Wassenaar

Student nr: 43865208

Supervisor: Prof E Kempen

Department of Life and Consumer Sciences

College of Agriculture and Environmental Sciences

Dear Prof Kempen and Ms Wassenaar

Request for Ethical approval for the following research project:

*Exploring South African customers' attitudes toward game meat*

The application for ethical clearance in respect of the above mentioned research has been reviewed by the Research Ethics Review Committee of the College of Agriculture and Environmental Sciences, Unisa. Ethics clearance for the above mentioned project (Ref. Nr.: 2014/CAES/121) is given after careful consideration of all documentation submitted to the CAES Ethics committee. Approval is given for the duration of the research project.

Please be advised that should any part of the research methodology change in any way as outlined in the Ethics application (Ref. Nr.: 2014/CAES/121), it is the responsibility of the researcher to inform the CAES Ethics committee. In this instance a memo should be submitted to the Ethics Committee in which the changes are identified and fully explained.

The Ethics Committee wishes you all the best with this research undertaking.

Kind regards,

A handwritten signature in black ink, appearing to read "E Kempen".

Prof E Kempen,  
CAES Ethics Review Committee Chair

R/P *Brenda* Prof MJ Linington *30/07/2014*  
Executive Dean: College of Agriculture and Environmental Sciences



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## APPENDIX C      QUESTIONS USED AND CRONBACH ALPHA SCORES

**Table C.1: Questions Used and Cronbach  $\alpha$  Scores for Attributes in Objectives 1 and 2**

Attribute	Questions Used	Cronbach $\alpha$
Sensory Characteristics	<p><i>Flavour</i></p> <p>Unappetising - Tasty Gamey / Wild - Mild Bland - Full, rich taste</p> <p><i>Texture</i></p> <p>Tough - Tender Dry - Juicy</p> <p><i>Appearance</i></p> <p>Bright red - Dark red Unattractive - Attractive Dull - Pleasing</p> <p><i>Aroma</i></p> <p>Bland – Appealing</p> <p>I like the overall flavour of game meat I like the texture of game meat I like the overall appearance of game meat I like the aroma of game meat</p>	<p>0.8 <i>Semantic differential scales</i></p> <p>0.9 <i>Statements</i></p>
Health Benefits	<p>Game meat is a lean product Consuming game meat lowers your risk of cardiovascular diseases Game meat is a nutritious source of protein Game meat is high in iron content I consume game meat because I believe that it is healthy I consume game meat because I like it, the health benefits are an added advantage I do not believe that game meat is as healthy as it is promoted to be (<i>Responses reversed</i>) I do not like game meat, therefore its health benefits does not convince me to consume it (<i>Responses reversed</i>)</p>	0.9

Attribute	Questions Used	Cronbach $\alpha$
Availability	Game meat is available in winter only ( <i>Responses reversed</i> ) Game meat is easily available throughout the year Game meat is sometimes available outside the traditional hunting season I can obtain game meat from the local butchery I can obtain game meat from the local supermarket I can obtain game meat from independent producers I can obtain game meat by hunting, or from friends or family members who hunt Game meat is available in a variety of cuts Game meat is packaged conveniently for household use I would buy more game meat if it were more readily available The availability of game meat plays an important role in my choice to consume it	0.7
Price	Game meat is affordable ( <i>Responses reversed</i> ) Game meat is a luxury item Game meat is good value for money ( <i>Responses reversed</i> ) Game meat is a cheap alternative to other meat ( <i>Responses reversed</i> ) Game meat is expensive in relation to other red meat The price of game meat prevents me from consuming it as often as I would like When I select game or red meat, the price of the different products largely determines my choice I can only afford to consume game meat on special occasions	0.9
Preparation	I find game meat easy to prepare The preparation of game meat is time-consuming ( <i>Responses reversed</i> ) If properly prepared, game meat is always tasty I find game meat convenient to use I can prepare game meat every day Because of its special preparation requirements, I only prepare game meat on special occasions ( <i>Responses reversed</i> ) The enjoyment of well-prepared game meat is worth the effort	0.8
Promotion	Enough information is available about game meat I have seen advertisements for game meat in the past year I have seen promotional offers on game meat in the past year	0.7

