

Determining the economic significance of the lion industry in the private wildlife tourism sector

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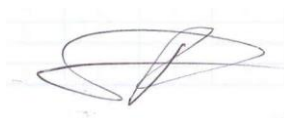
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ABSTRACT

Since little reliable data or statistics are available regarding the management of lions in the private sector and their economic significance in the private wildlife industry, the research was undertaken to determine the economic significance thereof to assist the industry in future legislation, product development and most importantly, to understand the said economic significance and importance of it for the economy of South Africa and the private wildlife industry.

Therefore the primary objective of this study was to determine the economic significance of the lion industry in the private wildlife tourism sector. Secondary objectives were (1) To do a theoretical analysis of wildlife tourism and the private wildlife tourism sector, (2) to do an analysis of the different economic measuring methods, (3) to conduct qualitative research in order to achieve the goal of the study and (4) to draw conclusions and make recommendations regarding the results of the study.

A descriptive research design was followed, more specifically qualitative research through structured interviews. Members of SAPA (South African Predators Association) which included lion breeders, lion traders and lion owners in South Africa were selected as research population. In total SAPA have 146 (N) members of which every 3rd member on the list was selected. If not willing to participate in the research process the next member on the list was selected. This resulted in 22 qualitative interviews, both telephonic and personal. The number of participants represent 15% (n=22) of the sample population.

The study found that the private lion industry do contribute greatly to the South African economy not just moneywise but also in job creation. In the private wildlife industry, the lion breeding sector has economic significance of R493 614 000 and a total of 1 680 jobs are sustained in the economy due to lion breeding activities.

Keywords: Breeding, consumptive, economic significance, hunting, impact, lions, non-consumptive, value, wildlife tourism

OPSOMMING

Sedert dat daar min betroubare data of statistiek beskikbaar is ten opsigte van die bestuur van leeus in die private sektor en hul ekonomiese belangrikheid in die private wilddedryf, is die navorsing gedoen om die ekonomiese waarde daarvan te bepaal om die dedryf te help met toekomstige wetgewing, produk ontwikkeling en die mees belangrike, om die genoemde ekonomiese waarde en belangrikheid daarvan vir die ekonomie van Suid-Afrika en die private wilddedryf te bepaal.

Daarom was die primêre doel van hierdie studie om die ekonomiese waarde van die leeu dedryf in die private wild toerismesektor te bepaal. Sekondêre doelwitte was (1) om 'n teoretiese ontleding van wildlewe toerisme en die private wildlewe toerisme sektor te doen, (2) om 'n ontleding van die verskillende ekonomiese meetmetodes te doen, (3) om kwalitatiewe navorsing te doen ten einde om die doel van die studie te bereik (4) om gevolgtrekkings en aanbevelings te maak met betrekking tot die resultate van die studie.

'N beskrywende navorsingsontwerp is gevolg, meer spesifiek kwalitatiewe navorsing deur middel van gestruktureerde onderhoude. Lede van SAPA (Suid-Afrikaanse Roofdiere Vereniging) wat leeu-boere, leeu handelaars en leeu-eienaars in Suid-Afrika ingesluit het, is gekies as die navorsingspopulasie. In totaal het SAPA 146 (N) lede waarvan elke 3de lid op die lys gekies is. Indien 'n lid nie bereid is om deel te neem in die navorsingsproses nie, was die volgende lid op die lys gekies. Dit het gelei tot 22 kwalitatiewe onderhoude, ingesluit telefoniese en persoonlike onderhoude. In totaal was daar 15% (n = 22) deelnemers verteenwoordig van die navorsingspopulasie.

Die studie het bevind dat die private leeu dedryf grootliks bydra tot die Suid-Afrikaanse ekonomie, nie net geld gewys nie maar ook in werkskepping. In die private wilddedryf, het die teel van leeus 'n ekonomiese waarde van R493 614 000 en 'n totaal van 1 680 werkgeleenthede word opgedoen in die ekonomie as gevolg van die teel van leeus aktiwiteite.

Sleutelwoorde: Ekonomiese belang, impak, jag, leeus, nie-verbruikende, teling, verbruikende, waarde, wildlewe toerisme

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CHAPTER 1

INTRODUCTION AND PROBLEM STATEMENT

“Lions belong in the wild but because of human impact it is necessary to have predators such as lions in captivity to give them the life they deserve and to help restore their blood lines” The lion man (Bush, 2015).

1.1. INTRODUCTION

Tourism is generally described as the largest industry in the world because of its contribution to global GDP, trade earning, the number of people it involves and the number of people it employs (OECD, 2008:107). This industry is one of the fastest growing ones, not least in developing countries; in Africa where tourism is highly reliant on cultural activities/traditions and the natural environment, the industry grew from 2% to over 11% between 1980 and 2003 of the total African exports (OECD, 2008:106). Within the global tourism industry, nature-based tourism is rapidly growing and holds considerable potential for wildlife-based economic growth. As a result, this is one of the few trade/service sectors in which “poor countries possess a clear comparative advantage as a result of their often rich natural base” (OECD, 2008:106).

Observing wildlife in its natural habitat in Africa has been an attractive focus for the tourism industry for a long time (Allen & Brennan, 2004:18). Novelli (2005:171) states that over the past hundred years, the African continent has undergone extraordinary growth in nature-based tourism activities, particularly within the wildlife tourism framework of consumptive tourism (hunting), conservation tourism and tourism safaris especially in South Africa (Novelli, 2005:171). Additionally, opportunities exist for national economies visited by tourists to capture a larger portion of the total value of tourism. South Africa’s wildlife tourism is customarily divided into two categories: the private sector and state owned, of which private land makes the largest contribution (Van der Merwe, Saayman & Krugell, 2004:105). For this study, the main focus will fall on the lion industry in the private sector.

This sector includes game farms and private nature reserves and consists of four pillars: breeding of wildlife, hunting, ecotourism attractions and game products, with each pillar contributing to a product that must be sustainable and forms part of conservation (Van der Merwe & Saayman, 2002).

Owing to the success of wildlife breeding in South Africa, the lion breeding industry is an ever growing one (Purohit & Purohit, 2013:545-548). Lions have been introduced on many game reserves in the private sector, since 1994, due to the fact that these animals are an attraction to the general public and are the most sought after species for tourists visiting wildlife areas or national parks, while in addition to this they also play a major role in trophy hunting (Hunter, 1999; Mbenga, 2004). The demand for lions varies: from a large group of visitors, including both domestic and foreign, as well as specialists and generalists (Wilson & Tisdell, 2003). Vorhies and Vorhies (1993:1-2) identified four primary demands for lions from an economic perspective, the first being to view the lions in their natural habitat; for example, photographic safaris. The second is to hunt lions while the last two demands comprise the market for live wildlife and the necessity for researchers to determine their contribution to the natural ecosystems (Vorhies & Vorhies. 1993:1-2). In a study undertaken by Saayman and Saayman (2014b:1193), which focused on tourists' willingness to pay to see the Big Seven, the results showed that visitors are willing to pay more if it is guaranteed that they will see one of the Big Five species, such as the lion.

Lion breeders state that the reason they are breeding lions is to protect these species for conservation purposes (Yandell, 2009). They also argue that the lion industry has conservation value and can benefit the community economically (Yandell, 2009). Tourism is one of the largest economic boosters in the African economy; lions continue to be one of the biggest tourist attractions (Cadman, 2009). Previous research by Yandell (2009) shows that the value of a single lion in relation to tourism activities can add up to over \$500 000 during the course of its lifetime. This suggests that the dominant income to be generated from introducing lions on game farms, reserves and National Parks will come from increased tourism expenditures. Lions are essential to a tourism destination in order for it to be a Big Five (lion, rhino, leopard, elephant, buffalo) destination. AndBeyond and other tourism companies, assert that the Big Five are essential for attracting foreign tourists to an African bushveld destination (Yandell, 2009).

This chapter provides clarification of the problem statement, describes the objectives of the study, explains the chosen method of research and provides chapter classification and clarification of relevant concepts.

1.2. BACKGROUND TO THE STUDY

It has been declared that wildlife tourism is a way to protect sustainable economic advantages while at the same time supporting wildlife protection and local host communities, as indicated by authors such as Shackley (1996:1); Fennell and Weaver (1997:1); Ashley and Roe (1998:1) and Manfredo (2002). Over the past several decades South Africa has experienced a significant increase in the supply of game due to the burgeoning in game farms and private game reserves as well as to the fact that economic significance has been attached to wildlife (Van der Merwe, 2014:7). Van der Merwe (2004) also observes that there is a growth in the percentage of people that shows interest in the importance of wildlife, and also to the socio-economic advantages of well-cared-for animals. The majority of tourism activities feature wildlife as their leading or most meaningful component of the whole wildlife experience; in this respect wildlife tourism is broadly considered as an industry that keeps on expanding. Tourism that depends on nature is rated as the fastest growing sector of all the tourism sectors. It is responsible for 20% of the world's overall tourism expenses according to the World Tourism Organization; progressively the experiences are forming part of organised tourism, and are contributing in a sustainable manner to the economics of various countries (WTTC, 2000); thus it can be regarded as one of the key drivers of wealth and economic empowerment (GCIS, 1999:194). A diverse set of experiences and classifying different forms of these experiences are included in the study of wildlife tourism and can be useful for a variety of purposes. For communities in South Africa, such tourism plays a major role because it supports the economic welfare of the community by creating jobs in the tourism sector and the scenery since wildlife is one of the main attractions (GCIS, 1998, GCIS, 1999). Therefore, wildlife tourism attractions, including observing and interactions with wildlife are increasing in popularity (Jenner & Smith, 1992) and governments and the tourism industry alike are starting to attract more interest in wildlife based tourism.

Wildlife tourism according to Higginbottom (2004:2) can be defined as: "tourism based on encounters with non-domestic (non-human) animals. The encounters can occur in either the animal's natural environment or in captivity. The interaction with the animals includes activities that are historically classified as non-consumptive such as photography and feeding, as well as those involved with the capture and killing of the animals. An example of this is hunting (in the terrestrial environment) and recreational fishing (in the aquatic environment)". In this fashion, wildlife tourism can also be described as "an area of overlay between nature based tourism, ecotourism, and consumptive use of wildlife, rural tourism,

and human relations with wildlife” which is illustrated in Figure 1.1 (Page & Dowling, 2002:82).

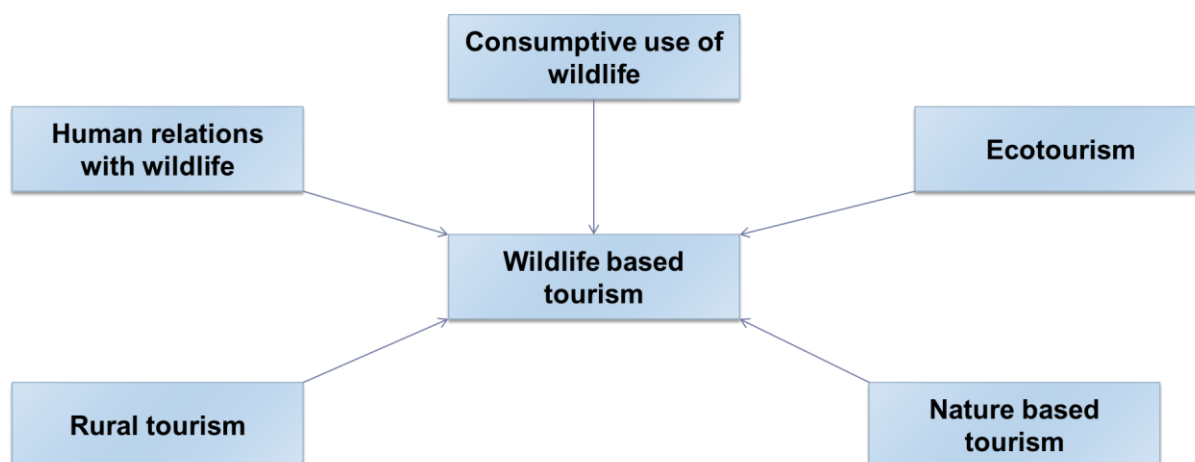


Figure 1.1: Wildlife based tourism
(Source: Page and Dowling, 2002:83)

Wildlife tourism can also be classified as consumptive or non-consumptive, depending on the recreational purpose of the visitor and the level of interaction the visitor has with wildlife (Sinha, 2001:1). There has also been a growing curiosity over the last decade concerning using wildlife, for example, lions, within multi-purpose systems, along with production of meat and value added activities, which include hunting, ecotourism and breeding (Van der Merwe & Saayman, 2002).

Wildlife tourism activities that are included within non-consumptive tourism involve activities where wildlife is neither caught nor killed: generally wildlife watching and photography. Wildlife tourism activities that are included within consumptive use comprise actions such as the capturing of animals and hunting (Commonwealth Australia, 1998, Box 3). Lions are valuable for both consumptive and non-consumptive forms, such as for hunters and ecotourism purposes, as illustrated in Figure 1.2.

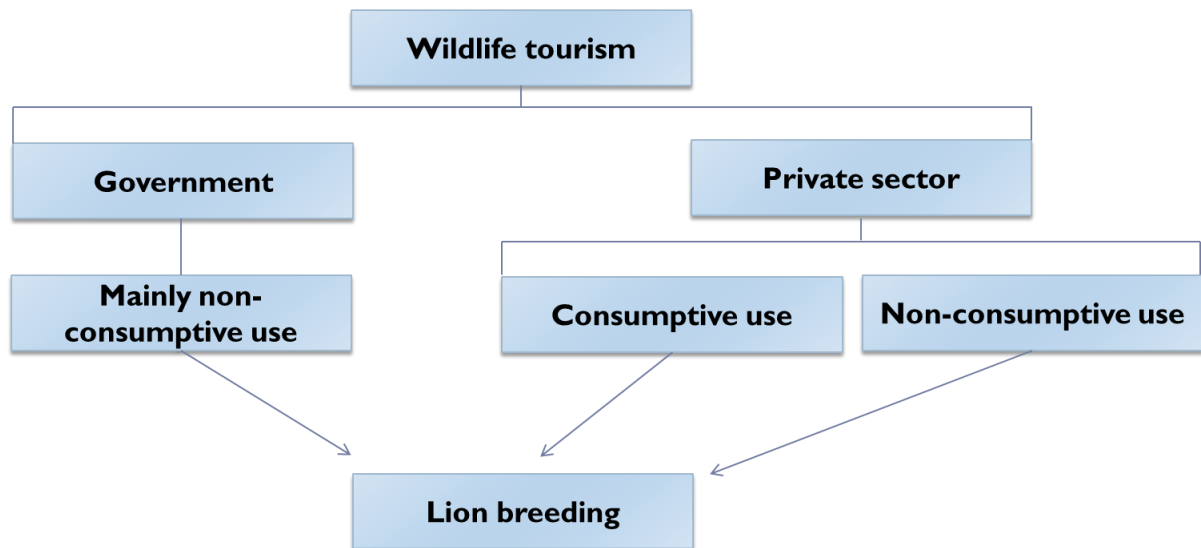


Figure 1.2: Lion industry
(Authors own design)

Historically, lions could be found all over the African, European and Asian continents. However, in recent years there has been a dramatic decline in their distribution and numbers because of habitat destruction and poaching, and they are also listed by the International Union for Conservation of Nature as threatened species (Bauer & Van der Merwe, 2004). Lions were eliminated from much of their historical range by the 1900's in South Africa (Nowell & Jackson 1996), although in the early 1990's they were reintroduced into several reserves in South Africa (reviews by Funston, 2008; Slotow & Hunter, 2009). Most of these reintroductions have been successful (Hayward, Adendorff, Moolman, O'Brien, Sholto-Douglas, Bissett, Bean, Forgarty, Howarth, Slater & Kerley, 2007; Hunter, Pretorius, Carlisle, Rickelton, Walker, Slotow, & Skinner, 2007).

According to the International Union for Conservation of Nature (IUCN) (2006:7) if lions are correctly managed they may offer a major source of economic benefits and there could be diverse advantages for a variety of countries, including South Africa (IUCN, 2006:7). Parker (2012) states that significant income can be generated for local communities in terms of consumptive and non-consumptive tourism, as well as from sales of lion bones to Asian markets and sales to the hunting industry (Parker, 2012).

However, a number of hurdles in the lion industry need to be overcome. For instance, no reliable data on the African lion populations exists prior to the late 20th century (Chardonnet, 2002; Bauer & Van der Merwe, 2004) while, according to Richardson (2013), it is a challenge to determine the exact number of lions in captivity in the private sector in South Africa, as many lion owners are very secretive about this. In his opinion, the number of lions in captivity is estimated to be between 6000 and 7000 (Richardson, 2013).

Regardless of the facts that no current reliable data are available and that there is a shortage of up to date statistics on the lion industry, studies have been undertaken by researchers such as Saayman and Saayman (2006); Saayman, Van der Merwe, and Rossouw (2011); Shwiff, Anderson, Cullen, White, and Shiff (2013) that focus on the value of wildlife, its economic impact, its economic value and economic significance. These studies point out that some of the aspects of game farm tourism indicate gaps in the industry and statistics; however this industry has essential economic value and larger numbers of breeding centres have been established throughout South Africa.

To be able to estimate the economic significance of the lion industry, certain factors need to be taken into consideration as well as an understanding of the elements of economic value. Therefore, identifying the differences between 'economic impact', 'economic value', 'economic benefit' and 'economic significance' is essential since these terms are often misunderstood.

1.2.1. Definition of relevant terms

Economic impacts: can be described as the influence of economic activities in a given area, such as business output or sales volume, added value, wealth, personal income and jobs. Any of these given areas may assist in improving the economic well-being of the area's residents (Weisbrod & Weisbrod, 1997:1).

Economic value: is one of the ways to define and measure value; it may be divided into two broad value categories: use and non-use value (Butler, 1983:424). Use value is further subdivided into direct and indirect value, while direct value is further split into consumptive and non-consumptive use value (McNeely, Miller, Reid, Mittermeier & Werner, 1990). Non-use value in turn has three sub-categories: existence, bequest and option values (Butler, 1983:425). This explanation is graphically summarised in Figure 1.3.

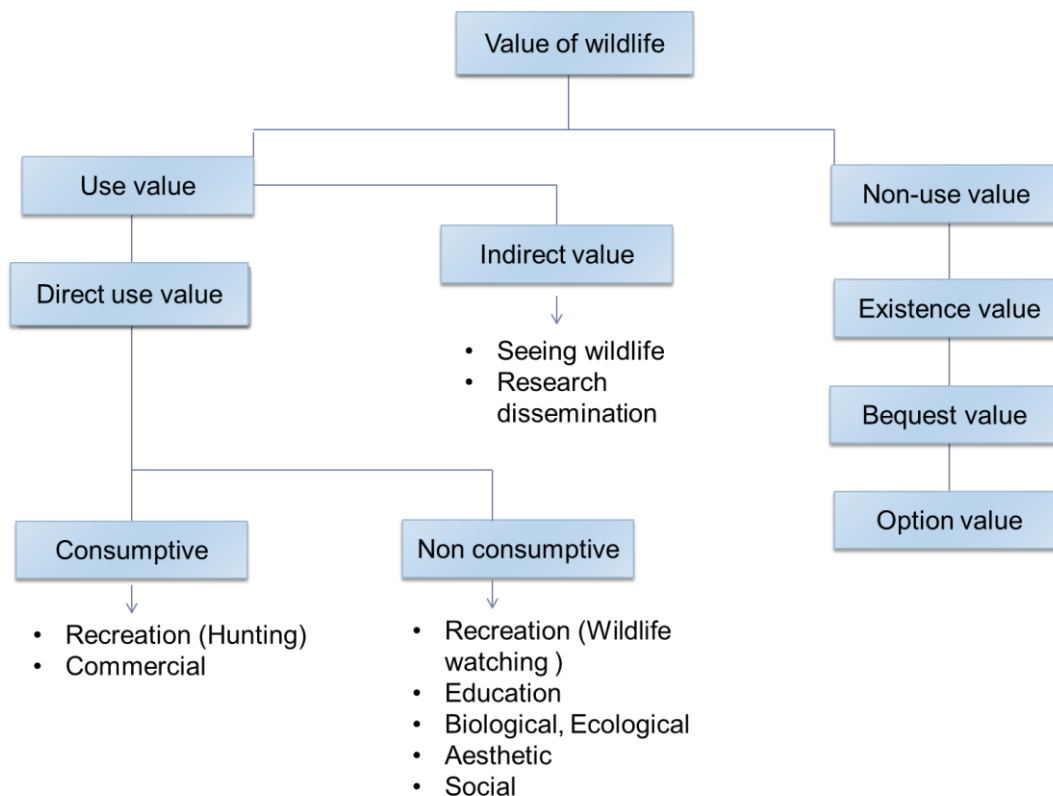


Figure 1.3: Components of the total value of wildlife
 (Adapted: Adamowicz, Asafu-Adjaye, Boxall and Phillips, 1991)

Economic benefit: is derived using a cost-benefit framework to determine the economic impact of wildlife. In doing this, economists attempt to measure what the total economic value of wildlife is, by measuring the use value of wildlife as well as the intangible economic values; for example, non-use values (Tisdell & Wilson, 2004). Two different methods are used to measure the economic impact of wildlife: the social cost-benefit analysis and the economic impact analysis (Tisdell & Wilson, 2004). The first method is applied to determine economic worth using cost–benefit analysis; the value of wildlife is conserved as a result of a programme and to conserve it this is compared with the total cost of the programme. If the economic worth indicates that the net benefits are positive, this signifies that the programme has economic worth: the larger the net economic benefits, the more advantageous the programme (Tisdell & Wilson, 2004).

The second method to determine the economic worth of wildlife is to establish its economic impact on variables; for example, the level of employment, incomes and expenditure, usually in a specific region or locality. This method is known as the economic impact analysis and is more limited in its scope than the social cost-benefit analysis, which calculates the total economic value (Tisdell & Wilson, 2004).

Economic significance: assists in making decisions on the optimal allocation of limited resources and in answering questions such as (Crompton, 2006:45, 67):

- What is the economic significance of lion breeding?
- What is the best method to breed lions?
- What is happening to the lions in the private sector and how are they managed?
- What is the opinion of the community regarding lion breeding?

Economic significance also provides valuable insight into how foreign and domestic markets operate, which helps in making rational choices for short and long term financial benefits (Crompton, 2006:45, 67).

Previous research (Kettles, 2007; Cadman, 2009; Potgieter, 2014) undertaken proposes that wildlife tourism, specifically the private lion industry, lacks important information concerning the total economic significance of the species within wildlife tourism. This makes it difficult to determine the said significance, since there is no particular framework which can be used to do so. This is also a challenge since limited knowledge exists concerning the lion industry in the private sector (Potgieter, 2014). There is a need to know just how vital lions are to wildlife tourism and to identify the economic significance derived from the private lion industry. The reason for using economic significance is because it measures the size of the economic activity and, as a result, proposes useful information when trade-offs are involved (Crompton, 2006:45, 67).

The main aim of this study may therefore be stated as an attempt to determine the economic significance of the lion industry in the private wildlife tourism sector.

1.3. PROBLEM STATEMENT

Commercial breeding of lions in captivity is rapidly increasing in South Africa. Throughout the country there are numerous facilities that legally do so and it is also estimated that there are more lions on private land than are found in provincial and national parks. According to Kiffner (cited in Van Zyl, 2014:30) lions are essential for the viability and profitability of lodges, breeding and hunting and it is clear from the information provided in section 1.2 that the lion industry forms part of wildlife tourism, contributing significantly to the latter throughout Africa (Lion Alert, 2014).

Due to exceptional interest in this species, research, education and conservation are ongoing (Hillerman, 2009:7). In an interview with Prof. P. Potgieter, President of the South African Predator Association (SAPA), he stated that the amount of information that exists on the private lion industry is very limited (as indicated above), making it extremely difficult to determine the economic significance of the lion industry and to carry out research (Potgieter, 2014). Therefore, the questions that arise are: What is the economic significance of lions in the private sector? What happens to these lions as the numbers increase? What happens to the excess lions? How are the lions managed and what breeding methods are used?

These questions make it essential to carry out more research on the private lion industry to fill these information gaps. It is therefore a cause for concern considering that this industry is such a competitive arena and commands high value for wildlife tourism (Potgieter, 2014). In recent years lion hunting and breeding specifically have attracted a great deal of media attention, most of which has been negative. The industry is obliged to deal with issues such as: speculation concerning inbreeding, over-population, onslaughts from anti-hunting groups and the Green movement. Certain airline companies, such as Emirates, refuse to ship lion trophies. These decisions receive considerable media attention and also impact the decisions of the general public (Vartan, 2001; Hedrick & Miller 1992; Newmark 1996; Packer, Hilborn, Mosser, *et al.*, 2005).

The lion industry can stand its ground successfully only if it has sound facts obtained from solid research. Therefore, the problem that arises concerns the economic significance of lion breeding. Answers to this will assist in obtaining more essential data from this industry.

1.4. PRIMARY AND SECONDARY OBJECTIVES

The following primary and secondary objectives were set.

1.4.1. Primary objective

The primary objective of this study is to determine the economic significance of the lion industry in the private wildlife tourism sector.