Attribute	Questions Used	Cronbach $\alpha$
Food Safety	<p>Game meat is safe for human consumption</p> <p>Game meat is of good quality</p> <p>The hygienic aspects of game meat concerns me (<i>Responses reversed</i>)</p> <p>I trust that production standards of game meat complies with food safety regulations</p> <p>I purchase game or red meat only from a reputable outlet</p> <p>I believe that game meat products generally possess the following characteristics:</p> <ul style="list-style-type: none"> <li>Organic production methods</li> <li>Free from growth hormones</li> <li>Free from antibiotics</li> <li>Free from pesticide residues</li> <li>Sufficient industry standards and regulations</li> <li>Traceability of the product</li> <li>The expiry date on the packaging</li> </ul> <p>To what extent will you consider the following factors every time you purchase game or red meat?</p> <ul style="list-style-type: none"> <li>Organic production methods</li> <li>The use of growth hormones</li> <li>The use of antibiotics</li> <li>Residues of pesticides</li> <li>Industry standards and regulations</li> <li>The traceability of the product</li> <li>The expiry date indicated on the packaging</li> </ul> <p>I consider other factors to be more important than the above mentioned factors (<i>Responses reversed</i>)</p>	0.8
Animal Welfare	<p>Game meat can be produced in a manner that respects animal welfare</p> <p>I believe animal welfare is sufficiently respected if animals are harvested in a quick and humane manner</p> <p>I believe the free-ranging nature of game meat production is a desirable attribute</p> <p>I believe that only humane, non-lethal methods of predator management are acceptable on game ranches (<i>Responses reversed</i>)</p> <p>I believe that lethal methods of predator control are acceptable, if non-lethal methods of predator management have failed to reduce losses on game ranches</p> <p>I consider humane methods of predator control on a farm / ranch to be important when choosing game or red meat (<i>Responses reversed</i>)</p>	0.7

Attribute	Questions Used	Cronbach $\alpha$
Ethics	<p>I believe that sustainable harvesting of game is ethical</p> <p>I believe game meat production is in harmony with nature</p> <p>Game meat production is environmentally friendly</p> <p>Game meat production is in accordance with sustainable land use practices</p> <p>The utilisation of game meat provides an economic incentive to conserve our wildlife</p> <p>Game meat is a valuable natural resource to support local industries</p> <p>Game meat is a valuable natural resource to enhance the local economy</p> <p>Game meat is a valuable natural resource to increase employment opportunities</p> <p>Game meat is a valuable natural resource to ensure food security</p> <p>It is not ethical to use wildlife for food (<i>Responses reversed</i>)</p> <p>I believe it is ethical to utilise game that are harvested from wild populations</p> <p>I believe it is ethical to utilise game that are kept on large game ranches, allowing animals to remain wild and free-ranging</p> <p>I believe it is ethical to utilise game that are kept in fenced camps, similar to cattle production methods</p> <p>I believe it is ethical to utilise game that are kept in intensive production units</p> <p>Since game form part of our unique wildlife heritage, it should not be harvested (<i>Responses reversed</i>)</p> <p>Since game numbers must occasionally be reduced in fenced areas, I do not have a problem with harvesting them</p> <p>As long as game is harvested in a humane manner, I do not have a problem with eating game meat</p>	0.9

**Table C.2: Questions Used and Cronbach  $\alpha$  Scores for Attributes in Objective 3**

Belief Component		
Attribute	Questions Used	Cronbach $\alpha$
Sensory Characteristics	<p><i>Flavour</i></p> <p>Unappetising - Tasty Gamey / Wild - Mild Bland - Full, rich taste</p> <p><i>Texture</i></p> <p>Tough - Tender Dry - Juicy</p> <p><i>Appearance</i></p> <p>Bright red - Dark red Unattractive - Attractive Dull - Pleasing</p> <p><i>Aroma</i></p> <p>Bland – Appealing</p>	0.8
Health Benefits	<p>Game meat is a lean product Consuming game meat lowers your risk of cardiovascular diseases Game meat is a nutritious source of protein Game meat is high in iron content I do not believe that game meat is as healthy as it is promoted to be (<i>Responses reversed</i>)</p>	0.8
Availability	<p>Game meat is available in winter only (<i>Responses reversed</i>) Game meat is easily available throughout the year Game meat is sometimes available outside the traditional hunting season I can obtain game meat from the local butchery I can obtain game meat from the local supermarket I can obtain game meat from independent producers I can obtain game meat by hunting, or from friends or family members who hunt Game meat is available in a variety of cuts Game meat is packaged conveniently for household use</p>	0.7