1.4.2. Secondary objectives

The secondary aims of the study are supported by the following research objectives:

Objective 1:

To do an analysis of wildlife tourism and the wildlife tourism sector regarding the lion industry by means of a literature study.

Objective 2:

To do a theoretical overview of analysing the different economic measuring methods.

Objective 3:

To do qualitative interviews in order to achieve the goal of the study.

Objective 4:

To draw conclusions from the results of the study and make recommendations that will benefit the South African lion industry and assist in future research.

1.5. METHOD OF RESEARCH

The following research methods were used in this study:

1.5.1. Literature study

A literature study was conducted in order to provide an analysis of the impact and the economic significance of the South African private lion industry, and to evaluate concepts, economic measuring methods and strategies that relate to determining the given significance.

In order to carry out the literature study and provide the given analysis, the following sources were consulted;

- Academic textbooks, articles, and scholarly journals.
- Various electronic databases such as Emerald, Sae Publications, ProQuest, ScienceDirect, Google Scholar, and journal articles were used in order to obtain relevant information and search for extant literature on the subject of wildlife tourism, hunting, consumptive and non-consumptive wildlife tourism, the lion industry, the economic value and impact of the lion industry.

Keywords that were used: Breeding, consumptive, economic significance, hunting, impact, lions, non-consumptive, value, wildlife tourism, wildlife.

1.5.2. Empirical survey

The empirical survey consisted of the following:

1.5.2.1. Method of research

In order to collect and analyse data, qualitative research was conducted means of structured interviews. According to Creswell (2013:4) qualitative research is “an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. This approach involves emerging questions and procedures, data typically collected in the respondents setting, data analysis inductively building from particulars to general themes” (Creswell, 2013).

1.5.2.2. Research design

A descriptive research design was chosen to obtain background information about the overall problem from the respondents because, as mentioned, there is very little information available. According to Burn and Bush (2014:98) “the research design is a master plan that is made up from a set of advanced decisions specifying the methods and procedures of collecting and analysing the information that will be needed to ensure the research objectives are reached”. This design also utilises statistical and scientific methods that will help to collect the data needed (Berndt & Petzer, 2011:32). A descriptive research design depends on the questions asked, which will ultimately determine the type of approach necessary to complete the research and to be able to answer the following questions, who, what, where and how (Burns & Bush, 2014:103), that are associated with this research.

Descriptive research is easily adaptable, which gives the researcher the opportunity to look into any accurate resources that are identified during the time period of the research (Burns, 2014:101). To guide the study only the goals and objectives were used.

1.5.2.3. Method of data collection and sample plan

In order to collect data, a qualitative research method was utilised to obtain the information from the respondents. For the purpose of this study a group of respondents that included lion breeders, lion traders, and lion owners in South Africa, was used to conduct an in-depth qualitative analysis to collect detailed information through interviews. The empirical part of the research was conducted from June 2015 until September 2016.

The survey population consists of SAPA members. In total, there are 146 (N) SAPA members. In this case, the sampling and element are identical because there is a list of all the active SAPA members in South Africa. This means that the survey population consists of 146 active SAPA members.

Stratified purposive sampling was used, where every 3rd respondent on the SAPA members' list was chosen, to gather data from respondents. If respondents were not willing to participate in the research the next member on the list were selected. The stratified purposive sampling approach was selected so that each respondent had an equal chance to be chosen and because resources for this study were limited. According to Patton (2002) a purposive sampling is a technique used widely for most effective use, in such a case. . According to Nieuwenhuis (2000:79) this form of sampling means that respondents are selected according to a preselected criterion relevant to a specific research question: in this case it referred to the lion farmers on the given list.

The stratified sampling was applied using structured interviews with the respondents. The interview questions were detailed and developed in advance. The interviews were undertaken in two ways: by telephonic interviews or by personal, face to face interviews through visiting the respondent, depending upon the method the respondent chose. Of the 146 active SAPA members, interviews were undertaken with 22 members resulting in 15% (n=22) of the total population.

1.5.2.4. Development of the qualitative survey instrument

This qualitative survey instrument was newly developed.

This qualitative survey instrument was newly developed. The structured interviews focused on determining demographic profiles, development aspects and economic impact aspects and were developed by the researcher with assistance from study leaders and Prof P.

Potgieter, president of SAPA and previous studies conducted by Van der Merwe, Scholtz and Saayman (2011) and Saayman and Van der Merwe (2003).

The qualitative interviews contained structured questions, which consist mostly of closed response questions and a few open ended questions. It contains three main sections: demographic aspects, development aspects and economic impact and management aspects.

Section A: Respondents were asked to answer a series of demographic questions adapted as just described. Questions asked were, for example, age, highest level of qualification, where the farm is located and so forth.

Section B: This section included questions concerning development aspects such as: how many lions can be found on your premises, specify the different lion variations on your establishment and the like.

Section C: This section included economic questions, such as: how much does it cost per month to operate lion facilities, what is the average price per lion you sell or export and so forth.

1.5.2.5. Survey

The interviews were conducted by the researcher herself. In depth interviews were held with the respondents to gather the information between May and August 2016.

Table 1.1: Time period of interviews

Time period of interviews	
Element	Time period
Planning and schedule of interviews	February 2015 until April 2015
Interviews	May 2015 until August 2016

1.5.2.6. Data analysis strategy

The following data analysis strategies were used:

Microsoft Office Excel 2007 was used to capture the data collected from the research. The Statistical Package for Social Sciences (SPSS) was used for statistical analysis. The data

collection was edited, coded, and captured. The representivity, validity and reliability of the results were assessed. Descriptive inferential and difference analyses were conducted.

The South African 2016 Social Accounting Matrix SAM model based on the Input Output model was used to determine the economic significance of the private lion industry. Input and output models are described as sets of equations that describe the components that link the output of one industry within all other industries in an economy. This model can be used to determine the impact within each industry and may provide more significant information than do measures of the mere income, output and employment (Broomhall, 1993:4). According to Cameron (2003:1) an input and output analysis is a logical framework devised with the intention of evaluating the interconnection of industries in an economy. In its most primitive form, an input and output model can be defined by a system of linear equations that describes the allocation of an industry's product throughout the economy. This model is a complete method to estimate the flow of money between sectors, sub-sectors, organisations, businesses and consumers, while they mentor the interdependence effects when applying the numerous multipliers (Reeves, 2002:54). The input and output model can measure precise effects of macroeconomic changes on the local economy and also examine the improvement that a particular sector within the local economy could achieve. These models may be tailored to be relevant for precise conditions and economies or applied to address economies of scale associated with changes of output (Reeves, 2002:54).

The inter-sectorial links in input and output models are expanded through SAM by identifying the link between production sectors and all institutions within the tourism economy (Akkermik, 2012). Basically, SAM can be used to examine the interrelationship between production structure, incomes distribution and household expenditures (Pal, *et al.*, 2011). The SAM model stands out from various other models due to its ability to detail the supply and demand, as well as who benefits from increased visitor spending; it also indicates the secondary effects. In addition Jones (2010) indicates that numerous types of multipliers can be derived from SAM models to capture the direct, indirect and induced impact on output (Pal, *et al.*, 2011).

The results, findings and evaluations of the research propositions are presented in this document and conclusions and recommendations made were based upon the findings of the study.

1.5.2.7. Trustworthiness

According to the authors Holloway and Wheeler (2002:254) trustworthiness in qualitative research can be defined as an “indication of methodological soundness and adequacy”. Methods that were used in this study to establish trustworthiness include the following;

- **Credibility**

Credibility was ensured by establishing well-researched methods and choosing a research design that fitted the research question (Lincoln & Guba, 1985).

- **Transferability**

The researcher provided the respondents with a full and purposeful account of the research question and research design.

- **Dependability**

Dependability was ensured through the research design and its implementation, data gathering and the reflective appraisal of the research (Lincoln & Cuba, 1985). Trustworthiness in this study was ensured by means of examination and coding and recording the data that were collected.

1.6. DEFINING THE CONCEPTS

The following terms are used and explained below:

1.6.1. Wildlife tourism

According to Higginbottom (2004:2) wildlife tourism can be defined [as] “tourism based on encounters with non-domestic (Wildlife animals) animals. The encounters may occur in either the animal’s natural environment or in captivity. The interactions with the animals include activities that are historically classified as non-consumptive, such as photography and feeding, as well as those which are consumptive, involved with the capture and killing of the animals. An example of this is hunting (in the terrestrial environment) as well as recreational fishing in the aquatic environment. Wildlife tourism may entail: attractions at fixed sites, tours and experiences available in association with tourists’ accommodation, or it might occur as unaccompanied encounters by independent travellers”.

1.6.2. Lion industry

According to IUCN (2006:7) the lion industry can be defined as an industry that consists of all the nature reserves, breeders, game farms and national parks that host lions in a free

roaming or captive state. This industry conducts the legal trade with lions and provides support for the conservation of lions (IUCN, 2006:7).

1.6.3. Conservation

Conservation is an attempt to maintain and use natural resources wisely in such a manner to ensure that future generation can use the resources. Careful use of resources could vary from actively managing species such as white-tailed deer populations by hunting to preserving and protecting spotted owl populations and habitat (IUCN, 2006).

1.6.4. Economic significance

Economic significance is one of numerous ways to define and measure value. Although other types of value are often important, economic significance is useful to consider when making economic choices – ones that involve trade-offs in allocating resources. Economic significance is a measure of the importance of the finding to support or disprove one's hypotheses (Ecosystem Valuation, 2015); it does not evaluate any loss in an economic activity if it did not take place. Rather, it measures the size of the economic activity and, based on this, provides useful information when trade-offs are involved (Crompton, 2006:45, 67).

1.6.5. Captive breeding

WWF (2007) defines captive breeding [as] “the process of breeding animals outside of their natural environment in restricted conditions in farms, zoos or other closed facilities. The choice of individual animals that are to be part of a captive breeding population, and the mating partners within that population, are controlled by humans”.

1.6.6. Canned hunting

The South African Predator association defines canned hunting [as] “the slaying of a drugged or overly-domesticated lion or a lion lured by food to the killing zone in a featureless, cramped enclosure” (SAPA, 2015).

1.6.7. Captive hunting

“Captive hunting are essentially private or commercial trophy hunts in which animals are raised or captured from the wild and released into a confined area not smaller than 1000 hectares to be hunted” (Born Free USA, 2016).

1.7. CHAPTER ARRANGEMENT

The chapters of the study are organised as follows:

- **Chapter 1: Introduction and problem statement**

Chapter one provided an outline of the study as well as information and an overview on what the research entails, it briefly describes the problem statement and objectives needed to achieve the main aim of this study.

- **Chapter 2: Literature review on wildlife tourism and the wildlife tourism sector**

This section furnishes an in-depth literature study on the subject matter, that is, of relevant concepts that concern wildlife tourism and the lion industry.

- **Chapter 3: Theoretical overview of analysing the different economic measuring methods**

This chapter affords a detailed view of relevant concepts and measuring methods that have economic significance.

- **Chapter 4: Empirical results**

This section describes the results and findings that emerged after the empirical research was completed and interprets them.

- **Chapter 5: Conclusions and recommendations**

The last section describes the key findings and provides recommendations to address lion management, using information obtained in this study.

CHAPTER 2

LITERATURE REVIEW ON WILDLIFE TOURISM AND THE PRIVATE WILDLIFE TOURISM SECTOR

2.1. INTRODUCTION

As mentioned in the previous chapter, wildlife tourism has recently increased markedly in the form of wildlife viewing in localities such as national parks, private game farms and game sanctuaries on government or state owned land. It was also mentioned that this industry is rated as the fastest growing sector of all tourism sectors, holds much potential for wildlife-based economic growth and is one of the few trade/service sectors in which developing countries have a clear competitive advantage as a result of their often rich natural resource base such as in the case of South Africa (OECD, 2009:106). The accelerated growth in wildlife tourism can be attributed to South Africa's exotic landscapes, enjoyable weather and combination of people, history and cultures. From seaside resorts to mountain retreats, South Africa has much to offer both domestic and international travellers (The International Hotel School, 2014).

The public and the private tourism sectors alike are starting to create more interest in wildlife based tourism and for communities in South Africa. Wildlife tourism plays a major role as it provides job opportunities, offers economic returns and supports conservation; the scenery and wildlife are two of the main attractions of South Africa (GCIS, 1998; GCIS, 1999). Activities that contribute to the growth in this industry are whale watching, game viewing, bird watching, fishing and hunting, to name merely a few (Van der Merwe, 2014:4).

A large percentage of wildlife tourism activities and conservation in South Africa take place on private land: such as game farms and private nature reserves. According to Van Hoven (2014:101) there are 11,600 game ranches covering an estimated 22 million hectares or 18% of the country's land surface. Game farms and private conservation areas in South

Africa are known for their beauty, unique types of accommodation and variety of wildlife species (Van der Merwe & Saayman, 2003:103-112) and make a significant contribution to the wildlife tourism industry and the conservation of species (Van der Merwe, Saayman & Krugell, 2004:105).

In order to create a better understanding of wildlife tourism, it must be put into context. The aim of this chapter is therefore to present a literature overview of the concept, to discuss important aspects that are essential to tourism of this nature and to discuss the private sector.

2.2. WILDLIFE TOURISM

Wildlife tourism is a specialised yet extremely important aspect in the tourism industry and provides significant economic opportunities to those who have wildlife species on their premises. Protected areas that are established for this type of tourism bring fundamental change to the surrounding lands, creating job opportunities for local communities as well as the service and retail sectors (Higginbottom, 2004).

Wildlife tourism consists of a variety of activities within its boundaries and caters for a wide range of needs in different ways. Certain forms of such tourism such as hunting or interaction with wildlife are more favoured by tourists than other types of tourism (Page & Dowling, 2002:83). The positive effects of wildlife tourism on the environment and wildlife may encourage the use of marginal agricultural areas for nature conservation, and in this way sustain natural conservation. Doing this endorses conservation by demonstrating the significance of natural areas for stimulating investment in infrastructure, generating income and acknowledging the importance of effective management of protected areas. It is also vital to take account of inappropriate development caused by mass tourism that may degenerate protected areas and destroy local communities. In order to practice successful wildlife tourism it is crucial to find the balance between visitors' enjoyment and conservation needs. It may also be observed that in general, the tourism industry would rather focus on activities that generate income and pay more attention to the economic and social benefits than to focus on the environment and the conservation of it (Dawson, 2001:41).

Consequently, this section accords attention to the following: definition of wildlife tourism, South African wildlife tourism industry structures, impacts of wildlife tourism and the sustainability of it, in order to offer an improved understanding of the concept.

2.2.1. Defining wildlife tourism

Page and Dowling (2002:82) define tourism of this nature as “an area of overlap between nature-based tourism, ecotourism, consumptive use of wildlife, rural tourism, and human relations with animals”. According to authors Miryala and Reddy (2015:282) wildlife tourism can be described as “tourism that involves encounters with non-domesticated animals either in their natural environment or in captivity. It includes a wide range of activities, such as bird-watching, whale-watching, general wildlife viewing, visiting zoos and aquaria, snorkelling to view underwater life, hunting and recreational fishing”. Higginbottom (2004:2) also defines wildlife tourism [as] “tourism based on encounters with non-domestic animals. The encounters can occur in either the animal’s natural environment or in captivity. The interaction with the animals includes activities that are historically classified as non-consumptive such as photography and feeding, as well as those involved with the capture and killing of the animals. An example of this is hunting (in the terrestrial environment) and recreational fishing (in the aquatic environment)”. In this manner wildlife tourism may also be described [as] “an area of overlap between nature-based tourism, ecotourism, and consumptive use of wildlife, rural tourism, and human relations with wildlife”.

As indicated earlier, wildlife-based tourism can be divided into consumptive and non-consumptive forms. Consumptive wildlife-based tourism occurs in different forms and involves the capturing or killing of animals, and it can be in the form of hunting and fishing. Consumptive wildlife-based tourism such as hunting generates income from hunting permits, hunting fees, hunting equipment and from hiring of land vehicles and accommodation (Milner-Gulland, & Mace, 1998.). In non-consumptive wildlife tourism, where it involves neither catching nor killing, it could still cause serious impacts on wildlife and their habitats. For example, wildlife photographers who want to obtain a closer shot of animals may cause more disturbances to wildlife than an observer who views wildlife from a safe distance. Previous studies which focused on the impacts of tourism showed that of the various recreational users, wildlife photographers are the most disruptive of all (Klein, 1993: 153-157).

2.2.2. Structure of the South African wildlife tourism industry

As illustrated in Figure 2.1 South Africa’s wildlife tourism industry is divided into three groupings, the public and the private sectors and communal land. The public sector includes national parks (SANParks), provincial parks and land owned by municipal government. There, it is the government’s responsibility to protect South Africa’s conservation areas for the benefit of all and to create a prosperous and equitable society that lives in harmony with

its natural resources. For the wildlife tourism industry it is important that government creates an effective economic, regulatory and business environment for this industry to prosper in an ecologically sustainable manner in the public sector. The main objective of the said sector is to build a strategic partnership on international, national and local level to support and promote conservation. Communal land is land owned by communities, which includes farms, game farms and nature reserves. The rights to these lands rest with households and communities. It is the responsibility of the traditional leader to allocate the land to households, act as an arbiter in land disputes as well as to manage and secure investments and development on communal land for the benefit of the community (Van der Merwe, 2014).

As indicated in Chapter 1, the main focus of this study falls within the private sector, which consists of game farms and nature reserves which are privately owned. As mentioned, the private wildlife industry in South Africa is based on four pillars: breeding of game, hunting, wildlife tourism attractions and game products. These pillars are discussed later in this chapter.

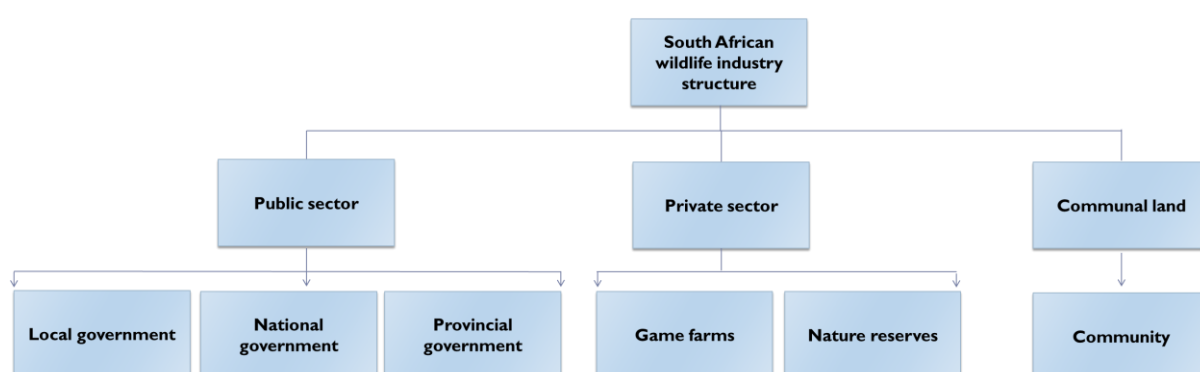


Figure 2.1: South African wildlife industry structure

(Authors own compilation)

2.2.3. Impacts of wildlife tourism

The impacts of wildlife tourism may be divided into three main categories, namely economic, ecological and socio-cultural as illustrated in Figure 2.2.

- **Economic**

Wildlife tourism impacts on the economy of a country in terms of job creation, foreign currency and the development of infra- and super-structures; for these reasons, it has economic value. This is also the field of research for this study.

- **Ecological**

When development takes place in terms of the said infra- and super-structures, these developments impact in various ways on the fauna and flora as well as on the environment in general. For instance, infrastructure includes development of roads for tourists to gain access to wildlife tourism attractions or natural areas. These roads take up a large quantity of hectares that represent a large number of ecosystems. Therefore it is essential to analyse the impact on the environment prior to development.

In addition to the mentioned structural developments, the presence of people also impacts variously on nature, such as in the pollution of the environment, which alters the natural environment.

- **Socio-cultural**

Tourists that travel to different destinations tends to bring along a culture different from the destination they visit (a culture that may be unknown to the local community). Both the tourists and the local people are influenced either positively or negatively (Saayman, 2009:178).

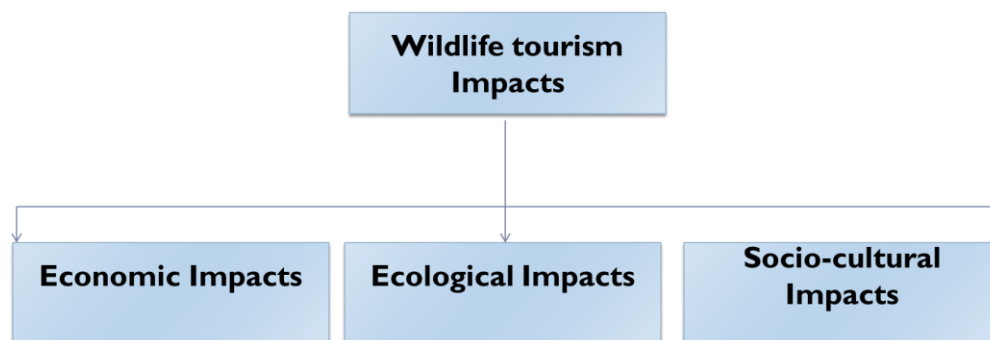


Figure 2.2: Impacts of wildlife tourism
(Source: Van der Merwe, 2014:15)

Besides the economic, social and environmental impact of wildlife tourism, these impacts on wildlife tourism can be categorised as positive or negative. This is briefly discussed:

2.2.3.1. Positive impacts and advantages

There are four main mechanisms through which the positive effects function: financial contributions, non-financial contributions, socio-economic incentives and education. These contributions might take place in conservation, animal welfare or both. Some forms of

wildlife tourism contribute positively to conservation. For conservation to be successful in the long term it is important to promote it inside and outside of the protected areas (Shea, Abbott, Armstrong & McNamara, 1997:39-48); this also supports the sustainability of business concerns (Tribe, 2004:97).

Even though it is difficult to determine the positive impacts, there are various benefits within wildlife tourism. As noted, species-specific wildlife tourism (example, interaction with lions) generates a large amount of income while activities such as big game hunting are considered a lucrative business. Incomes generated from big game are generally used to manage conservation areas and provide incentives to local communities to conserve wildlife and support community resources management by capitalising the value of wildlife through tourism (Milner-Gulland & Mace, 1998).

Incomes are also produced from non-consumptive wildlife tourism, such as fees and other related tourism industries previously discussed (Freese, 1996; 1998:15). The financial returns of hunting are considerable and are regarded as a primary economic activity and a cost effective business. The value of the non-economic aspects of wildlife tourism might involve the improvement of tourist gratification from exploring and learning about wildlife, high perspective of tourism impacts and conservation of biodiversity (Sinha, 2001:16). To decrease the effects of tourists on wildlife, tourism and biodiversity legislative measures are required. It is vital that illegal activities which may threaten the welfare of wildlife are controlled by government regulations and close monitoring in terms of consumptive use (Sinha, 2001:18).

Wildlife tourism is generally perceived as a tool for providing encouragement to private game owners to conserve wildlife by creating a demand for these animals. Generating income from tourism of this type transforms wildlife into a resource that is in the economic interest of game farm owners and makes it in the interest of game reserve owners to conserve wildlife. Additionally, this is also regarded as a way for local communities of wildlife areas to increase income through job opportunities (Emerton, 2001:208).

In summary, the following are positive impacts and advantages of wildlife tourism;

- **Wildlife tourism benefits conservation**

Since wildlife tourism began to increase, it has had a significant impact on the growth in the number of wildlife species in South Africa. As a result, it has added value to conservation areas in South Africa. Today more land is under private conservation

(game farms/ private nature reserves) than all the national and provincial parks put together(Mason, 2008:75).

- **Wildlife tourism has a positive impact on nature**

Land on which game farming and wildlife tourism activities are developed, are cleared of old and unused infrastructures in order to protect the attractiveness of the location (the game farm) for tourists visiting the farms. The land is therefore returned to its original state (Mason, 2008:75).

- **Wildlife tourism creates job opportunities**

Tourism is the largest job provider of all professions worldwide, but just the third largest industry in South Africa; however, this industry is still one of those that create the most job opportunities in South Africa (Mason, 2008:75).

- **Wildlife tourism offers entrepreneurial opportunities**

The wildlife tourism sector creates a variety of opportunities for the potential entrepreneur. Different entry levels to the tourism industry facilitate the development of small, micro and medium sized enterprises (SMME). Due to wildlife tourism activities such as hunting, numerous secondary industries have been established, such as game capturing, game transporting, breeding of endangered species and taxidermy (Mason, 2008:75).

- **Wildlife tourism develops infrastructure**

As the demand for more products and structures grows, it offers the opportunity for more and better infrastructure to be created, especially in rural areas: for example, roads, water and electricity supplies. As a result of wildlife tourism, hundreds of ordinary stock and crop farms in South Africa have been transformed into game farms, game ranches and nature reserves with lodges and hunting camps which have created more infrastructure and development than cattle farming (Mason, 2008:75).

- **Wildlife tourism stimulates other trades**

Since wildlife tourism cannot be easily confined, it can lead to other trades being stimulated, such as conservation, taxidermy, meat processing, game breeding and products made from leather (Mason, 2008:75).

- **Wildlife tourism broadens education**

When tourists travel to different destinations, they learn about new cultures, people, places, nature, conservation and other aspects they might not have known before. People employed in the industry also need and receive training and education (Mason, 2008:75).

- **Wildlife tourism reinforces preservation of heritage and traditions**

Cultural and heritage tourism acknowledge the fact that heritage and traditions should be preserved, which makes people more aware of these aspects (Mason, 2008:75).

- **Wildlife tourism enhances an appreciation of cultural traditions**

The process of making people aware of their heritage and traditions enhances an appreciation of these traditions. In Africa, one experiences the problem of acculturation in terms of Western traditions, causing more Africans to realise that there has to be an appreciation of traditions (Mason, 2008:75).

2.2.3.2. Negative impacts and disadvantages of wildlife tourism

In addition there are also negative impacts of wildlife tourism. According to Knight and Cole (1995:35), there are four extensive causes of impacts: habitat modification, harvest, disturbance and pollution. Knight and Cole (1995:35) also point out a 'pecking order' of immediate effects that have long term impacts on animals and their population. The tourism industry is burgeoning so rapidly that it is seen as a threat to wildlife and ecosystems (Croall, 1995); thus it is important that wildlife tourism is managed and the activities therein are sustainable with minimal impact on wildlife and their supporting ecosystems (Green & Griese, 2004:81). Even though wildlife tourism is environmentally friendly, unwitting damage can be caused by wildlife tourists as the latter tend to sympathise with wildlife issues and conservation. For example in 2015, News24 reported that a woman was attacked and killed by a lioness at the Lion Park, the lady and gentleman was driving with their windows open, and the lioness came through the passenger side window and attacked her" (Hartleb, 2015). Negative impacts can vary from short term effects to long term impacts. Developments like roads and eco-lodges may cause the animals to be vulnerable to stimuli. This has an overall effect on wildlife tourism because the behaviour of wildlife can be influenced by the characteristics of these stimuli (Green & Griese, 2004:82).

Wildlife tourism results in the following negative impacts and disadvantages:

- **Leakages**

There are concerns that funds raised from wildlife tourism such as hunting sometimes do not end up in the pockets of local businesses and community chests. This could be due to owners who do not live in the immediate area and, therefore, remove the money generated through the hunt and other activities from the local community; proprietors not making use of local service providers, such as taxidermists or butcheries, and owners employing foreign workers from neighbouring countries, such as Zimbabwe and Mozambique.

- **Unethical practices**

Irresponsible game farm and lodge owners, who allow illegal and unethical practices, such the hunting of caged animals or shooting game unethically, pose a threat to the industry's prospects (Ivins, 2007:8).

- **Biodiversity**

Wildlife tourism may lead to the loss and destruction of habitat, and change in species composition if not managed sufficiently and adequately by owners (Mason, 2008:75).

- **Increase in land value**

The cost in developing game farms, game ranches and nature reserves is massive. This automatically increases the value of the land, making it too expensive for people from the region to acquire. Coupled with this is the fact that numerous businesspeople, who actually do have the capital, for example, buy game farms as an investment, further increasing the value of land.

- **Wildlife tourism impacts on animal behaviour**

Uncontrolled activities such as hunting might lead to a population decline and extinction of local wildlife, specimen collection, killing of animals for safety reasons and comfort (e.g. animals perceived as dangerous to tourists are sometimes removed), animals being run over or hit by vehicles (from bringing in more traffic to wildlife areas), and the introduction of diseases (e.g. exotic ones) (Green & Giese, 2004:81).

2.3. SUSTAINABILITY OF WILDLIFE TOURISM

The main focus of wildlife tourism is to be able to create sustainable tourism products to tourists, where all parties involved will obtain the maximum amount of benefits (Van der Merwe, 2014:12). Sustainable tourism is based on three factors. The first is quality: sustainable tourism must provide the tourist with a quality experience, while such businesses improve the quality of life of host communities and protect the environment (Inskeep, 1991:508). The second is continuity: it is necessary that the resource which tourism is based on is sustainable. Sustainable tourism requires continuity in the culture of the host community, and in the visitor support or tourist demand (Wall, 1993). The last factor is balance; tourism balances the needs of the host, guest and destination environments (Bramwell & Lane, 1993). The three factors that sustainable tourism can be based on interrelate with sustainable wildlife tourism.

According to Higginbottom *et al.* (2001) when it comes to sustainability in wildlife tourism it becomes difficult to measure sustainability and to determine what level and type of activity will benefit wildlife tourism in a sustainable way. It is also very important to take the elements of sustainability, which are physical, economic and social, into consideration and any traces of that exist between the three elements. To be able to measure sustainability and to determine which activities will be most suitable and have minimum impact on wildlife and the environment, concepts such as planning for sustainable wildlife tourism, host communities affecting the sustainability of wildlife tourism and sustainable wildlife tourism development and the environment need to be examined (Higginbottom, *et al.*, 2001). Each of these concepts is discussed in the next section.

2.3.1. Planning for sustainable wildlife tourism

Owing to the rapid growth in wildlife tourism and the impacts and risks this poses for wildlife and its natural environment, it is important that the management of this type of tourism and tourism facilities and infrastructure are better planned and comply with the principals of sustainability. Such tourism can only be sustainable if it contributes to the conservation and survival of wildlife and their habitats, supports local communities and community development, offers good quality tourism and is commercially viable (Korir, Muchiri & Kamwea, 2012). In order to attain long term sustainability in wildlife tourism it requires long-term survival of population and habitats, must have minimal impact on behaviour of wildlife, improve the lifestyle of local communities, and encourage support for conservation activities from all stakeholders as well as a plan for sustainable management of this kind of tourism,

conservation and community development, based on the limits of acceptable change and adaptive management. It is also important that access to wildlife resources is managed; future development needs to be limited (Korir, *et al.*, 2012).

The achievement of each element involves different sets of skills and expertise, and it is necessary to be able to access tourism markets, work with local communities and manage wildlife resources. In addition, it is important to focus on places where there is potential to develop sustainable wildlife tourism (Korir, *et al.*, 2012). In particular, there are four areas that need to be addressed to improve the sustainability of this kind of tourism. The understanding of the biology of wildlife species and monitoring the effects that tourism has on them, tour guide training and interpretation need to improve, which will be discussed in the next sub-division. The conditions that are required for wildlife tourism need to be evaluated in order for it to be a viable option for generating revenues for conservation and support of local communities, planning and management of protected areas and viewing sites need to improve to provide a better view of wildlife species (Korir, *et al.*, 2012).

2.3.2. The role of interpretation in sustainable wildlife tourism

The main aim of interpretation in sustainable wildlife tourism is to stimulate interest, promote learning factors and guide visitors in appropriate behaviour for such tourism and to encourage enjoyment and satisfaction. Interpretation can be defined as first hand experiences through educational activities where the tourist comes to understand the meanings and relationships through the use of original objectives (Tilden, 1977:8). Sustainable wildlife tourism is supported by the interpretation of three main aspects. Firstly, interpretation may help with the managing of interactions between wildlife and tourists through this educational element: providing information to visitors in terms of how to behave in order to have a minimal impact on the environment in relation to interaction with wildlife, through explaining management strategies and supporting safety messages (McArthur & Hall, 1993; Moscardo, 1998). Secondly, this educational element could improve tourists' knowledge and make them aware of wildlife and their natural environment; furthermore it may well encourage tourists to take on a pro-conservation attitude and motivate them to act on conservation issues. Lastly, quality elements of interpretation might improve tourist satisfaction and could contribute to the commercial viability of tourist operations (Ham, 1992; Moscardo, 1998).

According to Moscardo and Saltzer (2004:182) in order to manage wildlife tourism in a sustainable manner both aspects need to be managed: the wildlife and the tourists. To carry out the latter, information is required concerning various aspects of these tourists. Firstly, for

different wildlife tourism activities it is important to understand the level of demand for each of these. Secondly, accurate measures of demand are required about the quantity of infrastructure that is needed to manage visitors at a number of sites, decisions regarding the number of staff and awareness of pressures that might possibly be experienced in the setting and by the wildlife (Moscardo & Saltzer, 2004:182).

2.3.3. Wildlife tourism and host communities

The role of the host communities and their relationship and interaction with wildlife has a direct impact upon sustainability of wildlife tourism. Host communities result in positive impacts (economic benefits such as creating entrepreneurial opportunities) and negative ones (e.g., on the behaviour of wildlife) on wildlife tourism activities and vice versa: such activities lead to a variety of potential effects on the host communities. For the development, successful operation, and sustainability of such tourism it is very important to be supported by the local communities (Burns, 2004:129).

Analysis of impacts on sustainable wildlife tourism has proved the necessity of including regional communities at differing levels of tourism improvement from the planning stage throughout implementation and evaluation (Murphy, 1985:45). Failing to include the local communities has resulted in exasperation by the community and negative influences in terms of social and environmental impacts (Sofield, 1991:156-172). Within the development of facilities in wildlife tourism the involvement of host communities might take place at different levels and play various roles in those stages (Burns, 2004:129). It has also been argued that the kind of involvement from host communities may shape the costs and benefits experienced from tourism; in addition, this might result in implications for sustainable wildlife tourism ventures (Burns, 2004:129).

To ensure the sustainability of such attractions within local communities requires knowledge of the interaction of components, influencing both their understanding and support for that type of tourism (Burns & Sofield, 2001). For example, host communities interact with the wildlife tourists and wildlife resources in varied ways, which results in various implications for the sustainability and viability of wildlife based tourism in the long term (Burns, 2004:129). According to Lepp (2002:219) retaining the benefits from local tourism can be a key to sustainability; such benefits need to be anticipated by the host communities to be able to counterbalance any costs or disadvantages. The sustainable use of wild species for tourism requires that there are positive economic incentives for the host communities that are living close to populations, to conserve them (Prescott-Allen, 1996; Adams & Infield, 2003:178). Even although economics plays an important role, sustainability is not ensured just from

incentives (Burns, 2004:129). It is cheaper and faster to have access to destinations along with on-going raised sustainable awareness when there are elements that provide for complete development in tourism and related interests in having closer interaction with wildlife (Shackley, 1996). In addition, the growing rates in leisure tourism are thought to produce more meaningful income levels (Flather & Cordell, 1995). Additionally, the raising of social concerns in terms of the quality of the natural environment is considered as leading to a higher level of education that results in a greater acceptance of learning activities, for example wildlife viewing (Eagles, McCool & Haynes, 2002).

For future sustainability in wildlife tourism within host communities there are a few general guidelines for development:

- Strategies for conservation and sustainable development for region, province and nation, need to include tourism planning, operations and development (Higginbottom, Rann, Moscardo, Gravis & Muloin, 2001).
- Assorted sectors should be included in tourism planning, operations and developments which involve various government agencies, private corporations, communities and individuals, which in this manner provide the greatest potential benefits (Burns, 2004:129).
- Ethical principles need to be adhered to by agencies, groups and corporations that include respect for the culture and environment of host communities, the way they live and their traditions and economy (World Tourism Organization, 1999).
- Within the host community, the economic uses of the natural environment must be used in a sustainable way while the tourism activities within the host community need to be planned and managed in a maintainable manner (Higginbottom, *et al.*, 2001).
- Tourism should be initiated with fairness in mind to deliver the possible benefits in a just way among the promoters of tourism and host communities (Higginbottom, *et al.*, 2001).
- Available information and research about the effects that tourism has on communities and the natural environments are very important, especially during tourism development (Higginbottom, *et al.*, 2001)
- The people within the host communities should be motivated to become involved in the tourism activities and developments (Ap & Crompton, 1998:120).

2.3.4. Sustainable wildlife tourism development and the environment

During the 1980's scientists did not foresee that extreme changes were suddenly taking place in the global environment, but eventually many came to realise this; the world also started to acknowledge the changes and became more apprehensive of the fact that there was an element of doubt and uncertainty in connection with the effects of human activities on global environments (Muhanna, 2006:16). It was necessary that fundamental changes had to be made to lifestyles to rectify these problems. In addition, it was argued that for human and wildlife species to survive they would depend on a newly adopted paradigm of economic development better known as "sustainable wildlife tourism" (Aronsson, 2000:32; McCool & Moisey, 2001:1). This paradigm is different from the others in that it requested environmental protection and economic progress and also supported quality of life needs (Van der Merwe, 2004). The concept of the sustainability of wildlife tourism emerged from the acknowledgment that it would not be possible for the earth's resources to continually support the fast growing human population and industrial growth, as the economic proceeds diminish underdevelopment and boosts the principles of living among all countries (Muhanna, 2006:18).

Despite the fact that it is acknowledged that wildlife tourism can be advantageous to the natural environment by supporting environmental conservation, there are various negative impacts that tourism of this type may have on the environment (Muhanna, 2006:18). Some of these include:

- As the scale of wildlife tourism keeps on expanding, the use of resources threatens to become more unsustainable.
- As a degraded physical environment, the location of the host community is in jeopardy of losing its prime attraction, raising the spectre of cheaper mass tourism, and putting more pressure on nature based tourism to move to new locations, which are probably even more unsuitable and inaccessible (Korir, *et al.*, 2013:43).
- The natural ecosystems and biodiversity are threatened which results in less wildlife and rare species, as well as degeneration and loss of habitat.
- The tourism industry uses the forest for fuel and timber, which impacts on soil, biodiversity, water quality, lessens the potential selection of forest merchandise by host communities as well as leading to the overuse of water.
- Tourism or recreational activities such as golf courses, consumption by tourists in hotels and urban problems cause congestion, overcrowding and vehicle traffic, all of

which impact variously on the environment, including noise and air pollution and health implications (Korir, *et al.*, 2013: 43).

The environment and wildlife tourism are closely linked. If the latter carries on evolving, techniques must be found and brought into play to make the connection between the two stronger in order to make them more sustainable. Inskip (1991:33) points out the importance of the connection between the wildlife tourism industry and environment by writing that for the development of wildlife tourism the fundamental conditions are unspoilt natural and human environments. The environment plays a major role in game farms as a large percentage of conservation takes place there and it also makes a huge contribution to nature conservation. According to Adri Kitshoff, the previous chief executive officer (CEO) of the Professional Hunters Association of South Africa (PHASA), South Africa is rapidly becoming one of the top countries in global conservation best practice and sustainable use of natural resources due to the large increase in numbers of game and the areas of land used to breed wildlife. Furthermore Inskip (1991:33) states that logical management of wildlife tourism may contribute considerably to the conservation and development of the natural environment and cultural heritage, moreover increasing the quality of life within host communities.

To be able to succeed in these objectives it is essential to inspire better practices, rather than to try to keep bad practice from happening, particularly in connection with man-made developments. In order for these to be sustainable it would be necessary for them to be established on a suitable location of an acceptable scale for the site and environment, with regard to on-site services and infrastructure. The development must be built of recycled and locally available materials from the area when possible and constructed to be energy efficient. Lastly, it must be constructed in such a manner as to have minimal impact on the environment and use minimal natural resources, for example water, while the disturbing of wildlife habitats must be minimised (Higginbottom, *et al.*, 2001).

With regard to the public sector, it is to a greater extent essential to accord more attention to the conservation of the natural environment. A large percentage of tourists require a variety of activities and an area which is functional, clean and unpolluted (Higginbottom, *et al.*, 2001). The wildlife tourism industry could support the implementation and mechanism to reinforce and where necessary, enhance the environmental quality of areas and provide tourists with what they require if the wildlife tourism industry is managed in a sustainable fashion. For residents of host communities, it is important to provide a high level of environmental quality. Host communities could be made more aware of the quality of their environment through tourism's support of them, and in addition the tourism industry should

also contribute to the environment's maintenance by caring for the environment and where needed improving (Higginbottom, *et al.*, 2001).

To prevent environmental and socio-cultural issues resulting from tourism it is important to implement techniques such as environmental planning approaches and carrying capacity. The function of environmentally friendly technology may help considerably in lowering the disadvantageous effects of tourism development. The carrying capacity technique is familiar in sustainable tourism literature. There are various types of such capacities, including: physical, environmental or ecological, economic, social, perceptual and infrastructure capacity. Even though the carrying capacity is a beneficial perception, it is problematic to implement it in an efficient way to help develop sustainable tourism. The Limits of Acceptable Change (LAC) framework is a different perception to that of the carrying capacity. The LAC framework is a management process constructed to support areas undergoing development: through this framework both existing and desired environments are inspected. This helps to identify any gaps within existing conditions and define acceptable conditions in addition to developing techniques to meet the latter. Sustainable wildlife tourism developments encompass an expanded range of aspects; as a result, it is crucial to establish long-term strategic plans combined with a management process (Higginbottom, *et al.*, 2001).

Murphy (1985:274) makes the statement that the interest of wildlife tourism in sustainable development is obvious; tourism advertises the environment, both physically and humanly, (for example, animals that get characters) as its product. The tourism industry is environmentally reliant while the environment is sensitive to the impact of tourism. Tourism is extensively a resource based activity, which interacts with natural systems and possesses the potential to introduce far-reaching adjustments within the environment (Pigram, 1995:208). Sustainable wildlife tourism development illustrates the linkage between environmental, social and economic problems and politics. This should be taken into consideration, for sustainable development of this kind of tourism to be successful (Myburgh & Saayman, 1999:18).

In summary, wildlife tourism is an essential feature of tourism that is nature-based and exists across a broad spectrum of countries and environments. In terms of wildlife tourism, some countries are exceptionally well supplied with natural resources, but there needs to be a number of other factors for this type of tourism to be interpreted into successful future expansion of the industry (Valentine & Britles, 2004:32). Conservation is a key element for sustainable wildlife tourism; without the former, such tourism has no role in a modern sustainable society and is clearly a short term draining of resources. Conservation of this

kind may offer a challenge in many areas because it contains various dimensions. Stakeholders are involved in all areas of wildlife tourism: governments and other partners are crucial and play special roles in guaranteeing proper legislative protection and resources for conservation. For the day to day outcomes, habitat managers which include conservation NGOs, private landowners, protected area managers, and traditional owners shoulder a major responsibility to manage wildlife tourism and to succeed in being sustainable, while the involvement of community groups is also very important because they offer political, financial and intellectual support for wildlife tourism ventures. For financial and political success, tourists are a key foundation. Eagles, McCool and Haynes (2002) point out that governments need to make improvements in a number of critical areas, including support for adequate legislation with effective resources for implementation, creating national policies for protected areas, and for each such area management of tourism and development of a management plan are necessary.

Considerable prospects are offered when ecosystem-based management approaches are used, and these are necessary if the wildlife tourism industry intends to be a sustainable one. A compelling need exists at all levels for capacity building, while to enable best practice codes and guidelines to be implemented, strong government leadership is needed. Conservation of wildlife is one of the crucial tasks since it is threatened by extensive habitat loss and other issues, so it is important for all stakeholders to participate to ensure a full spread of benefits (Valentine & Britles, 2004:32).

There is also a considerable amount of doubt related to wildlife tourism. These concerns include knowledge that is lacking about its effects on target species, inadequate certainty about the eagerness for closeness to animals amongst wildlife tourists, including the risks they are willing to take to get closer to the species and uncertainty of what might happen. To address the concerns and take advantage of the opportunities will call for abundant collaboration between researchers, industry and management (Valentine & Britles, 2004:33).

2.4. THE PRIVATE WILDLIFE SECTOR

Game farm owners realised the economic potential of game farming about 40 years ago for the first time, and the commercial utilisation of game has grown extensively over just the past two decades. Additionally, the private wildlife sector has become a dominant feature of the South African countryside to a great extent (Higginbottom & King, 2006) and South Africa has progressed to become one of the top world leaders in utilisation of wildlife and sustainable conservation (Ebendes, 2002).

It is not a new undertaking that various farmers are busy restoring their cultivated land to planted pastures or through the process of planted successions to leave it to naturally return to a habitat for game (Van der Merwe, 2014:7). In fact, as noted, a large percentage of conservation takes place in South Africa on private land; for example game farms and private nature reserves (Van der Merwe, Saayman & Krugell, 2004:105). A game farm can be defined as land that is adequately fenced, with a variety of wildlife species, which can be used for hunting, photographic opportunities, education, meat production and game sales, which also provides the different structures and superstructures for ecotourists and includes both consumptive and non-consumptive utilisation of wildlife (Van der Merwe & Saayman, 2005:1).

As stated by Van der Merwe (2004) there is a growth in the proportion of game farms that contribute to the awareness of the importance of wildlife and also to the socio-economic advantages of well-cared for wildlife. It is broadly recognised that the private wildlife sector is one of the fastest growing industries in South Africa (Van der Merwe, 2004). A few years ago, 17.9% of the total land that was suitable for agriculture in the country formed part of game reserves and game farms. In other words, 16 million hectares was used by game reserves and game farms compared to 3% (3.7 million hectares) that are managed and protected by SANParks (Van Hoven, 2005). In Limpopo Province game farms covered about 3.6 million hectares (49%) of land. The Northern Cape Province houses over 1109 exempted game farms covering 22% of the surface area, whilst in the Eastern Cape 12.3% of the province is covered by game farms and game reserves (Cloete, Taljaard & Grove, 2007; Hoffman, 2007).

As mentioned earlier, there are at present approximately 9000 game farms while South Africa has more wildlife species than at any time before. The main areas where such farms are found in South Africa are the provinces of Limpopo, North-West, Mpumalanga, Free State, Eastern Cape, Northern Cape (Kalahari) and KwaZulu Natal. Table 2.1 summarises land and resource allocation in South Africa.

Table 2.1: South African land and resource allocation

LAND ALLOCATION		
Land allocation	Hectares	%
Government protected areas	7 500 000	6.1
Commercial wildlife ranches	20 500 000	16.8 of total area of SA
Total under "industry conservation management"	28 000 000	22.9
Total agricultural land	100 600 000	82.2

Total area of South Africa	122 340 100	100.0
NUMBER OF COMMERCIAL WILDLIFE FARMS		
Number	9000+	
Exempted	7500	
Mixed use	300	

Adapted (Van Hoven, 2011)

Game farm owners and managers face a challenge every day regarding how to increase the financial success of a game farm and how to select the right activities and devise a management plan that will contribute to sustainability and the success of the farm. In other words to make use of the resources and the potential that the particular game farm has to offer. There has been a growing interest over the last decade for using wildlife within the previously described multi-purpose systems. As a result this has led to game farm development as a sustainable substitute for more traditional livestock farming systems.

The private wildlife sector has previously been described as consisting of four pillars: these were mentioned earlier and are illustrated in Figure 2.2 (Van der Merwe & Saayman, 2002).

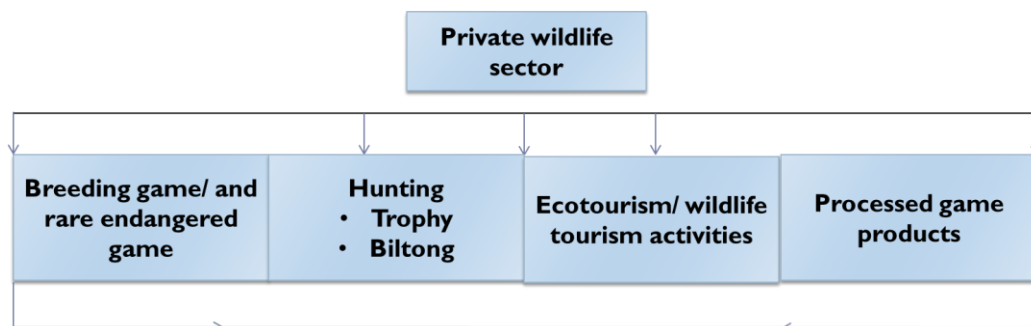


Figure 2.3: Pillars of the private wildlife sector

(Source: Cloete, Van der Merwe & Saayman, 2015)

These four mainstays of the private wildlife sector are discussed next:

2.4.1. Breeding game

The wildlife breeding industry is customarily divided into three groups: plain game, higher value game and colour/morphological variants. According to Eloff (1999) in order to sell game from public protected areas and private wildlife ranches it is essential to put in place a well-established breeding programme of normal non-endangered species or endangered ones. Good examples of these well-established breeding programmes are found in South

Africa where large areas of private land such as game reserves and game farms are managed for wildlife, with the economic assets being provided by live sales, harvesting and tourist activities such as game viewing, trophy hunting and hikes (Higginbottom & King, 2006). Nevertheless, there is less game hunted per year than animals that are bred, with a resulting increase in reproduction leading to an oversupply of game that surpasses the demand (Eloff, 2005).

In terms of breeding game such as animals of higher value /colour and morphological variants, recent developments have changed the landscape of game breeding in South Africa. These have provided the stimulus for broad scale infrastructure development and innovation throughout South Africa and also made marketing live game animals so much easier. Furthermore, the current improvement in the average auction prices of plain game species has contributed towards the allure of breeding such animals (Cloete, Van der Merwe, & Saayman, 2015).