Attribute	Questions Used	Cronbach $\alpha$
Price	Game meat is affordable ( <i>Responses reversed</i> ) Game meat is a luxury item Game meat is good value for money ( <i>Responses reversed</i> ) Game meat is a cheap alternative to other meat ( <i>Responses reversed</i> ) Game meat is expensive in relation to other red meat	0.8
Food Safety	Game meat is safe for human consumption Game meat is of good quality I trust that production standards of game meat complies with food safety regulations I believe that game meat products generally possess the following characteristics: Organic production methods Free from growth hormones Free from antibiotics Free from pesticide residues Sufficient industry standards and regulations Traceability of the product The expiry date on the packaging	0.9
Animal Welfare	Game meat can be produced in a manner that respects animal welfare I believe animal welfare is sufficiently respected if animals are harvested in a quick and humane manner	0.8
Ethics	I believe game meat production is in harmony with nature Game meat production is environmentally friendly Game meat production is in accordance with sustainable land use practices The utilisation of game meat provides an economic incentive to conserve our wildlife Game meat is a valuable natural resource to support local industries Game meat is a valuable natural resource to enhance the local economy Game meat is a valuable natural resource to increase employment opportunities Game meat is a valuable natural resource to ensure food security	1.0

Evaluation of Importance Component		
Attribute	Questions Used	Cronbach $\alpha$
Sensory Characteristics	I like the overall flavour of game meat I like the texture of game meat I like the overall appearance of game meat I like the aroma of game meat	0.9
Health Benefits	I consume game meat because I believe that it is healthy I consume game meat because I like it, the health benefits are an added advantage I do not like game meat, therefore its health benefits does not convince me to consume it ( <i>Responses reversed</i> )	0.8
Availability	I would buy more game meat if it were more readily available The availability of game meat plays an important role in my choice to consume it	0.8
Price	The price of game meat prevents me from consuming it as often as I would like When I select game or red meat, the price of the different products largely determines my choice I can only afford to consume game meat on special occasions	0.8
Food Safety	I purchase game or red meat only from a reputable outlet To what extent will you consider the following factors every time you purchase game or red meat? Organic production methods The use of growth hormones The use of antibiotics Residues of pesticides Industry standards and regulations The traceability of the product The expiry date indicated on the packaging I consider other factors to be more important than the above mentioned factors ( <i>Responses reversed</i> )	0.9
Animal Welfare	I believe that only humane, non-lethal methods of predator management are acceptable on game ranches ( <i>Responses reversed</i> ) I believe that lethal methods of predator control are acceptable, if non-lethal methods of predator management have failed to reduce losses on game ranches I consider humane methods of predator control on a farm / ranch to be important when choosing game or red meat ( <i>Responses reversed</i> )	0.7

Attribute	Questions Used	Cronbach $\alpha$
Ethics	<p>I believe that sustainable harvesting of game is ethical</p> <p>I believe it is ethical to utilise game that are harvested from wild populations</p> <p>I believe it is ethical to utilise game that are kept on large game ranches, allowing animals to remain wild and free-ranging</p> <p>I believe it is ethical to utilise game that are kept in fenced camps, similar to cattle production methods</p> <p>Since game form part of our unique wildlife heritage, it should not be harvested (<i>Responses reversed</i>)</p> <p>Since game numbers must occasionally be reduced in fenced areas, I do not have a problem with harvesting them</p> <p>As long as game is harvested in a humane manner, I do not have a problem with eating game meat</p>	0.8

**APPENDIX D      CERTIFICATE FOR ENGLISH LANGUAGE EDITING**

**CERTIFICATE FOR ENGLISH LANGUAGE EDITING**

This is to certify that the dissertation written by ms. R. Wassenaar  
Has been English Language edited by Prof. L.A. Greyvenstein.

L.Greyvenstein

**PROF. LESLEY ANN GREYVENSTEIN**

018 468 7335  
082 9744 505

## APPENDIX E      TURNITIN ORIGINALITY REPORT

 Turnitin Originality Report

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