Game farms that breed rare/endangered game species are described by Eloff (1999a:23) as game farming where the focus is primarily on producing such species, which are also for sale to other game farmers. It is essential to have the right combination of species on the correct rangelands when breeding with game for the best production, together with feeding availability and conservation to keep the rangelands sustainable (Bolen & Robinson, 2001:315). The breeding of game can be split into two categories: namely intensive and extensive. It has become modern practice to discover new genes and to understand and acknowledge the function of genes while, in addition, the genes themselves are a bargaining chip (Chardonnet, Des Clers, Fischer, Gerhold, Jori & Laarue, 2002:21). Rare game breeding such as that of buffalo, rhino, lion, sable and roan antelope are rapidly burgeoning as an investment choice and attracts various shrewd business people (Steyn, 2012:1). The interest in colour variants (golden Wildebeest, white Springbok) and a larger range of animals has increased rapidly especially due to visitors and hunters. Because hunting and tourism initiatives are required to be more market friendly it has, however, resulted in animals being introduced into areas that they do not originate from so that in terms of grazing and habitat they are not suited to the environment (Phillips, 2003).

To complement indigenous game, game farms are recommended to introduce rare species on the game farms, although it is extremely difficult to turn extensive wildlife breeding and game farm management into a profitable business operation, especially on privately owned land, as it is an expensive business venture. If substantial sustainable incomes are not generated from hunting safaris, private conservation efforts will not be sustainable. Both

international as well as local hunters contribute to operating capital for enterprises and in many cases sustain wildlife breeding and support conservation programmes (Steyn, 2012).

2.4.2. Hunting

For game farm owners, hunting is a major source of income and provides economic benefits (Van der Merwe, Saayman & Roussouw, 2011:2). Baker (1997:306-321) argues that hunting is economical and ecologically sustainable. From an ecological viewpoint the sustainability of hunting relies on the principles of wildlife harvesting (Bauer & Giles, 2002). Hunting is responsible for a large percentage of revenue on private land and supports wildlife conservation (Damm, 2004:8). Sinclair, Fryxell and Caughley (1994) were of the opinion that hunting can play a major role, contributing to a holistic and sustainable conservation approach if a Triple Bottom Line concept (as indicated, being socially, economically and environmentally accountable) is adhered to, and is able to be used as a tool that supports the development and economy of local communities (Baker, 1997; Chardonnet, Des Clers, Fischer, Gerhold, Jori & Laarque, 2002:21).

According to the authors Cloete, Taljaard and Grove (2007:71; Van der Merwe and Saayman, 2003:105; Eloff, 1999:22), hunting can be classified into two main categories: biltong and trophy hunting:

- **Biltong hunting**

Van der Merwe and Saayman (2008:3) define such hunting as “a cultural activity through which wildlife is hunted by means of a rifle, bow or similar weapon for the use of a variety of venison products such as biltong and salami”.

According to Damm (2005:16) there are about 200 000 hunters who participate in biltong hunting in South Africa, which makes them a valuable market segment. The incomes of privately owned game farms are strongly supported by this type of hunting as it is one of the key sources of income for game farms (Cloete, *et al.*, 2007:71; Van der Merwe & Saayman, 2003:105; Van der Merwe, Saayman & Krugell, 2013:184; Bothma, 2002:480; ABSA, 2003:28) and it also contributes considerably to the economy of South Africa since biltong hunters spend most of their money on the game that is hunted, hunting gear, fuel, food, beverages, equipment and accommodation (Van der Merwe & Saayman, 2008:37).

In South Africa the top five game species that are hunted by such hunters include kudu, gemsbok, eland, springbok and blue wildebeest (Cloete, Van der Merwe & Saayman, 2015);

similarly, the top five species that generate the most income for biltong hunting are impala, blue wildebeest, kudu, gemsbok and eland (Warren, 2011: 65,68).

The income is substantial for hunters: one of the biggest push factors for them is the price of popular merchandise, biltong and the related financial returns from hunting (Beinart, 1990:168). For that reason it is critical that game farm owners determine what the variables are that influence the biltong hunters' spending; for example, travel behaviour and socio-demographic characteristics (Cannon & Ford, 2002:264; Jang, Hang, O'Leary, 2004:333,339; Kastenholz, 2005:563; Beerli & Martin, 2004:626; Alegre & Pou, 2006:1352). Once the variables are determined a more fully viable and accurate marketing strategy and style can be provided to ensure a more profitable and sustainable product.

- **Trophy hunting**

Trophy hunting is a specific form of game usage associated with the phenomenon trophy animals (Van der Merwe & Saayman, 2004:2). Van der Merwe and Saayman (2008:3) define it as "an activity where wildlife is hunted by means of a rifle, bow or similar weapon primarily for its horns and/or the skin in order to be displayed as trophies and remembrance of the hunt".

Trophy hunting is regarded as the most profitable form of consumptive wildlife usage, and is considered to be essential to conservation as it creates financial incentives for promoting and retaining wildlife as a land use over vast areas. It also has the potential to contribute to conservation that focuses on endangered species (Lindsey, Roulet & Romanache, 2007: 455-469). Hunting results in various positive impacts that can be used as a conservation tool, in other words it focuses on a low off take rate and male animals; generally the focus is on 2% of the male population, which means that wildlife populations are not jeopardized. It also has little biological impact as it is the mature males that are hunted (Leader-Williams, *et al.*, 2005:284).

The types of game most hunted for trophies in South Africa are lion, kudu, buffalo, springbok and gemsbok (Patterson, 2005:16). In terms of growth and trophy production for animals to be capable to reach their genetic potential, it is important that the numbers of animals on game farms are limited in terms of competition for resources that exists between individuals, which is thereby minimised. It is also essential for game farms to be stocked below capacity with animals in relation to vegetation in order to produce top quality and a greater number of males which are trophy-bearing in age; it is thus very important that correct sex ratios are maintained (Patterson, 2005:21).

As regards lions in terms of hunting, they are mainly hunted as trophies. However the practice of doing so is a controversial issue. There are highly polarised opinions between people about the practice and the actual impact that it can have on conservation of the species (Lindsey, *et al.*, 2007:455-469). According to Lindsey *et al.* (2007: 455-469) there is increasing proof of effects on wild lion populations and ethical issues with respect to captive bred lions in South Africa. But this practice as well as trophy hunting exhibit the potential for a substantial positive or negative impact on lion populations in South Africa depending on how they are managed (Lindsey, *et al.*, 2007: 455-469). According to Kiffner (2008), African lions are extremely important for the viability and profitability of hunting areas. However, studies have found that countries such as South Africa, Namibia and Zimbabwe where lion hunting is practised this can contribute to the decline of lion populations as well. This is due to the shooting of dominant males in a pride that leads to infanticide, when a new male takes over the pride. A single trophy lion costs US\$37 600.00 while a total of 429 trophy lions were hunted during the course of 2010. In total, lion trophy hunts earned a staggering R116 784 096.00 for the South African economy in 2010. When one examines the lion industry one can therefore observe that lions have substantial value; for this reason lion breeding and reintroduction programmes are very popular (Kiffner, 2008).

2.4.3. Game farms as wildlife tourism attractions

Wildlife tourism is considered one of the fastest growing and indeed leading sectors within the tourism industry. The International Ecotourism Society (TIES) refers to such tourism [as] “responsible travel to natural areas that conserves the environment and improves the well-being of local people” (TIES, 1990). Growth in tourism of this type offers a huge potential for game farms, primarily because in South Africa the ecotourism market that forms part of the wildlife tourism share of the total tourism industry is not large. This kind of tourism entails that tourism practices benefit all parties involved and not just a few while neglecting others. Therefore, wildlife tourism requirements include planning that must be done before development, resources must be sustainable, tourism products must have economic viability, no negative impacts are allowed on the environment or host communities, all parties that are involved must adhere to environmentally friendly practices, and economic benefits must support host communities (Cybertonature Travel Services, 2003).

Game farms as wildlife tourism attractions entail the following (Van der Merwe, 2004:74):

- Hiking trails
- Game and bird viewing

- Photographic safaris
- Provision of conference facilities
- A variety of activities such as 4x4 trails, canoeing and abseiling
- A variety of accommodation such as tented chalets, rest camps, luxury lodges, chalets, old farmhouses, campsites
- Educational tours for tourists to learn more about wildlife and nature.

2.4.4. Game products

To supply game products to overseas markets and in South Africa, excess game that is not hunted during the hunting season, generally female species, can be used; it is essential that the products are made exotic for the consumer. Even though it is considered that meat constitutes the major part of the utilisation of game products, there are numerous other saleable products as well, such as horns, shoes and clothing hides, leather covered furniture, medicines, handbags, crafting, accessories and jewellery, as illustrated in Figure 2.3 (Gouws, 1999:16; Brits & Herselman, 1988:19; Glen-Leary, 1987:12).

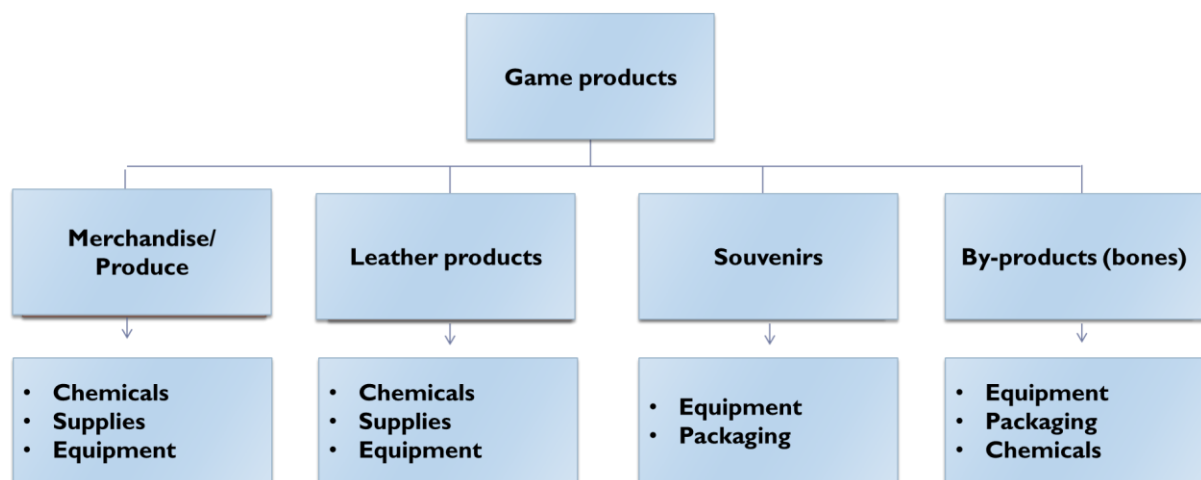


Figure 2.4: Value chain of produced products

(Source: Cloete, Van der Merwe & Saayman, 2015)

Game products can be classified into two main categories: meat production and trade in bones and horns, which are briefly discussed.

- **Meat production**

The trend that exists among humans to live a healthier life may represent an important tool within marketing to sell venison. Meat production from wildlife offers significant potential for market growth. Since game harvesting provides a tool to game farm owners it has a positive impact on the environment and protects the land as a means of managing wildlife numbers in terms of ecological carrying capacity (Van Schalkwyk, McMillin, Witthuhn & Hoffman, 2010:3940). When wildlife populations are harvested for meat production, it is essential that long-term sustainable harvesting is a pre-condition; hence the harvesting system should be managed in such a way that it does not disturb the population growth. If the harvesting system is managed in the right way it may result in an increase in population growth (Hoffman, 2003:29-30).

Locally and internationally the demand for game meat is increasing; species such as springbok, gemsbok and kudu are the highest in demand (Hoffman, Crafford, Muller & Schutte, 2004:125-130). Consumers who are concerned about the environment take more interest in free-range and organic products, which is beneficial for game farmers because game meat can be marketed as organic products, as it complies with the principles for organic production. These principles require that minimal damage is done to the environment, there is no use of agro-chemical pesticides and careful consideration is taken of the impact that farming has on the environment and conservation of wildlife (Lampkin & Padel, 1994:243-263).

- **Bone trade**

In South Africa the supply chain of bone trades is nearly transparent so that overall there are more legal than illegal trades in South Africa. The trade of bones such as lion bones generally follows a continuous route, starting with the bone agents, which can be regarded as the middlemen between farm owners and the Asian buyers. To determine the value of bones, two categories exist in the bone trade chain. The first category is the price that is paid to the farm owners by the bone agents for the skeletons; the second category is the price that is paid by the Asian importers to the bone agents, wildlife traders or intermediaries. In 2013, it was recorded that the estimated price paid by the bone agents to the farm owners in South Africa was between R12 000 and R15 000 per set, excluding the skulls of the lions, and between R18 000 and R20 000 including the skulls of the lions, depending on the size of the skeleton (Williams, Newton, Loveridge & MacDnald, 2015).

Even though there is no economic stimulus to farm lions exclusively for bones, keeping in mind the costs involved in raising these animals and the price paid currently for

skeletons, in the trophy hunting industry the trade in lion bones generates a secondary by-product for farm owners, thus motivating them to exhume carcasses that were discarded in the past, after trophy hunts. The fact that lionesses can produce offspring for the market added value to the lionesses which previously had no value to breeders from a hunter's point of view (Williams, Newton, Loveridge & MacDnald, 2015).

2.5. CONCLUSION

The aim of this chapter was to present a literature review of wildlife tourism and factors that play an important role within wildlife tourism. Secondly, it provided a literature survey as regarding the private wildlife sector to determine the most important factors there, to assist lion breeders to understand the close relationship between wildlife tourism, game farms and lion breeding.

It is clear from the literature study that game farm tourism does form part of wildlife tourism and sustainable tourism, plays a major role in nature conservation and provides significant economic opportunities. If the key aspects of sustainable wildlife tourism are taken into consideration, i.e. minimal impact on the natural environment, higher prices and fewer tourists at a time, providing educational opportunities to learn about nature, affording the tourists a nature based experience, conserving natural resources and sustainable development, the conclusion can be reached that the aspects that are able to be implemented on game farms also function in relation to wildlife tourism. However, it is important to measure sustainability and to determine which activities will be most suitable and exert the minimum impact on wildlife and the environment. Therefore, this requires the management of wildlife and the tourists in a sustainable manner.

In summary, wildlife tourism is an essential feature that is nature based and exists across a broad spectrum of countries and environments. The combination of benefits offered by South Africa makes the country one of the top global tourism attractions; unique experiences are offered by game farms in South Africa for local and international tourists. While the opportunities that exist are seemingly endless, it is essential that game farm owners carefully consider what type of enterprise will best suit their operation and manage resources responsibly to be sustainable. It is also important that the rates of consumptive use of renewable resources are well managed and clearly understood among game farm owners to ensure that the biological resources are sustainable (WWF-SA, 2003:14).

CHAPTER 3

ANALYSIS OF DIFFERENT ECONOMIC MEASURING METHODS

3.1. INTRODUCTION

There is a significant demand for wildlife tourism and related activities: sometimes just an individual species may be virtually the sole feature that attracts visitors to a specific destination. On the other hand, a combination of different species, such as the Big 5 and other attractions, brings tourists to a destination. It is therefore difficult or nearly impossible to identify the individual economic value of each factor for wildlife tourism as the tourism economic value of the combination that exists exceeds the sum of the values of its individual components (Tisdell & Wilson, 2004:145).

However, there are a number of benefits of significance for wildlife tourism to be part of human activity: wildlife has substantial value and supplies financial benefits. Benefits that exist from wildlife generally provide an important stimulus for government involvement in protecting it, because, as indicated, overall wildlife tourism offers positive outcomes and various benefits to a country (Tisdell & Wilson, 2004:147). It also contributes to the economic growth and development of countries, earns foreign exchange and furthermore creates job opportunities for the host community (Blamford, *et al.*, 1995:1; Dieke, 2001:9; Pădure & Turtureanu, 2005:1).

Since, as argued, the economic value of wildlife tourism is important and needs discussion, the main objective of this chapter is to undertake an analysis of different economic measuring methods. The secondary objective is to give the reader a better understanding of the private wildlife tourism sector regarding the lion industry and how to incorporate the value of wildlife into the economic measuring methods, helping to make important economic and financial decisions within the industry.

3.2. DEFINING ECONOMIC VALUE

Economic value can be perceived as the effective distribution of scarce resources in order to increase the well-being of society. In economic efficiency terms, the use of natural resources should provide humankind with the best social benefits. Therefore economic analysis may support decision making about the best use of resources such as those obtained for wildlife tourism (Davis, Tisdell & Hardy, 2001). Economic value can be defined as any net change in the welfare of society. Hence to tourists, the economic value of resources such as wildlife includes more than just the direct benefits they receive by viewing or in other ways interacting with it (Glanzing, 1995).

When valuing wildlife, economists often refer to the process as 'economic value'; this is also known as the theory of economic valuation, which is based on the expectations of stated preferences rather than revealed ones (King & Mazzotta, 2000). King and Mazzotta (2000) argue that indirect values can often be derived from the price people in the market are willing to pay for related goods and services, even though economic value is often considered as market value. From an economic perspective, prices are considered a gesture of the value that a product has and the value of the product is estimated in a market which is based on the market structure. However, in terms of environmental goods, the price is generally not determined by the market, but rather determined for the purpose that it is used for, in other words a particular market values a product for a particular function (Saayman & Saayman, 2016:1). King and Mazzotta (2000) further argue that tourists are willing to pay a higher price to see, for example, a lion, versus what they are willing to pay to see general species such as impala or springbok. Tourists also gain satisfaction and therefore, economic value, from simply knowing that important species such as rhino and lions are being conserved.

In the field of wildlife tourism the value of wildlife can be classified into two main categories: use value and non-use value, as illustrated in Figure 3.1. According to the authors Kotchen and Reiling (1998) the total value of species is estimated by these values.

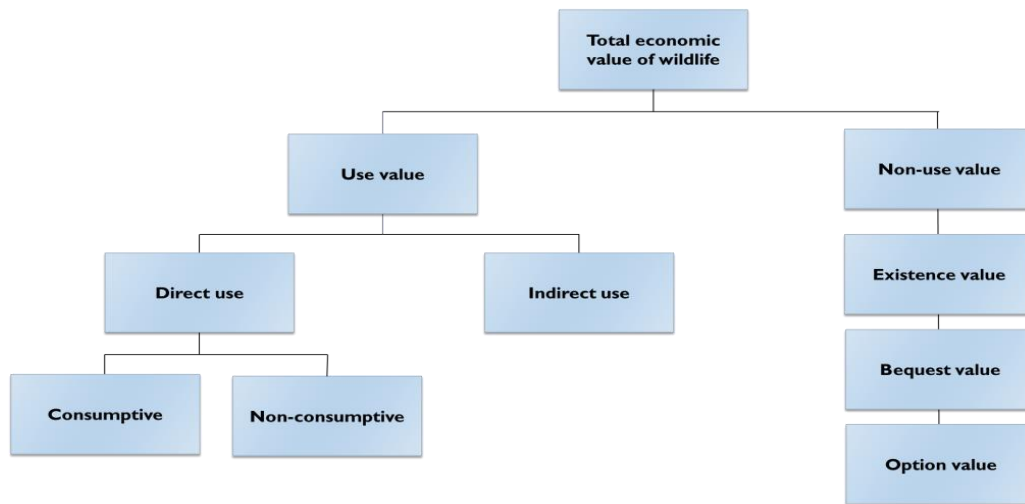


Figure 3.1: Components of the total value of wildlife
 (Source: Adamowicz, Asafu- Adjaye, Boxall and Phillips, 1991)

The economic value that is derived from wildlife tourism can be regarded as economic use value. Use value is derived from the actual or potential consumption of flows such as goods and services derived from a specific species. These goods and services within an economy can be further categorised into two main groups: excludable (can individuals be prevented from using the property of a good?) and rival (the property of a good whereby one individual's use reduces another individual's use). Using these two main characteristics, goods can yet again be classified into four categories: "private goods", that are both excludable and rival, for example food, which is excludable because one can prevent someone from eating it (you just do not give it to them), while on the other hand food is rival, because if one person eats an ice-cream cone, for instance, another person cannot eat the same cone. Within the economy most goods are private goods. "Public goods" are neither excludable nor rival, which means that individuals cannot be prevented from using public goods; if an individual enjoys doing so, this does not reduce another individual's enjoyment of using them as well and they are available free of charge to anyone to use them. "Common resources" are not excludable but are rival, for example, fishing is perceived as a rival good, because when one person catches a fish, there are less fish to catch for the next person. However, the fish is not an excludable good due to it being difficult to charge a person for the fish that they catch. The term "Natural monopoly" describes the situation when a good is excludable but not rival (Argandona, 2011).

Furthermore, use value can be categorised into direct and indirect value: direct value is further divided into consumptive and non-consumptive use value. Direct economic value encompasses the actual good and services. This includes activities such as hunting and fishing (King & Mazzotta, 2000) which can be considered as consumptive use value and productive use value. However, the researchers Chardonnet *et al.* (2002:15) explain that

direct value can also include non-market values for goods, such as game species. Indirect economic value can be considered as non-consumptive use value. Non-consumptive use, nevertheless, encompasses activities where individuals may use, yet not consume, certain aspects of wildlife, such as watching wildlife and studying it; for example, lions (Chardonnet, *et al.*, 2002:16).

Non-use values generally involve relatively intangible features of resources. However, in the case of wildlife species, non-use value includes the following values as well; firstly, the pure existence value of the species. This value occurs when individuals place an economic value on wildlife species that they will never see nor use, yet are willing to pay for their continuing existence. The second value is its bequest value; this exists when individuals wish to conserve species for future generations and are prepared to pay to do so. Lastly, is option value. Within the discipline of environmental economics some textbooks generally categorise option values under use values (see Turner, *et al.*, 1994) due to the fact of the possibility of using the resources in the future. Option value refers to the option and willingness to pay for the possibility of using a species in the future or to accommodate a possible change in its non-use value, even though these species are not being used now (Tisdell & Wilson, 2004:6).

Studies conducted by researchers such as Tisdell and Wilson (2004), and Bandara and Tisdell (2003) indicate that in some cases non-use values account for the greater part of the total value for some species, and that use value, which sometimes includes tourism use value, may constitute a low fraction of the total value.

Tourism that utilises wildlife is not marketed or priced. Economic value is mostly not successfully measured through available financial measurements, but comparatively fixates the focus on costs and expenditure that are involved. Thus, measures of the estimates of the economic significance of wildlife tourism need examination from an economics viewpoint, and should be flexible in economic importance according to the policy to be considered. Calculating precise consumption or cost arising in engaging in wildlife tourism or in catering for it is a poor indicator of the net economic value of wildlife tourism in collectively fulfilling economic wants (Tisdell & Wilson, 2004:156). Tisdell and Wilson (2004:156) pose the question “whether we can generalise about economic importance of the demand for wildlife tourism?” In their findings, these authors suggest that there are generalities that are possible but they have not been accurately summarised as a whole.

Although there are no reliable overall measurements of the economic impact of wildlife tourism, it is clear that there is a large percentage of respondents that generate a great deal of money (Saayman & Krugell, 2013:632). However, in the context of wildlife tourism the problem that arises is that even although it is possible to determine the consumptive use

value of wildlife, it is difficult to determine the non-consumptive use value of wildlife. Thus both use values need discussion (Saayman & Krugell, 2013:632).

Therefore the objective of the next section is to furnish an overview of economic impact concepts and economic measuring methods that can be used to determine the economic impact and value of wildlife species within wildlife tourism. Although there are various ones that can be used, just a few that are relevant to the purpose of this study are discussed in this section.

3.3. DEFINING ECONOMIC IMPACTS

The Economist's Dictionary of Economics defines the term economic as "the study of the production, distribution and consumption of wealth in human society" (Moffatt, 2008). Researchers such as Van der Merwe, Lotriet and Viviers (2003) and Saayman (2000) note that economics is the subsidiary of social science that analyses the production, distribution and consumption of goods and services. Economics incorporates the analyses of markets and also involves four key elements of human society: the consumer, producer, the government and the foreign sector. Studies on economics lead to satisfaction of endless needs, given the limited resources that exist. These resources can be seen as factors of production and include labour, capital, natural resources and entrepreneurship (Saayman, 2000).

Economic impacts can be described as the influence of economic activities in a given area such as business output or sales volume, added value, wealth, personal income and jobs. Any of these given areas may assist to improve the economic well-being of an area's residents (Weisbrod & Weisbrod, 1997:1). Ritchie and Goeldner (1994) interpret economic impact as "the net economic change in a host community resulting from tourists spending in a given area". The said impact is generally considered as the inflation or recession of an area's economy, derived from changes in the expansion or contraction of a programme or project. There are also times where the economic impact of an already existing project or programme is assessed, such as in this study which determines the economic significance of the lion industry. Generally, this is examined in conditions such as jobs, income and business sales, which the programme or project directly or indirectly supports. These measures usually represent the gross effect (Weisbrod & Weisbrod, 1997:1).

Note that there is a difference between economic impact and the interpretation of "individual user benefits" of a specific facility or service, and this kind of impact is also different from the broader "social impact". User benefit and social impacts incorporate the value of changes in

improvement in quality of life elements such as safety, air or noise quality and health. Although these benefits and impacts are valued in economic terms they are not classified as economic impacts. However, these benefits do have an effect on the areas level of economic activity. Economic impacts further lead to fiscal impacts, which can be regarded as diversity in government revenues and expenditures. These revenues may be affected by economic impact on wealth, total business sales and personal income, for instance through increasing or decreasing the tax base (Weisbrod & Weisbrod, 1997:1).

To estimate the economic impacts, for example of wildlife tourism, certain concepts, theories and various economic models need to be taken into consideration for one to be able to choose the right measuring method to determine the economic impact or value of a specific event or species. This section furnishes an overview of the concepts, theories and different economic impact measuring methods that are most relevant to this study and which could be used to determine the economic impact or value of wildlife tourism. These include the concept of externalities, the contingent valuation method (CV)/ willingness to pay, financial survey models, opportunity cost, travel cost method, social cost benefit analyses/ economic analyses, input and output models (I-O), computable general equilibrium model (CGE), and social accounting Matrix models (SAM).

3.3.1. Concept of externalities

Various economic concepts are applicable to wildlife tourism and its sustainable management. The concept of externalities is one of these economic key elements, as it is important to take this concept into consideration when developing management strategies for wildlife tourism. These externalities potentially relate to animal welfare concerns, such as impacts originating from human observation or interaction with animals (Davis, Tisdell & Hardy, 2001: i). Externalities emerge whenever actions of producers or consumers exert unforeseen positive or negative indirect effects on other consumers or producers. Externalities may manifest themselves in positive or negative effects. In this case social benefit is higher than private benefit. On the other hand, negative externalities emerge when an action results in harmful effects on others; in this case the social cost is higher than the private cost. Thus, in the context of externalities, there is a difference between social benefit (cost) and private benefit (cost). Ultimately, the difference between the two types of benefit (cost) results in inefficiency in source allocation (Sankar, 2000). However, there are abundant complications in making this concept accurate, mostly having to do with the operational meaning of “significant”. To exemplify these complications, one should note that basically every economic action a consumer or producer takes has some impact on another

consumer or producer. Thus, when externalities are present and not dealt with in a centralised way they may constitute a bad factor (Starrett, 1988). There are various definitions that have been suggested for this concept; however it is difficult to give an exact one that will adequately cover all of the examples that have emerged in applications (Starrett, 1988). Table 3.1 lists some possible examples of externalities that are based on wildlife tourism.

Table 3.1: Example of externalities

Impact of wildlife tourism	Possible outcomes or causes	Externality
Decline of breeding	Noticed amongst some wild cats when they are disturbed by tourism activities	Reduces wildlife tourism experience through fewer wildcats
Animals being physically harm	Boat strikes – noticed with different marine species	Reduces wildlife tourism experiences as animals become shyer or fewer in number
Destruction or alteration of habitat	Logging, removals of mangroves for development, reduced populations, e.g. Bengal tigers	Reduced wildlife tourism experiences through fewer animals to view
Scaring away of prey	Vehicles and boat movements	Reduced wildlife tourism experiences through fewer animals
Psychological damage, stress	Increased energy used by species, greater incident or illness or aggression	Aggressive behaviour towards tourists
Avoidance of areas frequented by tourists	Reduced use of important habitats	Reduce wildlife tourism experience through fewer animals
Disruption to habitat corridors	Road and other developments	Reduce wildlife tourism experience through fewer animals
Illness and associated problems with animals	Artificial feeding to attract animals	Viewing in unnatural settings and possible reductions in animals numbers
Reduced ability to survive in the wild	Dependence on feeding by human	Viewing in unnatural setting and reductions in animal numbers

Adapted from: David, Tisdell and Hardy (2001)

3.3.2. Contingent valuation method (CV) / Willingness to pay

The contingent valuation method is applied to determine the economic value of non-market environmental characteristics or services; for example viewing endangered species in their natural environment or just experiencing scenic beauty (King & Mazzotta, 2000; Frykblom, 1997). The assumption is that the value of a conservation service is reflected in how much tourists are willing to pay to travel to a particular tourist destination, or to view a specific species in its natural habitat, or to hunt a particular animal. The contingent valuation method is one of the most commonly used techniques and most advanced methods for environmental evaluation.

To determine the economic value, individuals were handed a questionnaire with a scenario about a particular subject; for example, about endangered species and asked about their willingness to pay in terms of conservation efforts. The latter question clearly indicated what criteria should be followed in applying this method (Saayman, Krugell & Saayman, 2016). The payment is theoretical and the estimated cost is contingent on the specific scenario presented to the individuals. Contingent valuation methods may make use of open-ended questions, dichotomous choices, payment cards or bidding games (Drucker & Anderson, 2004).

However, there are various aspects that affect the willingness to pay for wildlife conservation, such as the usefulness of the species to humans, how much humans like the species, what is measured by the measuring instrument, education level of respondents, and the level of economic damage created by the species. The same accounts for hunting. The price hunters are willing to pay depends on the species status, for example if the species is part of the Big Five or scarce species (Bateman, *et al.*, 2002; Nunes & Van den Bergh, 2001; Brown, *et al.*, 1994, 1996; Martin-Lopez, *et al.*, 2007a, 2007b).

A critique of the contingent valuation method involves the hypothetical nature of the questionnaire and the shortcomings in validating responses. Due to this, some question the efficiency of the method in determining the benefits of wildlife (Champ, *et al.*, 2003; Eberle & Hayden, 1991). Furthermore Blamford *et al.* (2003), Pearce and Moran (1994:136) state that “public goods such as wildlife do not lend themselves to evaluation in this manner and further, this type of valuation of public resources typically understates the true non-market value”. It is essential that surveys are designed appropriately in order to overcome some of these possibly severe problems and to reduce potential uncertainty and biases (Ekstrand & Loomis, 1998; Martin-Lopez 2007a, 2007b). According to Christie *et al.* (2009) applications

of this type of method are increasing in the literature; however, it is still limited in a wildlife conservation setting.

Researchers such as Tisdell (2003); Samdin (2008); Majumdar, Deng, Zhang and Pierskalla (2011); Hakim, Subanti and Tambunan (2011); Krugell and Saayman (2013) and Saayman and Saayman (2014) all used Contingent Valuation method (CV)/ willingness to pay models to determine the economic impact of a specific activity within tourism; for example the willingness to pay model was used by researchers such as Saayman and Saayman (2014) to determine who is willing to pay to see the Big Seven and what the economic impact thereof was.

3.3.3. Financial survey models

The function of financial survey models is to present a report on all the internal and external financial activities of a sector or event. These reports are commonly based on box office data, local business surveys and quantitative analyses of financial accounts, attendance statistics and market assessments. In order to offer a financial opinion without deliberating the quantitative context, quantitative analyses are statistically interpreted from financial survey models. Previous studies carried out by Myerscough (1988), Travers (1998) and Cambridge Arts Theatre (2000) cited in Van Wyk, Saayman and Rossouw (2011:30) all present examples where financial survey models were applied to evaluate the economic impact of events.

3.3.4. Opportunity cost

The perception of economics is all about making choices. In order to make good choices it is important to measure the benefits of something in relation to its cost, which means finding out how much of one thing can be produced in comparison to another thing. Hence the theory of opportunity cost is one of the most central ideas in economics. Opportunity cost is used by economists to understand the behaviour of individuals and firms. This theory integrates the assumption of scarcity. In other words everything one does is a trade-off or something else is involved. This means that one thing must be traded-off for another, because resources are limited. However, these resources can be used in different ways. Both explicit costs (ones that require a monetary payment) and implicit ones (that do not require a monetary payment) can be included in opportunity costs (Mankiw, 2001).

Researchers such as Hoagland, Kaoru and Broadus (1995) indicate that the value of a service or good is based on the idea of opportunity cost within economics. The opportunity cost of any action can be regarded as the value of the foregone opportunity. These

researches clarify that in most situations the largest costs of a good or service is mostly those associated with foregone commercial development opportunities. There are various examples in wildlife tourism of this concept, but perhaps the most important one is the maintenance of habitat. Reperto declares that “good ecology is good economics and states that it is important for governments to return a greater portion of the money spent on wildlife tourism to the protection of ecosystems” (Davis, Tisdell & Hardy, 2001:11).

3.3.5. Travel cost method (TCM)

The Travel Cost Method (TCM) is based on the presumption that the cost of travel to gain access to a specific destination or attraction is a proxy for the price paid to use that resource. According to King and Mazzotta (2000) the TCM can be described as a method that is used to measure the value of certain conditions of the environment or species. The fundamental issue here is that the value of a conservation value is reflected in how much tourists are willing to pay to reach a tourist destination, for example, access to different national parks or private game reserves to hunt a specific species. Surveys are used in this method to determine where tourists come from (place of residence, the distance they travel to the destination and the frequency of visits and their demographic characteristics). To determine the willingness to pay for conservation at different destinations or sites, the differences in the number of visits and travel costs are used, according to King and Mazzotta (2000).

Researchers such as Hotelling (1947); Clawson (1959); Knetsch (1963) and Clawson and Knetsch (1966) describe the TCM as a “revealed preference method”. This method uses the cost of travel as a proxy for the price of using a tourist site. The tourists who travel further to visit a destination generally pay more than those tourists who live closer to it. Additionally, it could be anticipated that the tourist residing further away from a wildlife tourist or recreation destination would visit less frequently than one living closer by. Empirically, it is possible to determine the relative frequency of visits at a wildlife tourist destination or site from zones around the site/destination as a function of the cost of travelling to the site; this method is called the Trip Generation Function.

The Trip Generation Function can be used to determine the cumulative demand curve for visits to the destination or site. The demand curve then helps to supply a basis for placing an economic value on tourism at a destination or site. Loomis (2000) explains that, when wildlife is the prime attraction at a destination or site, the demand curve can be used to supply a basis for measuring the economic value of wildlife tourism at a destination or site. The areas that falls under the demand curve symbolises the maximum amount that tourists are willing to pay, to visit a site. On the other hand if there are no entry fees to the site and

there are on-site costs associated with visits, the area under the demand curve represents the overall economic value of the site for wildlife tourism, as Loomis (2000) notes.

However, criticisms regarding the TCM have been advanced. For example, this method only measures the use value, and it is difficult to separate out the effects of visits to various sites. The form of the demand relationship adopted is also often difficult to select (Davis, Tisdell, & Hardy, 2001). Other weaknesses of this method are found in the assumptions that are made to define these types of costs, which include substitutes for recreational activities and sites, appropriate valuation of travel time and value of the site. Additionally, the applicability of this method is limited in a conservation setting because human access to conservation sites may itself be restricted, while human awareness of or preferences towards species may also be limited. In this case, if tourists are not able or willing to travel to conservation sites to expand funds, this method confers no value (Shwiff, Anderson Cullen, White & Shwiff, 2013).

Nevertheless, researchers such as Dwyer, Forsyth, Rao and Valerio (1998); Fleming and Cook (2008) and Saayman and Saayman (2009) have used the TCM in their studies.

3.3.6. Social Cost-Benefit Analysis (SCBA) / Economic analysis

The Social Cost Benefit Analysis (SCBA) also referred to as Economic Analysis (EA) is based on the concept of welfare economics. In other words, the welfare of a society relies upon the accumulative individual utility levels of all members of that society. SCBA is generally utilised when a society wishes to evaluate whether a proposed project will add benefit or cost to that society, and comprises a process to evaluate the merits of a specific project or course of action in a systematic and rigorous fashion (Pathak, 2016). General economic arguments are valid when the sum of benefits of the project or policy exceeds the cost, thus supporting the action to make the investment or implement the policy (PSRC, 2009).

Social accounting models make use of the benefit cost analysis as a framework to measure any benefits or costs against all other benefits and costs. This method could be employed to monitor decisions about the relative ranking, or prioritisation, of various investment options, or it may be used to decide what the economic value is, of making any given investment in the first place (Pathak, 2016).

However, the SCBA has various constraints, such as the accuracy of data used in the evaluation process, or concerns about values to be employed in the analysis resulting from either incomplete science/philosophical or ethical disputes. The other limitations that exist within the SCBA are the following: “equity”- the SCBA does not inform the analyst how to

make inter-personal correlations; in other words, this method does not offer good suggestions on how to balance the net gains of one part of the community that are at the expense of the net losses to another part of the community; “Valuation”- it is compulsory that benefits and costs are monetized. However, this may offer a challenge where the decision context at hand is influenced by difficult-to-value benefits or resources such as amenity values; “Project screening” - it is difficult to distinguish between project and programme in a setting where project initiatives are combined in different ways to the degree where the elements are combined in multiple ways. The number of alternatives might also increase quickly; additionally, this could leave the analyst with an inconsistent evaluation, which may be a concern; and finally, “Tool use” - it is important that the evaluating framework fits well, operationally and organisationally, within existing organisational parameters (PSRC, 2009).

Nonetheless the objectives of analysis are not to resolve all such disputes, or phase out uncertainty, but rather, firstly, to provide accurate information put together in a disciplined manner that is able to assist decision makers faced with challenging investment or policy decisions. The second objective is to evaluate the cost and benefits of alternative economic choices and then to select the best alternative choice that offers the largest net benefit in order to secure and achieve the value of money in the economic world. To sum it up, basically the main focus of SCBA is to determine:

- Economic benefits of the project that reflect social value in terms of price (shadow price)
- What the impact of the project will be on the distribution of income in the society
- What the impact of the project will be on the level of savings and investments in the society
- The contribution of the project towards the fulfilment of certain meritorious wants, such as sufficiency, employment etc (PSRC, 2009).

As indicated above, numerous researchers, such as Vaughan, Farr and Slee (2000); Saayman and Saayman (2006a); Oberholzer, Saayman, Saayman and Slabbert (2010); Rossouw and Saayman (2011) have used the Social Cost Benefit Analysis / Economic Analysis in their studies to determine the economic impact of an event or activity within tourism.

3.3.7. Input and Output (I-O)

Input and output models can be described as sets of equations that describe the component that links the output of one industry, in this case wildlife industry, within all other industries in an economy. These models can be used to determine the impact for example in this case, lion breeding, within other wildlife industries and are able to provide more significant information than do measures of the mere income, output and employment (Broomhall, 1993:4). According to Cameron (2003:1) an input and output analysis is a logical framework devised with the intention of evaluating the interconnection of industries in an economy. In its most primitive form, an input and output model can be defined by a system of linear equations that describes the allocation of an industry's product throughout the economy. This model is a complete method to estimate the flow of money between sectors, sub-sectors, organisations, businesses and consumers, while they mentor the interdependence effects when applying the numerous multipliers (Reeves, 2002:54). The function of the input and output model can measure precise effects of macroeconomic changes on the local economy and it is also able to examine the improvement that a particular sector within the local economy can effect. These models can be tailored to be relevant for precise conditions and economies, or applied to address economies of scale that are associated with changes of output (Reeves, 2002:54).

Input and output models may also be used to analyse any economic effects in the demand and supply chain of an industry. Such a model serves as a framework for what each business must purchase from all the other sectors, to be able to produce one Rand's worth of goods and services. In the short term the input and output model presumes that the inputs that are used to produce a product are connected to the industry's output, by a continuous and fixed coefficient production function. In terms of this expectation input and output relationships are converted into technical relationships where each column in an input and output coefficient table represents a technique of production (UN, 1999). According to Pao (2005), "an input-output analysis is a method of tabulating an economic system in matrix form (input and output table) to show as rows, the sales made by each sector of the economy to other sectors and as columns, the purchases made by each sector from each of the other".

According to Crompton (1999:15) an input and output model symbolises the diversified flow of economy in a region. From this perspective, input and output models are able to measure the secondary effects (indirect or induced) of visitor spending by determining the economical active linkage between sectors. Due to the changes that take place in sales and income generated or jobs that are created in the sphere of sectors in a region that act as suppliers of

goods and services to the tourism and recreation sectors, indirect effects become evident. This could then cause a local region to experience an increase in sales figures since households spend the income that was earned in the tourism and supporting sectors. This is noted as an induced effect of visitor spending. The sum of the direct and secondary effect serves as the total effect. The ratio of the total effect to direct sales will therefore reveal the size of the secondary effects; these are known as multipliers (Crompton, 1999:15).

The effect of tourism can be analysed by charting the movement of initial visitors' expenditure through different sectors of the economy. A logical input and output model to analyse the effect of tourism is illustrated below:

$$X - AX = Y$$

In this manner X and Y are the respective vectors of output and the final demand whereas A is the matrix of technical coefficient. By restoring an identity matrix I to the equation, it can be written as:

$$(I - A) * X = Y$$

Here (I-A) is the Leontief Inverse Matrix, called the Inter-industry Interdependence Coefficient Matrix.

The essential feature serves as the asset supplied from one industry to others to produce other units of output for the final demand. Y produces X since it is multiplying this matrix by a vector of final demand and also serves the multiplier effect. The multiplier would be higher in a region, if the latter is more self-sufficient and purchases goods and services from within the region. Due to its ability to provide accurate and detailed information the input and output model is one of the most popular ones used to determine the effect of tourism (Pao, 2005) because according to Loomis and Walsh (1997), it also provides detailed information on direct, indirect and induced effects, of visitor spending on all economic measures regarding different industries in the local economy.

However, the input and output models are accountable to various constraints such as fixed, prices, a short time frame and unidirectional sector impacts. Researchers such as Dwyer, Forsyth and Spurr (2004:307) hold the view that input and output models with calculated multiplier effects that aim to evaluate economic impact in the tourism context are both incomplete and misleading. These researchers are of the opinion that such methods fail to give attention to key aspects of the economy: for example, the relationship which the direct effects have with other parts of the economy; furthermore it is assumed that there is a free unlimited flow of resources to the related sectors of the economy. These constraints could

result in inaccurate outcomes when the region's limited resources and the employment of non-local labour are ignored. The researchers also make the point that these two aspects would have had a direct effect on other sectors of the economy. Consequently, no feedback effects, which typically work in opposite directions to the initial change, are taken into account.

The foregoing, I-O model serves as an important tool in decision making with regard to regional development (Tohmo, 2005:444). Developers and policy makers may regard the results as very significant when planning future tourist events and cultural activities, while this model is also an important tool to estimate the economic effect of tourism in an economy.

Saayman and Saayman (2006); Croes and Servert (2007); Llop and Pie (2008) are all researchers that have been using the input and output method over time to determine the economic impact of a specific activity or event within tourism.

3.3.8. Computable general equilibrium model (CGE)

Since the 1970's researchers had already started using computable general equilibrium models to assist them in addressing contemporary policy issues in mixed economics, while currently numerous researchers still use this model. The popularity of this model may be associated with the advantages that this model provides, such as offering a useful framework to understand and manage structural changes and building bridges between theorists, planners and practical policy makers (Cameron, 2003:3-4). Within the economy CGE models cover the entire range of sectors, including primary and secondary activities and services.

The CGE model accounts for all interrelationships that appear between the numerous sectors. This makes it possible to trace any effects of changes in non-tourism activities on tourism related sectors, as well as effects that appear due to changes in tourism on the remainder of the economy. The macroeconomic impacts of alternative scenarios on income, welfare, the balance of trade, employment and government revenue, as well as on individual sectors of the economy, are quantified (Van Heerden & De Wet, 2002).

According to Cameron (2003:3) the objective of CGE models is to be able to convert the abstract portrayal of an economy into realistic, solvable models of substantial economies. Numerous attempts have been made to try to combine theory and policy in such a way that this can improve the analytic foundations of policy evaluations. Cameron (2003:3) describes the CGE model as "an economy-wide model that takes account of the feedback between the

demand, income and production structures and all price adjustment structures until decisions made in production are consistent with those made in demand". Alternatively, a normal CGE model can be described as a theoretical structure that illustrates equations such as period allowed, producer's demands for produced inputs and primary factors for a set time. Authors such as Cordier and Hecq (2008:1) describes the CGE model as an economic model that uses substantial economic data to express an outcome regarding how an economy might respond to changing technology, policy or other external factors. A CGE model usually consists of equations that describe variances of an accurate database in detail; the database contains tables of transactional values as presented by input and output models or SAM models and dimensional parameters that capture behavioural responses to policy scenarios.

However, the abovementioned authors, Cordier and Hecq (2008:1), are of the opinion that the CGE models are limited by various constraints, such as the costs of the model, which is very expensive and extremely time consuming. Furthermore, the complexity of implementation efforts is noted as an additional limitation while the results, which mainly depend on key economic parameters, remain uncertain. Additionally, equations that are used in the CGE models tend to develop from an underlying theory that is based on optimising behaviour, and these models are not required for events other than sizeable ones, such as those presented in regional areas (Cordier & Hecq, 2008:1).

To be able to determine the economic impacts that are associated with an activity or event, the application of a CGE model allows for the identification of resource constraints on elements such as land, labour and capital that might possibly limit changes in economic activity due to increases in final demand for goods and services. Furthermore, it also allows for relative price changes should the event cause the business to change the composition of their inputs (Jago & Dwyer, 2006:33).

Many researchers, such as Adams and Parmenter (1995); *URS Finance and Economics* (2004); Narayan (2004); Blake (2005); Dwyer, Forsyth and Spurr (2006a, and 2006b); Saayman and Rossouw (2008); Bohlmann and Van Heerden (2008) and Rossouw and Saayman (2011) have used the CGE models to determine the impact of an activity or event during their studies.

3.3.9. Social accounting Matrix (SAM)

The social accounting Matrix (SAM) is a technique, associated with national income accounting that supplies a theoretical basis for analysing the growth and distributional concerns within a single analytical framework in an economy. It can be viewed in a single matrix as demonstrating the interaction between consumption and capital accumulation,

production and income (Sen, 1996:1). The purpose of the SAM model is to categorise numerous institutions according to their socio-economic background, rather than their economic or functional activities. Social and economic data are both applied in the SAM models (Chowdhury & Kirkpatrick, 1994:58). According to Cameron (2003:2) the SAM model can be used as a platform for the reasonable arrangement of statistical information as far as income flows in a country's economy, within a set period, which is usually one of 12 months. Conventional national accounts present various kinds of transactions within an economy as well as national income statistics, input and output tables, expenditure statistics and household income that serve as the basis for this model, and can be regarded as an extension of input and output models, normally used to determine the economic impact of tourism (Akkermik, 2012; Jones, 2010).

The inter-sectorial links in input and output models are expanded through SAM by showing the link between production sectors and all institutions within the economy of tourism (Akkermik, 2012). Basically, SAM can be used to examine the interrelationship between production structure, incomes distribution and household expenditures (Pal, *et al.*, 2011). The SAM models stands out from various other models due to its ability to detail the supply and demand, while identifying who benefits from increased visitor spending, while it also indicates the secondary effects. Moreover, Jones (2010) indicates that numerous types of multipliers can be derived from SAM models Jones (2010), to capture the direct, indirect and induced impact on output (Pal, *et al.*, 2011).

Pyatt (1988) identifies three main principles that motivate and underlie the development of SAM's. The first is that SAM models help to organise and bring together data from various disparate sources that help to interpret the structural characteristics of an economy. This model may also be useful in helping to enhance the range and quality of estimates, by highlighting data needs and identifying key gaps. The second principle is that SAM models are an exceptional way of illustrating information, showing the structural relations in an economy at the macro and meso levels in an understandable way. A SAM unambiguously depicts the interrelationship between income allocation and economic structure. This is of course exceptionally valuable in the context of this study. The third principle is that the SAM illustrates a beneficial detailed framework for modelling; in other words it presents a straightforward input into a range of models, including fix-price multiplier models, and also comprises an essential part of the benchmark data set necessary to calibrate CGE models.

The SAM model is one of the most popular models that has been used by numerous analysts (Akkemik, 2012), and has been extensively used of to analyse numerous issues such as energy (Akkemik, 2012; Hartonoa & Resosudarmo, 2008), fisheries (Seung &

Waters, 2009), foreign direct investment (Harun, *et al.*, 2012), climate change (Pal, *et al.*, 2011), tourism (Rossouw & Saayman, 2011; Akkemik, 2012; Li & Lian, 2012 and Cloete & Rossouw, 2014) and various other issues.

The basic structure of a SAM model consists of a single accounting framework which arranges data on production and income flows as generated by different institutional groups and classes into an equal number of rows and columns that are flexible. The number and rows alter in accordance with the nature of an economy and the reason for which the SAM is required. This consequently determines the degree of integration and consecutive number of rows and columns in the SAM, respectively. The rows and columns in a SAM model identify various accounts in the economic system while the elements of the SAM itself refer to the value of transactions between the various accounts for a given time and place. For any given account, and therefore for each particular row and column pair, the entries in the row express receipts or revenue for that account, whereas the entries in the corresponding column represent outgoings or the expenditure side of the account. Taylor (1983) describes the SAM as a tabular presentation of the accounting identities, stating that incomings must be equal to outgoings for all sectors of the economy.

However Akkemik (2012) are of the opinion that SAM models are limited by various constraints, such as that this model is demand-driven and deals with certain assumptions, is also not a helpful tool to make practical recommendations and lastly, requires a large volume of data, especially if it comes to the input data. Additionally, it entails household data, which can be costly to obtain and may not be available.

In summary, a SAM model that is appropriately designed and structured shows a considerable amount of information concerning the structural features and interdependencies of an economy. It represents a snapshot of the transactions taking place in a given year. The SAM model is a meso-level framework that serves as a useful link between a macro framework and a more detailed description of markets and institutions (Round, 2003:2).

3.3.10. Model selection

As discussed earlier in this chapter, each model has its strengths and weaknesses; however there is no specific accepted economic model that is used to estimate the economic impact of tourism. Generally, as regards impact studies, the researchers adjust the original model in order to meet the objective of the study. According to Akkemik (2012) the selection of the modelling technique depends on the research questionnaire. For example, CGE models are used to determine the changes of supply and demand shock (Oosterhaven & Fan, 2006).

On the other hand, SAM models are utilised to determine the economic significance of something particular within the tourism sector; for example, that of the lion industry. Input and output models are considered able to capture the direct, indirect and induced impacts (Frechtling, 2011). However, the models need some adjustment to support the analysis.

For this study a SAM was used, since the main aim of this study was to determine the economic significance of the lion industry.

3.4. CONCLUSION

The main purpose of this chapter was to provide an analysis of different economic measuring methods. The secondary objective was to give the reader a better understanding of the private wildlife tourism sector regarding the lion industry and of how to incorporate the value of wildlife into the economic measuring methods, to help one to make important economic and financial decisions within the industry.

In summary, economic value can be described as the effective distribution of scarce resources in order to increase the well-being of society (Davis, Tisdell & Hardy, 2001). Total economic value can be perceived as the sum of use and non-use values and also as a full economic analysis of an environmental good, such as the use of a wildlife population for tourism purposes, which will take account of all the values associated with that population. The above mentioned values, especially non-use values, also emphasise the importance of the fact that resource conservation implements a shared benefit to society, including those who do make physical use of the resource in question. Thus, government has a responsibility to support nature conservation through reconstruction of taxation, thereby conserving bequests and other values while at the same time retaining the opportunity for future generations to benefit from it.

Various economic measuring methods can be applied to determine the economic impact of wildlife tourism, while there are numerous concepts, theories and models that need to be taken into consideration to choose the correct measuring method for determining the economic impact or value of a specific event. This chapter provided an overview of the concepts, theories and different economic impact measuring methods that are most relevant to this study and that may be employed to determine the economic impact or value of wildlife tourism. These included the following: concept of externalities, the contingent valuation method (CV)/ willingness to pay, financial survey models, opportunity cost, the travel cost method, social cost benefit analyses/ economic analyses, input and output models (I-O), the computable general equilibrium model (CGE), and SAM models. Each measuring method

has its positive and negative elements; however there are no specific accepted economic model that are used to determine the economic impact or value of a particular event.

CHAPTER 4

EMPIRICAL RESULTS OF RESEARCH

4.1. INTRODUCTION

As indicated in Chapter one, the main objective of this study was to determine the economic significance of the lion industry in the private wildlife tourism sector. In order to achieve this central objective, four secondary objectives were set. Secondary objectives one and two were covered in the literature in Chapters 1, 2 and 3; (secondary) objective three's empirical results are discussed in this chapter while the last objective is discussed in Chapter 5.

The aim of secondary objective three was to carry out a qualitative survey by means of interviews in order to achieve the main objective of this study. A qualitative method was used to obtain the information from the participants. For the purposes of this study, participants who included lion breeders, lion traders and lion owners in South Africa were interviewed to collect detailed information through qualitative interviews.

To address this objective, the foremost aim of Chapter 4 is to combine the overall goal of the study with the interview results.

Chapter 4 consists of three main sections that have various sub-sections. Section A addresses the results obtained from the interviews conducted with the participants; Section B deals with the economic significance of the private lion industry while Section C examines the problems and challenges.

4.2. SECTION A: RESULTS FROM QUALITATIVE INTERVIEWS

Sections A includes and examines the following aspects: socio-demographics, facility related management aspects and economic aspects.

4.2.1. Socio – demographic profile of participants

The socio-demographic profile of the participants which formed part of the questionnaire included: age, gender, home language, highest level of education and training. Table 4.1 provides a summary of the results obtained from the study.

According to Table 4.1, the majority of participants are male (77%), while a small percentage of participants were female (23%). The average age of the participants was 51 years of age, and the most commonly spoken language was Afrikaans (77%) followed by English (18%) and German (5%).

It was clear from Table 4.1 that the majority of participants were well educated. Thirty-two percent (32%) of participants held a technical diploma/degree, 27% had attained a university degree or a postgraduate degree, 27% held a matric qualification, while 14% had achieved a high school grade.

The research shows (see Table 4.1) that the largest percentage of participants are located in the Free State province (45%), followed by North West province (36%) while a small proportion of participants are situated in Limpopo (14%) and the Northern Cape provinces (5%).

Table 4.1: General profile of participants

Category	Profile	
Age	30-40 years	10%
	41-50 years	29%
	51-60 years	51%
	61-70 years	5%
	71-80 years	5%
	Average age: 51 years	
Gender	Male	77%
	Female	23%
Language	Afrikaans	77%
	English	18%
	Other: German	5%
Highest level of education	Primary school completed	0%

	Some high school	14%
	Matric (Grade 12)	27%
	Tech diploma/degree	32%
	University degree or postgraduate degree	27%
Province where lion facilities are located	Free State	45%
	North West	36%
	Limpopo	14%
	Northern Cape	5%

4.2.1.1. Training

From the results of the survey it became clear that most participants (72%) did not receive any formal training in managing and taking care of lions. These participants acquired their knowledge on how to manage and take care of lions through their own experience, learning from other lion breeders and through veterinary services. Twenty-eight percent (28%) indicated that they have had some type of training, while just a small percentage (14%) of the 28% had been given formal training from Game Capturing Schools (See Figure 4.1).

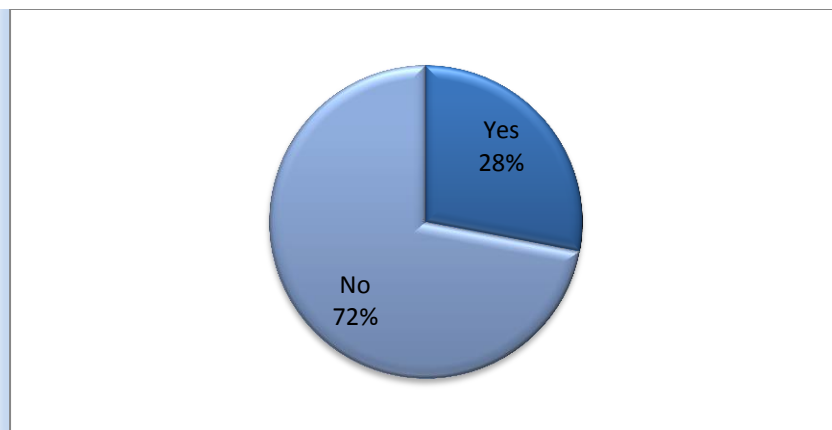


Figure 4.1: Training regarding managing and taking care of lions

4.2.2. Facility related management

In terms of facility management aspects in the lion industry, various components were investigated when conducting the interviews. The succeeding section presents an overview of each component that formed part of facility management; these include the following: size and cost of lion holding facilities, type of lion holding permit, proximity of lion holding facilities

on farms, number of lions owned, selling price per lion, hunting aspects, record keeping of lions and accommodation type provided to tourists.

- **Size of lion holding facilities**

Table 4.2 illustrates the size of the lion holding facilities of each participant and the total quantity of camps which participants have on their premises. The average participant has less than 5 camps with an average size of less than 200 hectares. The size of the lion holding facilities of participants focusing on breeding and hunting of lions is bigger (between 1401-1800 hectares) than farms that focus on conservation and tourism activities. This is due to the policies of provinces that require that lion hunting camps must be approximately 1000 hectares in order to allow hunting to take place (South Africa. Environmental Affairs. 2013).

Participants were asked to indicate the distance between their lion holding facilities and any man-made structures. Most participants (32%) indicated that their lion holding facilities are less than 5 meters from any man-made structures, followed by 23% who indicated 1000 meters and more. Eighteen percent (18%) responded that these were between 51-100 meters, whereas 14% answered, between 101-300 meters. A small percentage of participants (9%) indicated that their lion holding facilities are between 501-700 meters from any man-made structures and 5% reported between 701-800 meters.

- **Cost of lion holding facilities**

As may be learned from Table 4.2, the larger percentage of participants (45%) paid between R1.1 million and R5 million to construct their lion holding facilities. Five percent (5%) paid less than R50 000 and a small percentage (5%) paid between R5.1 million and R10 million for these constructions. Analysis of the data in Table 4.2 indicated that construction of lion holding facilities costs an average of R1 385 000.

Research conducted in this study shows that the majority (55%) of participants pay less than R50 000 to run their lion holding facilities per month. Farms with a larger scale of operations (22%) pay more than R501 000 to run their lion holding facilities per month. Based on the data obtained, the average running costs are R50 000 per month.

- **Lion holding permits**

Research conducted in this study found that the majority of participants have standing permits whereas a small percentage hold ordinary permits. In the questionnaire, the participants had the option to choose more than one category from the list concerning different permits, which involved keeping, trading, hunting and breeding. Table 4.2 shows that 68% of participants have a keeping permit, 68% hold a breeding permit, 55% hold a trading permit and a small percentage (32%), hold a hunting permit.

Within the wildlife industry there are two main permits: an ordinary permit and a standing permit (Environmental Affairs, 2013).

An ordinary permit can be issued for the following reasons (Environmental Affairs, 2013).

- “Once-off carrying out of any of the restricted activities or a combination of restricted activities;
- carrying out of multiple events of any of the restricted activities or a combination thereof; or
- carrying out of a restricted activity involving one or more specimens of one or more listed threatened or protected species”.

A standing permit can be issued for the following reasons (Environmental Affairs, 2013). To obtain authorisation for the continuous carrying out of any of the secured activities or a combination of these in connection with the specimens of one or more that are listed as threatened or protected species. “A standing permit may be issued, without prior registration, only to-

- an official of an organ of state, for the carrying out of restricted activities in the official performance of his or her duties;
- an organ of state, for the carrying out of restricted activities involving specimens of listed threatened or protected species on land under its jurisdiction;
- the management authority of a protected area, for the carrying out of restricted activities involving specimens of listed threatened or protected species within the protected area, that are necessary for the management of such species in accordance with the management plan of the protected area;

- a veterinarian, for darting and any other restricted activities necessary for the management of such species; or an official of the National Council of Societies for the Prevention of Cruelty to Animals”.

“In addition a standing permit involving specimens of listed threatened or protected species may be issued to the following persons, upon prior registration-

- a person operating a captive breeding facility, for the carrying out of restricted activities involving species kept or bred at that captive breeding facility, that are necessary for the purpose for which that captive breeding operation is registered; To carry out secured activities which involve specimens brought to sanctuaries for treatment or care or for the reasons that the sanctuary are registered for,
- the operator or head of a commercial exhibition facility, for the carrying out of restricted activities involving specimens under the care of the exhibitor, that are necessary for the purpose for which the commercial exhibition facility is registered;
- the owner of a nursery, for the carrying out of restricted activities involving specimens, for the purpose to which the registration relates;
- an owner of a game farm, for restricted activities involving specimens to which the registration relates” (More information can be found at regarding this at the following link:https://www.environment.gov.za/sites/default/files/gazetted_notices/nemba10of2004_threaten_protected_species_regulations.pdf regarding lion permits).

Table 4.2: Facility related management

Participant	Number of camps	Size of camps (hectares)	Distance of holding facilities from human structures	Cost of construction of lions holding facilities	Cost per month to run lion facilities	Type of holding permit
Participant 1	4		0-50 meters			Keeping
Participant 2	1	4.8	More than one kilometre	50 000	5000	Keeping & breeding
Participant 3	3	1700	More than one kilometre	1 500 000	200 000	Keeping
Participant 4	5	13	0-50 meters	800 000	20 000	Trading & breeding
Participant 5	8	14	0-50 meters	700 000	20 000	Keeping
Participant 6	4	6	51-100 meters	180 000		Trading
Participant 7		100	51-100 meters	2 000 000	50 000	Keeping

Participant 8	26	65	51-100 meters	2 400 000		Keeping, trading & breeding
Participant 9	4	2.5	Less than 50 meters	300 000	30 000	Breeding
Participant 10	14	14	Less than 50 meters	1 200 000	1 600 000	Keeping, trading & breeding
Participant 11	6	1.5	101-300 meters			Keeping & hunting
Participant 12	4	15	More than one kilometre	500 000	20 000	Breeding
Participant 13	24	3400	101-300 meters	1 370 000	122 000	Keeping, trading, breeding & hunting
Participant 14	38	140	701-1000 meters	1 100 000	220 000	Keeping, breeding & hunting
Participant 15	2	1600	51-100 meters	8 000 000	775 000	Keeping, trading & hunting
Participant 16	41	10X10	501-700 meters	2 500 000	45 000	Trading, breeding & hunting
17	25	4	Less than 50 meters	1 400 000	41 000	Keeping, trading & breeding
Participant 18	12	12	101-300 meters	4 300 000	190 000	Keeping, trading & breeding
Participant 19	5	15	501-700 meters	600 000	25 000	Trading & breeding
Participant 20	36	15	More than one kilometre	2 500 000	100 000	Keeping, trading, breeding & hunting
Participant 21	13	3	Less than 50 meters	4 800 000	1 000 000	Keeping, trading & breeding
Average				R1 385 000	R50 000	

- **Lion population**

Figure 4.2 provides a summary of the estimated lion population of captive bred lions owned by the participants. There are 1758 lions privately owned among the participants of the research sample which are located in four provinces, with the largest percentage located in the North West (46%), followed by the Limpopo (26%), the Free State (26%) and the Northern Cape (2%), (see Figure 4.2). Based on the median using the research sample, an extrapolation of the data firstly shows that an average farm houses 28 lions, and secondly, that this implies that the total numbers of lions on privately owned farms are between 8000-8500.

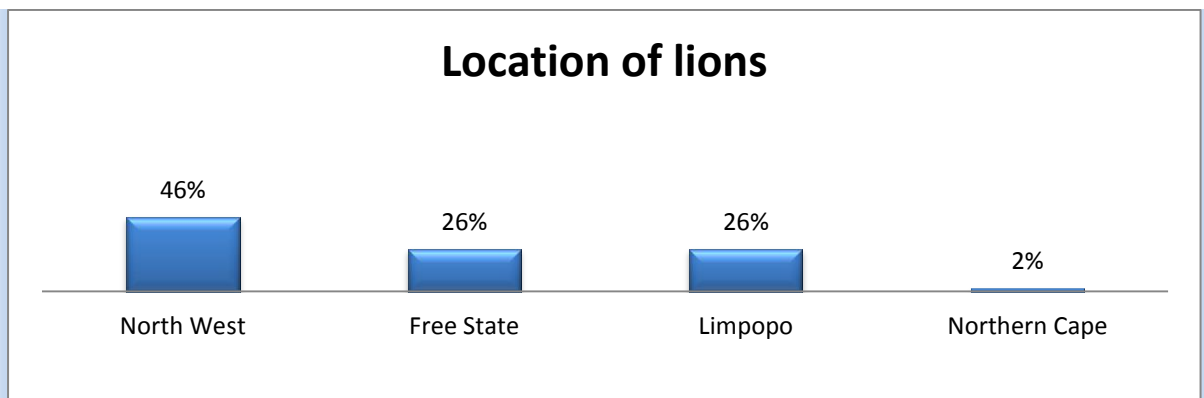


Figure 4.2: Location of lions

Table 4.3 shows the estimated population of captive bred lions in South Africa in 2016 according to the Department of Environmental Affairs (2016). The numbers of captive bred lions in 2016 are updated in this study using information provided by the provinces, Department of Environmental Affairs (DEA), SAPA, and personal interviews. The second Table (Table 4.4) indicates the population of captive bred lions in South Africa, estimated from previous research conducted by Williams, Newton, Loveridge and Macdonald in 2015 (Williams, *et al.*, 2015).

Of note is the difference in statistics between the two reports: the one by Williams *et al.*, in 2015 (Williams, *et al.*, 2015) indicates that there are 5 796 captive bred lions and 146 breeding facilities; this report also shows that only the Free State, North West, Limpopo and the Eastern Cape have farms with captive bred lions. However, according to the statistics provided by the Department of Environmental Affairs (DEA, 2016) there are approximately 5 915 captive bred lions and 297 breeding facilities in South Africa while there are captive bred lions in each province (See Figure 4.3). The province with the most such lions is the Free State with 2800 captive bred lions and 112 breeding facilities. The second biggest province is North West that has around 1 954 captive bred lions and 84 lion facilities. Comparing the

two reports there is a marked difference in statistics regarding the captive bred lion population in South Africa.

Table 4.3: Captive bred lion population Source: Department of Environmental Affairs: Captive bred lion population (2016)

Province	Estimated number of lions	Number of facilities
Free State	2800	112
North West	1954	84
Limpopo	287	37
Gauteng	190	12
Western Cape	123	18
KwaZulu Natal	104	7
Mpumalanga	38	6
Eastern Cape	380	16
Northern Cape	39	5
Total	5915	297

According to estimates in a report compiled by Williams *et al.* (2015), there are approximately 9 100 lions in South Africa, of which 32% (2 912 lions) are free roaming and 68% (6188 lions) are in captivity. In 2013 it was estimated that there are about 5 800 captive bred lions in South Africa (Williams, *et al.*, 2015). The report by Williams *et al.* (2015) shows that the Free State province has the largest number of captive lion breeding facilities with approximately 3 000 lions in 70 breeding facilities and two hunting facilities. The report also indicated that the second biggest province within the lion breeding industry is the North West province. In the report it is estimated that the North West province has approximately 2 200 captive lions in 64 hunting reserves (Williams, *et al.*, 2015).

Table 4.4: Number of captive breeding and hunting facilities and number of lions within these facilities. Adapted from: Williams et al. (2015)

Province	Estimated number of lions	Number of breeding facilities	Number of hunting facilities
Free State	3000	70 breeding only	2
North West	2196	64	12
Limpopo	350	2	?
Gauteng	0	0	0
Western Cape	0	0	0
KwaZulu Natal	0	0	0
Mpumalanga	0	0	0
Eastern Cape	250	10	<2
Total	5796	146	>16 excl. Limpopo

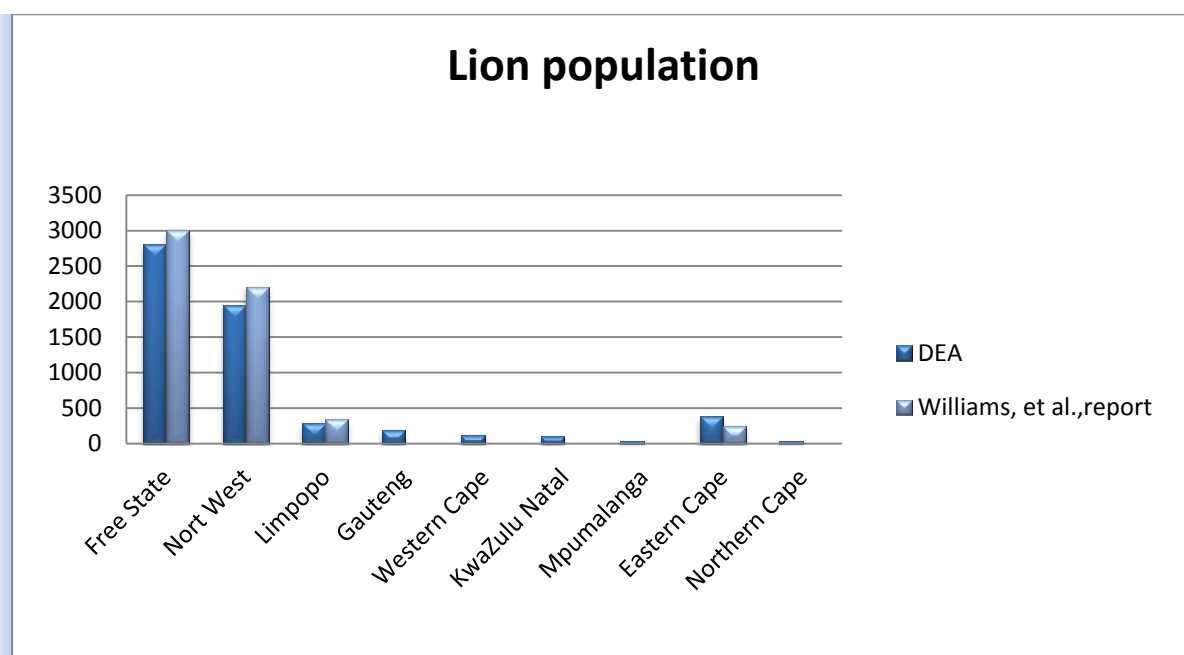


Figure 4.3: Differences in lion population according to the two sources.

- **Purpose of having lions**

Table 4.5 gives a summary of the main purpose for possessing lions and the number of lions owned among the participants. Table 4.5 indicates that the majority of participants own lions for conservation/genetics (64%) purposes, 41% for breeding purposes, 41% for wildlife tourism purposes and 32% for hunting purposes.

Research conducted in this study reveals that 22% of the privately owned lions are white (*Panthera leo krugeri*) while 78% are brown (*Panthera leo*). Of these, the majority (55%) are male, 39% female while 6% are cubs (Table 4.5).

- **Selling price per lion**

Participants were asked to indicate how much they sell their lions for. As indicated in Table 4.5 (also see Table 4.6) the average prices per male lions are R180 000, for lionesses R45 000 and for cubs R20 000. The highest price received for a male lion was R500 000 while the lowest price was R20 000. For a lioness, the highest selling price was R65 000 whereas the lowest price was R10 000. For cubs, the highest selling price was R25 000 with the lowest price being R5 000.

Table 4.5: Combined results

Participant	Reason for having lions	Total number of lions	White lions	Brown lions	Male lions	Female lions	Cubs	Selling price of male lions	Selling price of female lions	Selling price of cubs
Participant 1	Conservation/ genetics	4	0	4	2	2				
Participant 2	Wildlife tourism	6	3	3	3	3	0	20000	10000	5000
Participant 3	Conservation/ genetics	12	7	5	4	6	2			
Participant 4	Breeding	17	0	17	9	8	0	400000		0
Participant 5	Conservation/ genetics & wildlife tourism	31	6	25	28	2	1	180000	30000	20000
Participant 6	Breeding	8	2	6	5	3	0	250000	40000	0
Participant 7	Breeding & wildlife tourism	33	3	30	15	15	3	500000	20000	0
Participant 8	Breeding & Conservation/ genetics									
Participant 9	Conservation/ genetics	4	2	2	2	2	0	20000	50000	0
Participant 10	Conservation/ genetics & wildlife	59	12	47	25	29	5	250000	15000	0

	tourism									
Participant 11	Breeding & Conservation/ genetics	12	2	10	3	9	0			
Participant 12	Conservation/ genetics	27	0	27	2	15	10			
Participant 13	Hunting, breeding, Conservation/ genetics & wildlife tourism	236	55	181	170	66	0	300000	25000	0
Participant 14	Hunting, breeding & Conservation/ genetics	540	180	360	280	210	50	200000	65000	0
Participant 15	Hunting	3	3	0	3	0	0	150000	55000	0
Participant 16	Hunting	40	6	34	12	28	0	120000	65000	0
Participant 17	Hunting, breeding, conservation/ genetics & wildlife tourism	121	2	119	72	49	0	170000	50000	25000
Participant 18	Breeding, conservation/ genetics & wildlife tourism	26	10	16	15	11	0			15000
Participant 19	Conservation/ genetics	28	0	28	4	16	8	100000	20000	0
Participant 20	Hunting	202	22	180	75	60	67	150000	60000	
Participant 21	Conservation/ genetics & wildlife tourism	49	11	38	20	29	0	300 000	25 000	15 000
Participant 22	Hunting							120000	50000	20000

Table 4.6: Market price for lion

	Highest price	Lowest price	Average price
Male	R500 000	R20 000	R180 000
Female	R65 000	R10 000	R45 000
Cubs	R25 000	R5000	R20 000

- **Hunting**

The research conducted in the survey regarding the hunting aspects was relevant just to those participants who offer lion hunting as an activity. This section gives an overview of each component that formed part of the hunting aspects included in the questionnaire (see Table 4.7):

- **Responsibility for lion hunting**

The participants were asked who was responsible for the hunting of lions on their premises. The majority (67%) of participants answered that they were responsible although 33% responded that other hunting outfitters are responsible for the hunt.

- **Source of lions**

The second question asked was to determine from where the lions are obtained. The majority (73%) indicated that they are bred by themselves while 27% answered that the lions were purchased from other breeders.

- **Drop-off**

Participants were also asked whether they allow other hunting outfitters to hunt lions which do not belong to them, on their premises, in other words “drop-offs”. Ninety-one percent (91%) responded that they do not permit this but 9% answered that they do allow this (See Table 4.7).

Table 4.7: Hunting aspects

Participant	Size of hunting camp	Responsible for hunting	Where do the lions come from?	Are outfitters allowed to hunt drop-offs on your farm
Participant 2	N/A	Other hunting outfitters	Lions purchased from other breeders	No
Participant 3	N/A	Participant himself	Own lions	No
Participant 4	N/A	Other hunting outfitters	Lions purchased from other breeders	No
Participant 8	N/A			
Participant 11	1000 hectares	Participant himself	Own lions	No
Participant 13	1000 hectares	Participant himself	Own lions	No
Participant 14	1000 hectares	Participant himself	Own lions	No
Participant 15	1000 hectares	Other hunting outfitters	Lions purchased from other breeders	No
Participant 16	1000 hectares	Participant himself	Own lions	No
Participant 17	N/A	Participant himself	Own lions	Yes
Participant 20	2000 hectares	Participant himself	Own lions	No
Participant 22	2000 hectares	Other hunting outfitters	Own lions	No

- **Accommodation type**

Figure 4.4 depicts a summary of the accommodation types found on premises that accommodate tourists or hunters. The most commonly found accommodation type was lodges (70%), although 15% indicated chalets, 10% rooms and 5% other.

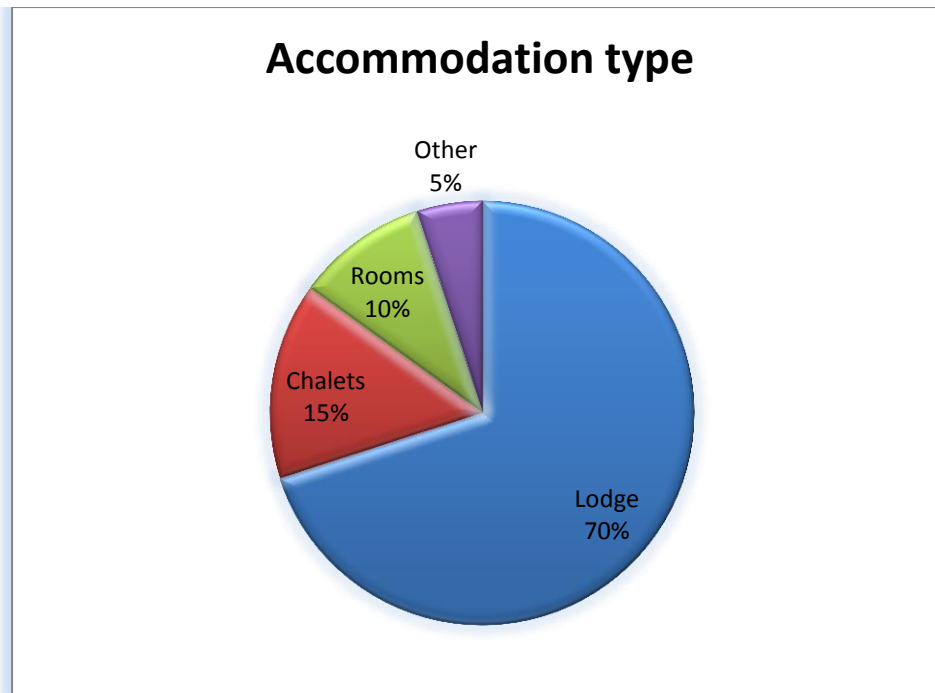


Figure 4.4: Accommodation types

4.2.3. Economic aspects

This section reports on economic aspects covered by the research and includes profitability, employment, operation cost and income.

- **Profitability**

Participants were asked to rate the importance of various aspects regarding profitability of their businesses on a 5-point Likert scale (with 1 being not important at all and 5 being extremely important). The results were as follows:

- **Sell lions to other breeders**

Four participants (participants 4, 6, 12, 13) felt that it is extremely important to sell lions to other breeders. Participants 11, 17, 18, 19 indicated that it is very important. Seven participants (participants 1, 2, 5, 7, 8, 14, 21) responded that it is important to sell lions to other breeders. Participants 9 and 20 felt that it was less important whereas five participants (participants 3, 10, 15, 16, 22) indicated that it is not important at all to sell lions to other breeders.

- **Sell lions to hunting outfitters**

Four participants (participants 15, 19, 20, 22) asserted that it is extremely important to sell lions to hunting outfitters. Participants 12, 13, 14 and 17 indicated that it is very important.

Participants 4, 8 and 16 responded that it is important to sell lions to hunting outfitters. Participant 5 felt that it was less important while ten participants (participants 1, 2, 3, 6, 7, 9, 10, 11, 18, 21) indicated that it is not important at all to sell lions to hunting outfitters

- **Sell lions at auctions**

Participant 13 declared that it is extremely important to sell lions at auctions. Participants 12 and 19 indicated that it is very important. Five participants (participants 1, 5, 8, 20, 22) responded that it is important to sell lions at auctions. Participant 5, 14 and 16 felt that it was less important whereas eleven participants (participants 2, 3, 4, 6, 7, 9, 10, 15, 17, 18, 21) averred that it is not important at all to sell lions at auctions.

- **Keep lions for own use**

Ten participants (participants 1, 2, 4, 9, 10, 12, 14, 16, 20, 21) noted that it is extremely important to keep lions for their own use. Participants 5, 19 and 22 indicated that it is very important. Participants 3, 6, 7 and 8 said that it is important to keep lions for own use while five participants (participants 11, 13, 15, 17, 18) felt that it is not important at all to keep lions for one's own use.

- **Export (trade lion products)**

Three participants (participants 10, 13, 21) responded that it is extremely important to trade lion products. Participants 18 and 22 indicated that it is very important. Participants 8 and 20 answered that it is important to trade lion products. Participants 5 and 11 felt that it was less important whereas thirteen participants (participants 1, 2, 3, 4, 6, 7, 9, 12, 14, 15, 16, 17, 19) responded that it is not important at all to trade lion products.

Figure 4.5 provides a summary of the above results. From this Figure it may be observed that the results are as follows: 45% of the participants felt that it would be most profitable to keep lions for their own use, followed by 18% who regarded it as important to sell lions to breeders; 18% agreed that it is important to sell lions to hunting outfitters, whereas a small percentage (14%) concurred that it is important to trade lion products; only 5% agreed that it is important to sell lions at auctions to make the industry more profitable.

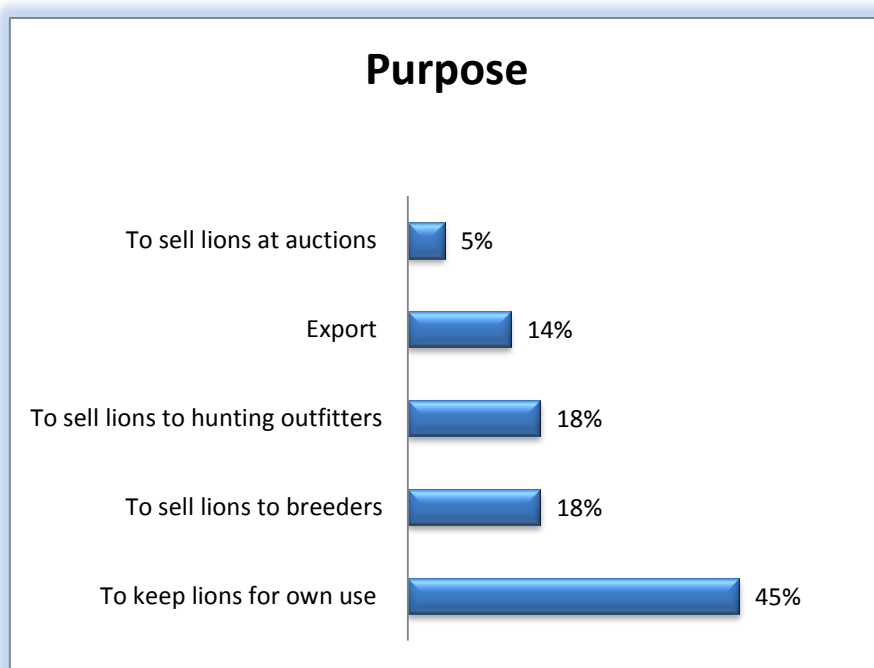


Figure 4.5: Purpose for keeping and breeding lions

- **Employment**

Research conducted in this study shows that 369 people from the research sample are employed on the farms, and that the majority of employed workers on farms that breed with lions are male (61%) with 39% being female (see Table 4.8).

According to a study commissioned by the Department of Environmental Affairs in 2008, the community benefits significantly in the form of employment, in terms of breeding of lions. It was reported that in 2008 an estimated 3596 lions were kept in 174 breeding facilities in South Africa, thus creating 225 full time job opportunities in the industry (Environmental Affairs, 2015). The research, as indicated above, found that more people are employed in the industry, than previously indicated by DEA. See section B: 4.3.2 for total jobs that are sustained in the economy due to lion breeding activities.

Table 4.8: Employees

Employees	Number	%
Male	224	61%
Female	145	39%
Total employees	369	100%

- **Operational Costs**

Table 4.9 reports on the operating budget per month of participants.

Table 4.9: Operational budget per month

Participant	Running cost %	Marketing %	Licence fees %	Insurance %	Operation lease %	General %	Total % (100)
Participant 1							
Participant 2							
Participant 3	70	10	0	5	0	15	100%
Participant 4	50	30	5	5	5	5	100%
Participant 5	30	0	5	10	10	75	100%
Participant 6	88	0	2	0	0	10	100%
Participant 7	25	15	5	15	30	10	100%
Participant 8							
Participant 9							
Participant 10	85	7	0	0.3	0	7.7	100%
Participant 11							100%
Participant 12	80	5	2	10	0	3	100%
Participant 13	90	0	2	3	2.5	2.5	100%
Participant 14	90	0	5	0	0	5	100%
Participant 15	40	5	2	12	15	26	100%
Participant 16	60	10	4	6	10	10	100%
Participant 17	60	20	5	10	2.5	2.5	100%
Participant 18	80	5	0.5	5	0	9.5	100%
Participant 19	75	5	2	10	5	3	100%
Participant 20	70	10	10	10	0	0	100%

Participant 21	70	5	1	4	0	20	100%
Participant 22	20	20	5	5	20	30	100%

As evident in Table 4.10, the average participant spends 63% of their operational budget on overheads (running costs per month), 13% is spent on general items, 9% on marketing, 6% on insurance, 6% is spent on operating lease whereas a small percentage is spent on licence fees (3%).

Table 4.10: Average operation budget per month

Statement	%
Running cost (wages, salaries, water & electricity, maintenance, repairs & administrative repairs)	63%
Marketing	9%
Licence fees	3%
Insurance	6%
Operating lease	6%
General department	13%
Total	100%

- **Income**

This section is divided into three parts: percentage income derived from the lion industry, income derived from lion product trades and lastly, annual income.

- **Percentage income**

Table 4.11 shows that the majority of participants indicated that the largest percentage of income is derived from tourism activities (38%), followed by hunting of lions (24%) and lion trade (22%). Only a small percentage of participants generate a yearly income from products such as meat (6%), lion skins (1%), lion bones (1%), nails (1%) and other activities such as donations and sponsors (4%).

Table 4.11: Percentage income regarding lion business

Statement	%
Hunting of lions	22%
Lions trade	21%
Tourism activities	42%
By products	
Skins	1%
Bones	6%
Nails	1%
Teeth	1%
Other	3%
Total	100%

- **Lion product trade**

Participants were asked to indicate the average income they derived in 2014 from lion bones, lion skins and other lion body parts sold (see Table 4.12). The average income generated from the selling of lion parts was: bones R181 590, lion skins R27 272 and from other body parts R68 181. The total income generated by the participants was approximately R6 095 000 whereas the average income derived in 2014 from among the research sample was approximately R2 031 667.

Table 4.12: Income derived from lion product trades

	Average income	Total
Lion bones	R181 590	R3 995 000
Skins	R27 272	R600 000
Other body parts	R68 181	R1 500 000
Total	R277 043	R 6 095 000

- **Annual income**

Participants were asked to indicate what their annual gross income for 2014 was. The total annual gross income from the research sample was R 38 255 000 while the average income was approximately R3 187 917 (See Table 4.13).

Table 4.13: Annual gross income

Total income	Average income
R38 255 000 (x22)	R3 187 917

4.3. SECTION B: ECONOMIC SIGNIFICANCE OF THE PRIVATE LION INDUSTRY BASED ON SAM CALCULATIONS

In this section, the analysis of the economic significance is determined by using the operational cost per year of a participant, which is converted to the associated increase in production, income and jobs in the provincial economy using economic multipliers from a Social Accounting Matrix (SAM) model. The SAM multiplier approach makes use of specific multipliers for each cost-related subdivision. Costs are converted into the associated increase in output and income through the multipliers while secondary effects are determined as the spending of a participant circulates through the national economy. The 2012 National Social Accounting Matrix (SAM) was used to determine the direct and indirect impact for a typical lion breeding farm in the country. The 2012 SAM consists of 62 activities, 140 commodities and 14 different household types based on income levels (Van Seventer, Hartley, Gabriel & Davies, 2016).

4.3.1. Operational costs of a typical lion breeding farm per year

The operational cost refers to recurring costs per year and therefore offers a good indication of the loss in economic activity in the absence of lion breeding. The breakdown of operational costs into various commodity items used to shock the SAM, was obtained via the surveys. The operational cost of a typical lion breeding farm consists of the following items: running costs (wages, salaries, water and electricity, maintenance, repairs and administrative repairs), marketing, licence fees, insurance, operating lease and general department.

Table 4.14: Generated cost of a lion breeding facility

Statement	%	R (Y = P% * X)
Running cost (wages, salaries, water & electricity, maintenance, repairs & administrative repairs)	63%	112 266 000
Marketing	9%	16 038 000
Licence fees	3%	5 346 000
Insurance	6%	10 692 000
Operating lease	6%	10 692 000
General department	13%	23166000
Total	100%	178 200 000

Table 4.14 provides an indication of what lion breeders spend their operational costs on. A typical lion breeder spends 63% of operational cost on running costs per month, 13% is spent on general aspects, 9% on marketing, 6% on insurance, 6% on operational lease and a small percentage on licence fees (3%). Based on the amount the average running cost per lion breeding facility is approximately R50 000 per month. This equates to R600 000 per year: if one multiplies this by the number of breeding facilities (297) it amounts to R178 200 000 per year (R50 000x12x297). This is just expenditure on operational costs per year, excluding the infrastructure costs.

The calculations of the direct, indirect and induced impact of the operational cost per year of a typical participant are presented in Table 4.14. To determine the economic significance of lion breeding activities, all of the cost items were divided into one of the SAM commodity divisions, other than salaries paid to workers; using the multipliers the subsequent indirect and induced effects on production in the economy of the direct spending by a typical lion breeding operation, was determined. The results were then aggregated into the main national accounts sector, as illustrated in Table 4.15.

Production refers to the total turnover generated by each sector in the provincial economy. Production consists of two elements, the first being the transitional inputs by an activity and the second the total value added that is generated by an activity.

Table 4.15: Financial impact on production

Production effect					
Sector	Direct R	Indirect R	Induced R	Total R	Percentage
Agriculture	18 606	11 985	21 983	52 574	2.8%
Mining	25 676	13 188	29 584	68 449	3.6%
Manufacturing	215 072	182 656	263 551	661 280	35.0%
Electricity & water	35 982	21 997	39 978	97 958	5.2%
Construction	34 565	27 941	44 470	106 976	5.7%
Trade, Accommodation, Catering	101 265	60 897	125 350	287 512	15.2%
Transport & communication	41 762	25 410	47 271	114 444	6.1%
Financial & business services	114 604	84 902	139 417	338 923	17.9%
Government	20 736	10 429	27 853	59 018	3.1%
Personal and social services	38 465	17 633	47 410	103 508	5.5%
Total	646 734	457 040	786 868	1 890 642	100.0%

From Table 4.15 it is clear that the largest spending by participants is on manufactured goods. It is therefore clear that largest direct impacts are manufacturing (35%), financial and business services (17.9%) and trade, accommodation and catering (15.2%). Large indirect and induced impacts through the ‘backward linkages’ are also largely experienced in the manufacturing sector, reflecting an indirect impact of R182 656 and induced impact of R263 551. Agriculture (2.8%), government (3.1%) and mining (3.6%) had the lowest direct impact.

The aggregate multiplier can be derived by dividing the total impact by the direct impact. According to this calculation the production multiplier is equal to R2.92, which means that every R1 spent by a lion breeder leads to an increase in production of R2.92.

4.3.2. Employment

The impact of the private lion industry on labour income is illustrated in Table 4.16, reflecting the effects on labour using the labour multipliers. In the production process, labour is an important factor, so that any increase in production is a positive impact. Table 4.16 indicates the effect of a typical lion breeder’s annual spending on job creation. The labour multiplier is derived from labour and output ratios and consequently illustrates the increase in the demand for labour due to an increase in production. Table 4.16 indicates that an average lion breeder is sustaining four employees in the economy. If this is extrapolated to all 297 farms surveyed, a total of 1311 jobs are sustained in the economy due to lion breeding activities; this excludes workers on the farms from the research sample. Including such workers in the sample, a total of 1680 jobs are sustained in the economy due to lion breeding activities.

The sectors most affected in terms of job opportunities are the trade, accommodation and catering sectors (28.7%), financial and business services (20.8%) and the manufacturing sector (16.8%).

Table 4.16: Employment

Employment effect		1 farm	all farms	
Sector	Total production	Total labour		Percentage
Agriculture	52 574	0.21	62.4	4.8%
Mining	68 449	0.04	13.3	1.0%
Manufacturing	661 280	0.74	220.9	16.8%
Electricity & water	97 958	0.06	19.3	1.5%
Construction	106 976	0.59	176.0	13.4%

Trade, Accommodation, Catering	287 512	1.27	375.8	28.7%
Transport & communication	114 444	0.16	47.1	3.6%
Financial & business services	338 923	0.92	272.9	20.8%
Government	59 018	0.15	43.9	3.3%
Personal and social services	103 508	0.27	79.8	6.1%
Total	1 890 642	4.	1 311	100%

4.3.3. Household income

Using the SAM multiplier, it is possible to determine the impact of spending at the level of families' income. In order to determine the impact, particular household income multipliers for each activity were calculated; from these were multiplied by the values of the total sectors impact using the household allocation, from which it is possible to derive the benefit that low, middle income and high income families derive from lion breeding activities. From Table 4.17 it is clear that low income households (income generated R154 349) also benefit from the private lion industry.

Again, a typical lion breeder's operational spending per year is used; it is evident that this spending creates economic activities in a number of sectors, which leads to income for households working in that sector. In total, R373 200 spent by a typical lion breeder, creates an income of up to R1.79 million for the economy. This excludes the salaries/ wages paid by the average farmer which come to an additional R226 800 per year; if salaries and wages are included a total of R600 000 is spent on operational costs by the average lion breeder. The income multiplier is therefore R2.77, which means that for every R1 spent by a typical lion breeder, families earn up to R2.77 in the economy. If this is to be extrapolated to all lion breeders surveyed, a total of R493 614 000 (R178 200 000 X R2.77) is generated from the lion industry.

Table 4.17: Income effect

Income effect					
Sector	Total production R	Low income R	Middle income R	Total income R	Percentage %
Agriculture	52 574	4 494	18 249	45 304	2.5%
Mining	68 449	5 413	26 897	66 397	3.7%
Manufacturing	661 280	52 786	237 305	569 700	31.8%
Electricity & water	97 958	6 493	36 685	93 707	5.2%

Construction	106 976	8 966	38 994	94 025	5.3%
Trade, Accommodation, Catering	287 512	25 018	119 764	290 014	16.2%
Transport & communication	114 444	7 378	39 778	98 976	5.5%
Financial & business services	338 923	25 012	147 085	359 448	20.1%
Government	59 018	5 129	28 625	68 215	3.8%
Personal and social services	103 508	13 659	42 630	103 727	5.8%
Total	1 890 642	154 349	736 014	1 789 513	100%

The next section elucidates the most important problems and challenges experienced by the participants.

4.4. SECTION B: PROBLEMS AND CHALLENGES IN LION INDUSTRY

This section affords an overview of the results obtained from the open-ended questions of the survey. Participants were asked to indicate what they think the biggest problems/challenges in the lion industry are. There were three main issues that emerged: permits, negative media and unethical lion hunting.

- **Permits**

One of the largest problems and challenges in the lion industry stems from the permits that lay down different rules and regulations in each province. Participants feel that all the provinces must have standard rules and regulations (participants 11, 13, 14, 15, 17, 18, and 19).

- **Wrong perception**

The second biggest issue is the wrong perception that the public have of the lion industry, which is mainly caused by the negative and inaccurate information that the media provide to the public (participants 3, 10, 15, 17, 18, 20, 21, 22).

- **Unethical hunting**

Another problem is the hunting of lions that is carried out unethically; for example, so-called canned hunting (participants 1, 2, 3, and 7).

4.5. CONCLUSION

The aim of this chapter was to determine the economic significance of the private lion industry. The following conclusions were arrived at:

Regarding socio-demographic aspects the research showed that the majority of participants are male, Afrikaans speaking, and their average age 51 years. The highest percentage of participants holds a tech/diploma degree and is situated in the Free State Province.

Regarding facility management, the research found that the majority of participants own between 1-5 lion holding camps with an average size of less than 200 hectares. The participants who focus mostly on breeding and hunting maintain lion holding camps of between 1401-1800 hectares. Most of the lion holding facilities are less than 50 meters from any human structures. In terms of construction, the average cost to construct lion holding facilities is approximately R1 385 000. The majority of participants paid between R1.1 million and R5 million for the total cost of erecting their lion holding facilities. To run these facilities the average cost is about R50 000 per month.

The majority of participants have obtained keeping and breeding permits while a small percentage have trading and hunting permits. The main reason for possessing lions is for conservation/genetic, breeding, and wildlife tourism reasons, while just a small percentage own lions for hunting reasons.

This study found that the majority of privately owned lions are situated in the North West and the Free State provinces. The total number of lions amongst the participants was 1758, of which the majority are brown and a small percentage white; the majority are male lions. Various reports have been compiled to estimate the population of captive bred lions in South Africa. However, this industry is not stable; consequently the number of lions changes daily, making it difficult to estimate an accurate number of captive bred lions in South Africa. Nevertheless, the research conducted in this study estimates that there are between 8000-8500 captive bred lions in South Africa.

Regarding hunting aspects: the majority of participants are responsible for the hunting activities when a lion is hunted on their premises; the largest percentage of lions comes from their own farms. The majority of participants also do not allow other hunting outfitters to hunt lions ("drop-off") on their premises.

In terms of economic aspects, the average selling price for a male lion is approximately R180 000, a female R45 00 and cubs R20 000. The most important statement regarding the profitability of the lion industry is that proprietors keep lions for their own use, followed by

selling lions to other breeders and to hunting outfitters. To export lion body parts and to sell lions at auctions were regarded as the two statements that are less important regarding the profitability of the lion industry.

The average participant spends the largest percentage in terms of the operational budget per month on running costs and the smallest percentage on license fees. Regarding income from the lion industry, the majority of participants generate the most income from tourism activities, followed by hunting of lions and lion trades. In terms of by-products, lion bones generate the highest income whereas the lowest is from skins, nails and teeth.

The total income generated by the panel of participants was from the selling of lion parts such as lion bones, skin and other body parts was R6 095 000. The total income derived in 2014 among the participants was R38 255 000 (R3 187 917 average per participant).

The following conclusion can be drawn from the SAM analysis. In terms of operating cost of lion breeding facilities, the highest percentage is spent on running cost per month and the lowest on licence fees. Based on this amount the average running cost per lion breeding facility is approximately R50 000 per month. This equates to R600 000 per year, and if one multiplies it with the number of breeding facilities it amounts to R178 200 000 for the total industry. Therefore with an average annual income of R3 187 917 and running cost of R600 000 leaves the lion breeder with a profit of R2 587 917. The return on capital investment is not taken into account.

In terms of impact on production the largest spending of participants is on manufactured goods. Large indirect and induced impacts through the “backward linkages” are also largely experienced in the manufacturing sector, reflecting an indirect impact of R182 656 and induced impact of R263 551.

This study pointed out that 1 680 jobs are sustained in the economy due to lion breeding activities. The sectors most affected in terms of job opportunities are the trade, accommodation and catering sectors, financial and business services and the manufacturing sector.

In term of household income, a typical lion breeder spends about R373 100 which creates an income of up to R1.79 million for the economy, excluding salaries and wages. Including salaries and wages a typical lion breeder spends about R600 000 on operating costs. If this is extrapolated to all lion breeders surveyed (297) a total of R493 614 000 is generated by the lion industry.

CHAPTER 5

GENERAL CONCLUSIONS AND RECOMMENDATIONS

5.1. INTRODUCTION

The main objective of this study as indicated in Chapter 1 was to determine the economic significance of the lion industry in the private wildlife tourism sector. To achieve the primary objective the following secondary objectives were set:

- **Objective 1:** To undertake a literature analysis of the following: Wildlife tourism and the private wildlife tourism sector and accord attention to definitions of such tourism, South African wildlife tourism industry structures, impacts of wildlife tourism and sustainability of this type of tourism to achieve a better understanding of the said concept. This was met in Chapter two.
- **Objective 2:** To carry out an overview of economic value, economic impact concepts and economic measuring methods so as to provide the reader with a better understanding of how to determine the value of wildlife and how to incorporate this into economic measuring methods, so as to help to determine the economic significance of wildlife tourism. This objective was met in Chapter three.
- **Objective 3:** To perform empirical research to measure the economic significance of the private lion industry. The results were discussed in Chapter four.
- **Objective 4:** To draw conclusions and make recommendations concerning the problem statement in this study for further research based on the content of and results from Chapters 1, 2, 3 and 4. Various conclusions and recommendations can be made concerning the objectives of the study. In the present chapter the primary

focus will be placed on the main conclusions regarding the literature study, and empirical results. Recommendations stemming from the study will also be made.

Chapter five is divided into four main sections:

- Conclusions regarding the literature study
- Conclusions regarding the empirical results
- Recommendations.

5.2. CONCLUSIONS

This section is split into two parts, the first containing conclusions from the literature study (Chapter 1, 2, 3) with the second part offering conclusions regarding the empirical results (chapter 4). (See Figure 5.1).

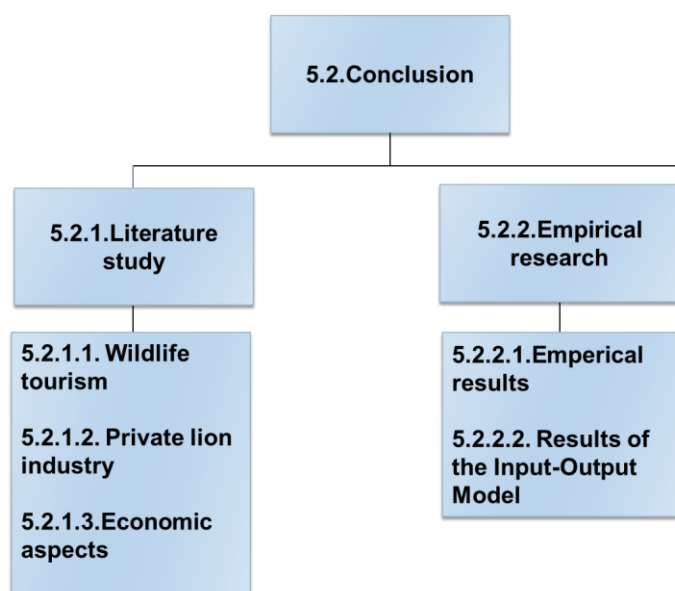


Figure 5.1: Chapter outline

5.2.1. Conclusion regarding the literature studies

This part is divided into three sections, the first dealing with wildlife tourism, the second with the private lion industry and the third providing an overview of assessing the economic value of wildlife in line with the literature study.

5.2.1.1. Wildlife tourism

The following conclusions can be reached regarding wildlife tourism. The literature discusses the following:

- Wildlife tourism can be defined as an area of overlay between nature based tourism, ecotourism, consumptive and non-consumptive use of wildlife, rural tourism, and human relations with wildlife. It is tourism that is based on encounters with non-domestic (non-human) animals, such as lions (cf. 1.2).
- Tourism of this kind is a method to protect sustainable economic advantages while at the same time supporting wildlife protection and host communities; therefore it can be perceived as one of the key drivers of wealth and economic empowerment (cf. 1.2).
- The majority of such tourism activities feature wildlife as their leading or meaningful component of the whole wildlife experience (cf. 1.2). In order to practice successful wildlife tourism it is crucial to establish the equilibrium between visitors' enjoyment and conservation needs (cf. 2.2).

- **Sustainability of wildlife tourism**

From the literature study the following conclusions can be arrived at regarding the said sustainability:

- It is important that sustainable tourism, in terms of standards and living, meets the needs of the host community to achieve social sustainability in local communities and to give assistance to their protection and development (cf. 2.2.5). Wildlife tourism can only be sustainable if it contributes to the conservation and survival of wildlife species and their habitats, supports local communities and community development, offers good wildlife tourism quality and is commercially viable (cf. 2.2.5).
- National, regional and local strategic planning frameworks need to implement wildlife tourism development in order to achieve sustainability. This implies that resources need to be used effectively by those undertaking development in such a manner that future generations can do the same (cf. 2.2.5).
- When such development takes place it is important that it comply with the principles of sustainability (cf. 2.2.4). Concepts that must be looked at to measure sustainability and develop activities which will have minimum impact on

wildlife and the environment are: the planning of sustainable wildlife tourism, the effect that host communities will have, and the impact of the development of wildlife tourism on the environment (cf. 2.2.4).

- Factors that are most relevant for sustainable wildlife tourism are financial viability; visitor satisfaction, visitor education, and protection of the environment (cf. 2.2.4).
- The key factors for sustainability within wildlife tourism can be defined as: concerns as regards the quality of the experience that is offered to visitors, to benefit the host communities through economic returns, to ensure protection of biological diversity. Sustainable tourism requires continuity of the culture of the host community, as well as of the visitor support or tourist demand; it is important that tourism balance the needs of the host, guest and destination environments (cf. 2.2.4).
- It is very important to take the elements of sustainability, physical, economic and social, into consideration and any traces that excites between the three elements (cf. 2.2.4).
- Sustainable tourism developments include an extensive range of aspects; as a result it is crucial to establish a long-term strategic plan combined with a management process (cf. 2.2.5).
- **Impacts of wildlife tourism**
Wildlife tourism results in both positive and negative impacts on the environment and host communities (c.f. 2.2.3). The following impacts were indicated in Chapter 2 as positive ones:
 - Large amounts of income are generated from consumptive and non-consumptive use of wildlife tourism.
 - Wildlife tourism benefits conservation and has a positive impact on nature.
 - It has a significant impact on the growth in the number of wildlife species and adds value to conservation.
 - Job opportunities are created through wildlife tourism, which offers entrepreneurial opportunities.

- Such tourism offers the opportunity to develop more and better infrastructures.
- Tourism of this nature broadens education, enhances an appreciation of culture traditions and reinforces preservation of heritage and traditions.
- Wildlife tourism could lead to visual and structural changes. It may lead to new uses for marginal, unproductive land, the re-use of neglected buildings as well as the regeneration or modernisation of building environments on farms.

The following impacts were indicated in Chapter 2 as negative:

- Wildlife tourism has a long term impact on animals and their population such as habitat modification, harvesting, as well as the disturbance and pollution of the environment.
- Even though wildlife tourism is environmentally friendly, unwitting damage can be caused by wildlife tourists for the reason that the latter tend to sympathise with wildlife issues and conservation.
- Leakages in the industry. There are concerns that funds raised from wildlife tourism such as hunting sometimes do not end up in the pockets of local businesses and community chests.
- Unethical practice. Irresponsible game farm and lodge owners, who allow illegal and unethical practices, such as the hunting of caged animals or shooting game unethically, pose a threat to the industry's prospects.
- Wildlife tourism leads to the loss and destruction of habitat, and change in species composition if not managed well.
- Increase in land value. The cost incurred in developing game farms, game ranches and nature reserves is tremendous. This automatically increases the value of the land, making it expensive for new participants to buy land.
- Wildlife tourism has an impact on animal behaviour. Uncontrolled activities such as hunting may lead to a population decline and extinction of local wildlife, specimen collection, killing of animals for safety reasons and for comfort of tourists.

- **The private wildlife sector**

The following conclusions can be reached regarding the private wildlife sector

- A large percentage of conservation activities takes place on private land, which makes a significant contribution to the tourism industry and nature conservation (cf. 2.3).
- It contributes to the awareness of the importance of wildlife as well as the socio-economic advantages of well conserved wildlife (cf. 2.3).
- The private sector rests on four pillars: breeding of game and rare/endangered species, hunting, wildlife tourism attractions and lastly game products (cf. 2.3).
- Each pillar offers various opportunities; however there are various advantages and disadvantages as discussed in chapter 2 (cf. 2.3).

5.2.1.2. Private lion industry

The following conclusions can be arrived at regarding the private lion industry:

- The ownership of lions is customarily classified into two main categories, the private sector and state owned, to which the former makes the largest contribution (cf. 1.10).
- Lions represent one of the main attractions for the general public, are the most sought after species for tourists visiting game reserves and national parks and play a major role in trophy hunting (cf. 1.1).
- Lions are valuable for both consumptive and non-consumptive forms of tourism such as hunting and ecotourism (cf. 1.2).
- The four main demands for lions from an economic perspective are the following: (1) to view lions in their natural habitat, (2) to hunt lions, (3) the market for lion products and finally (4) the opportunities that are created for researchers to determine these animals' contribution to the natural ecosystems (cf. 1.1).
- The lion industry has conservation value and can benefit the community in an economic manner (cf. 1.1).

- The lion industry can be a major source of economic benefits and offers a variety of advantages for different countries if lions are correctly and sustainably utilised (cf. 1.2).
- Large amounts of financial income can be generated for local communities in terms of consumptive and non-consumptive use (cf. 1.2).
- The lion industry forms part of wildlife tourism and contributes significantly to this throughout South Africa. Lions are also essential for viability and profitability for lodges, breeding and hunting (cf. 1.3).

5.2.1.3. Economic measuring methods

In Chapter 3 various economic impact concepts and economic measuring methods were discussed in order to determine which methods would be the best option to achieve the main goal of this study.

The following conclusions can be reached regarding these economic concepts and theories:

- **Economic value**

Research implies that the concept of economic value can be seen as:

- Effective distribution of scarce resources in order to increase the well-being of society (cf. 2.3).
- Any net change in the welfare of society (cf. 2.3).
- Economic value can be categorised into two main categories, namely use value and non-use value (cf. 2.3).

- **Economic impacts**

Economic impacts can be defined as:

- The study of the production, distribution and consumption of wealth in human society (cf. 3.3).
- Influence of economic activities in a given area (cf. 3.3).
- The net economic change in a host community resulting from tourists spending in a specific area (cf. 3.3).

- **Concept of externalities**

Research in this study implies that this concept can be perceived as:

- A key element to take into consideration when developing management strategies for wildlife tourism (cf. 3.3.1).
- Emerging when actions of producers or consumers have unforeseen positive or negative indirect external effects on other consumers or producers (cf. 3.3.1).
- Positive externalities appear when the effect of an action benefits others (cf. 3.3.1).
- Negative externalities emerge when an action harmfully affects others (cf. 3.3.1).
- When externalities are present and not dealt with in a centralised manner, they might be negative (cf. 3.3.1).

The following conclusions can be arrived at regarding the different economic impact measuring methods:

- **Contingent valuation method (CV) / Willingness to pay**

- This is used to determine the economic value of non-market environmental characteristics or services (cf. 3.3.2).
- One of the most commonly used techniques and the most advanced method for environmental evaluation (cf. 3.3.2).
- Determines what people are willing to pay for a service or product (cf. 3.3.2).
- There are various aspects that affect the willingness to pay for a product or service (cf. 3.3.2).
- Critique of the contingent valuation method involves the hypothetical nature of the questionnaire and its shortcomings in validating responses (cf. 3.3.2).

- **Financial survey model**

- The function of this model is to present a report on all the internal and external financial activities of a sector or event (cf. 3.3.3).

- Financial survey models are used to determine a financial opinion without taking the quantitative context into deliberation (cf. 3.3.3).

- **Opportunity cost**
 - Opportunity costs are used by economists to understand the behaviour of individuals and firms (cf. 3.3.4).
 - The concept integrates the assumption of scarcity (cf. 3.3.4).
 - The value of a service or good is based on this concept (cf. 3.3.4).
 - The opportunity cost of any action can be regarded as the value of a foregone opportunity (cf. 3.3.4).

- **Travel cost method**
 - This is based on the presumption that the cost of travel to reach a specific destination or attraction is an intermediary factor for the price paid to use that resource (cf. 3.3.5).
 - It is used to measure the value of certain conditions of the environment or species (cf. 3.3.5).
 - This method uses the cost of travel as a proxy for the price of using a tourist site (cf. 3.3.5).
 - There are various criticisms regarding the said method (cf. 3.3.5).

- **Social Cost Benefit Analysis/ Economic Analysis**
 - This method is based on the concept of welfare economics (cf. 3.3.6).
 - SCBA is generally used when one wants to evaluate whether a proposed project will add benefit or cost to society (cf. 3.3.6).
 - It is a process to evaluate the merits of a specific project or course of action in a systematic and rigorous manner (cf. 3.3.6).

- This method could be used as a framework to measure any benefits or costs against all other benefits and costs (cf. 3.3.6).
- It can be utilised to mentor decisions about the relative ranking, or prioritisation, of various investment options (cf. 3.3.6).
- It could be used to decide what the economic value is of a service or product (cf. 3.3.6).
- Cost benefit analysis is subject to various constraints, such as the accuracy of data used in the evaluation process (cf. 3.3.6).
- Other limitations that exist within the said analysis are the following: equity, valuation, project screening, and tool use (cf. 3.3.6).
- The main focus of SCBA is to determine:
 - Economic benefits of the project that reflect social value in terms of price (shadow price)
 - What the impact of the project will be on the distribution of income in society
 - What the impact of the project will be on the level of savings and investments in society
 - The contribution of the project towards the fulfilment of certain merit wants such as sufficiency, employment etc. (cf. 3.3.6).
- **Input and Output model (I-O)**
 - This can be described as sets of equations which describe the component that links the output of one industry within all other industries in an economy (cf. 3.3.7).
 - These models can be used to determine the impact within each industry and are able to provide more significant information than do measures of the mere income, output and employment (cf. 3.3.7).
 - They can offer a complete method to estimate the flow of money between sectors, sub-sectors, organisations, businesses and consumers, while they

measure the interdependence effects when applying the numerous multipliers (cf. 3.3.7).

- They may also be used to analyse any economic effects in the demand and supply chain of an industry.
 - They provide a framework for what each business must purchase from all the other sectors, to be able to produce a rand's worth of goods and services (cf. 3.3.7).
 - Input and output models are able to measure the secondary effects (indirect or induced) of visitor spending by determining the economically active linkages between sectors (cf. 3.3.7).
 - The input and output models are limited by various constraints such as fixed prices, a short time frame and unidirectional sector impacts (cf. 3.3.7).
 - This model serves as an important tool in decision making with regard to regional development (cf. 3.3.7).
- **Computable General Equilibrium Model (CGE)**
 - Advantages that this model provides include that it is a useful framework to understand and manage structural changes and to build bridges between theorists, planners and practical policy makers (cf. 3.3.8).
 - Within the economy CGE models cover the entire range of sectors, including primary and secondary activities, as well as services.
 - The CGE model accounts for all interrelationships that appear between the numerous sectors (cf. 3.3.8).
 - The objective of CGE models is to be able to convert the abstract portrayal of an economy into realistic, solvable models of substantial economies (cf. 3.3.8).
 - The CGE uses substantial economic data to express an outcome for how an economy might respond to changing technology, policy or other external factors (cf. 3.3.8).

- This model is subject to various constraints such as being very expensive and extremely time consuming (cf. 3.3.8).
- **Social Accounting Matrix (SAM)**
 - The purpose of the SAM model is to categorise numerous institutions according to their socio-economic background, rather than their economic or functional activities (cf. 3.3.9).
 - The SAM is a single matrix that demonstrates the interaction between consumption and capital accumulation, production and income (cf. 3.3.9).
 - This model can be used as a platform for the rational arrangement of statistical information as far as income flows in a country's economy within a set period which is usually a period of 12 months (cf. 3.3.9).
 - It may be utilised to examine the interrelationship between production structure, income distribution and household expenditures (cf. 3.3.9).
 - Numerous types of multipliers can be derived from SAM models to capture the direct, indirect and induced impact on output (cf. 3.3.9).
 - Three principal motivations that underlie the development of SAMs are:
 - they help to organise and bring together data and assist in enhancing the range and quality of estimates
 - they comprise an exceptional method of illustrating information
 - they illustrate a beneficial detailed framework for modelling (cf. 3.3.9).
 - SAM models are limited by various constraints such as that this model is demand-driven and are able to deal with only a few assumptions; it is also not a good tool to make practical recommendations (cf. 3.3.9).
 - The SAM model is a meso-level framework that serves as a usual link between a macro framework and a more detailed description of markets and institutions (cf. 3.3.9).

5.2.2. Conclusions regarding the empirical results

This part consists of two sections: conclusions regarding the interviews conducted and those with respect to the SAM analysis.

The following main conclusions can be reached regarding the survey that was conducted:

5.2.2.1. Socio-demographic aspects

- This study indicated that the majority of participants (77%) are male, Afrikaans spoken (77%), their average age is 51 years and the majority are well educated with a tech diploma/degree (32%) or a university degree (27%).
- The majority of participants are situated in the Free State (45%) and the North West provinces (36%).

5.2.2.2. Facility related management

- The majority (72%) of participants have not received any training regarding the management of and care for lions while only 14% have had some kind of formal training.
- The largest percentages of participants (43%) have less than 5 lion camps on their premises.
- The average size of lion holding facilities is less than 200 hectares.
- 32% of the participants indicated that their lion holding facilities are 50 meters or less from any human structures.
- The largest percentage of participants (45%) paid between R1.1 million and R5 million for the development of their lion holding facilities.
- Construction of lion holding facilities cost an average of R1 385 000.
- 55% pay less than R50 000 to run their lion holding facilities per month. The average expenses per month are R50 000.
- The majority of participants (68%) have a keeping permit while the same percentages (68%) possess a breeding permit.

- The top three provinces in which privately owned lions are situated are the North West (55%), Limpopo (32%) and Free State provinces (11%).
- Participants own an average of 28 lions on their farm.
- The main reasons among participants for possessing lions were the following:
 - For conservation/genetics (64%)
 - To breed with lions (41%)
 - For wildlife tourism purposes (32%)
 - For hunting purposes (32%).
- **Hunting aspects**

The following conclusions can be arrived at regarding lion hunting:

- 67% of participants are conducting it.
- 73% indicated that the lions hunted are their own.
- 91% do not allow other outfits to hunt lions (drop-offs) on their premises.

5.2.2.3. Economic aspects

The following conclusions can be reached regarding the economic aspect of the private lion industry:

- The majority of employees who work on lion farms are male (61%).
- The average price for a male lion is R180 000, for a lioness R45 000 and for cubs R20 000.
- Statements that were perceived as extremely important in order to contribute to the profitability of the private lion industry were the following:
 - To keep lions for own use
 - To sell to other breeders
 - To sell lions to hunting outfits.

- Statements that were regarded as not important at all in order to contribute to the profitability of the private lion industry were as follows:
 - To trade/export lion products
 - To sell lions at auctions.
- The majority of participants indicated that the largest percentage of income is derived from tourism activities and hunting of lions.
- The average annual income of participants in 2015 was R33 187 917.

5.2.3. Conclusions regarding the SAM analysis

The following conclusions can be arrived at regarding this analysis:

- A typical lion breeder spends 63% of operational cost on running cost per month.
- The largest spending of participants is on manufactured goods.
- Large indirect and induced impacts through the “backward linkages” are also largely experienced in the manufacturing sector, reflecting an indirect impact of R182 656 and induced impact of R263 551.
- A total of 1 680 jobs are sustained in the economy due to lion breeding activities.
- The sectors most affected in terms of job opportunities are the trade, accommodation and catering sector, financial and business services and the manufacturing sector.
- In total R373 200 spent by a typical lion breeder, creates income of up to R1.79 million for the economy. Thus excludes the salaries/ wages paid by the typical farmer which average an additional R226 800 per year; if salaries and wages are included a total of R600 000 per year is spent on operational costs by a typical lion breeder. Multiplying it this by the number of breeding facilities (297) amounts to R178 200 000 per year.
- Hence a total of R493 614 000 is generated from the lion industry.

5.2.4. Challenges and problems in the lion industry

It was found that the major problems and challenges in the lion industry are the following:

- Ordinances and legislation governing the permits differ in each province.
- The skewed perception of the public regarding the lion industry, and negative media publicity.
- Hunting of lions that are carried out unethically.
- Banning of the hunting of captive bred lions will put pressure on free roaming lions

5.3. RECOMMENDATIONS AND RECOMMENDATIONS

The following recommendations are made regarding the private lion industry:

- That the ordinance and legislation controlling the lion industry (permits) need to be reconsidered. It should be considered that all the provinces devise the same rules and regulations in terms of permits. This will also make the transport of lions from one province to another easier and will reduce the challenges that stem from the different rules and regulations. This should also assist the private lion industry to contribute more to economic growth in South Africa.
- Guidelines in terms of management should be developed based on natural ecological processes to help lion owners to enhance the lion industry further.
- Strategies need to be developed to introduce more lions to non-captive environments.
- Attention needs to be given to the incorrect public perceptions of the lion industry that are mainly caused by the negative and or inaccurate information that the media provide to the public. It is important to ensure that the public receives accurate information that is based on sound facts. This can be done by issuing monthly reports regarding the lion industry, and acting immediately on poor media reports.
- A framework or study group for lion management needs to be developed. It is important that lion farmers receive proper training with regards to managing and taking care of lions. It is recommended that before lion breeders start breeding with

lions, they consult with such study groups beforehand. This will ensure better management in the lion breeding fraternity.

- Unethical hunting practices, such as canned hunting, need to be stopped, in order to improve the image of lion breeders.
- Proper data capturing plans regarding the issuing of permits and their record keeping need to be developed.
- It is important that the public understand the consequences if lion hunting is banned in South Africa: this will result in the loss of a large number of jobs and the closing down of various businesses such as “license/permit departments, taxidermy services, hunting gear suppliers, hunting organisations, game translocation and capturing services, auctioneers, veterinary services and hunting clothing suppliers to name but a few. Other areas affected are the accommodation sector and transport sector; in other words, the tourism industry that many African countries rely on” (Van der Merwe, 2016).

5.3.1. Recommendations regarding further research

- It is recommended that a management framework is developed for lion owners to ensure that this industry is properly managed and to enhance the private lion industry even further.

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**DETERMINING THE ECONOMIC SIGNIFICANCE OF THE LION INDUSTRY IN THE PRIVATE
WILDLIFE TOURISM SECTOR**

SECTION A

SOCIO DEMOGRAPHIC

1. Year of birth?

	1
--	---

2. Gender?

Female	1
Male	2

3. Home language?

Afrikaans	1
English	2
Other, please specify:	3

4. Highest level of education?

Primary school completed	1
Some high school	2
Matric	3
Tech diploma/ degree	4
University degree or postgraduate degree	5
Other, please specify: _____	6

5. Have you received any training in regards with managing and taking care of your lions?

Yes	1
No	2

5B. If yes, where and what

6. Are you a member of the SAPA (South African Predator Association)?

Yes	1
No	2

7. If not why not?

SECTION B**FACILITY MANAGEMENT****8. In which province is your lion facility located?**

Eastern Cape	1
Free State	2
Gauteng	3
Limpopo	4
Mpumalanga	5
Northern Cape	6
North West	8
Western Cape	9

9. What kind of permit do you have regarding your lions?

Keeping	1
Trading	2
Breeding	3
Hunting	4

10. What is the average size of your facility?

How many pens/camps?	
How many hectares?	
Size of your hunting camp?	

11. How many lions do you have in your facility?

White lions	10
Normal colored lions	16
Total	26

12. What is the main purpose for having lions?

Hunting	1
Breeding	2
Conservation/ genetics	3
Wildlife tourism	4

13. How far are your facilities situated from any human structure?

0-50 meters	1
51-100 meters	2
101 – 300meters	3
301 – 500 meters	4
501 – 700 meters	5
701 – 1000 meters	6
More than one kilometer	7

14. How many are male/female/cubs?

Males	
Females	
Cubs	

15. How important is the following regarding off-spring breeding?

Question 15 is to determine how important the following statements are for the profitability of lion breeding. Please indicate to what extent you agree on the following questions on a scale 1 – 5, where 1 =not important at all, 2 = less important, 3 = important, 4 = very important, 5=extremely important.

Off spring					
	1	2	3	4	5
Sell to other breeders	1	2	3	4	5
Sell to hunting outfitters	1	2	3	4	5
Sell lions at auctions	1	2	3	4	5
Keep for own use	1	2	3	4	5
Export	1	2	3	4	5
Other , please specify					

16. If lion hunting is part of your business who is responsible for the hunting thereof?

You self	1
Other outfitters	2

17. If lions are being hunted on your premises, where do these lions come from?

Own lions	1
Lions purchased from other breeders	2

18. Do you allow other outfitters to hunt lions which do not belong to you at your farm (drop-offs)?

Yes	1
No	2

19. Do you keep record of the growth, purchase and sale of the lions? (A stock and breeding register)

Yes	1
No	2

20. What accommodation facilities do you have on your farm? (Please specify)

Lodge	1
Chalets	2
Rooms	3
Tents	4
Other (Specify)	5

21. What are in your opinion the biggest problems/ challenges for the industry?

SECTION C

ECONOMIC ASPECTS

22. How many people are employed by you due to your lion/Predator farming?

Male	9
Female	4
Total	13

23. How much did the construction of your lion facility cost?

R	
---	--

24. What is the total cost per month to run your lion facility?

R	
---	--

25. Give a percentage break down of total operational cost per month for the following of lion breeding:

	%
Running costs (Wages, salaries, water & electricity, maintains, repairs & administrative repairs)	
Marketing	
License fees	
Insurance	
Operating lease	
General department	
Total	100 %

26. What percentage of your income regarding your breeding is due to:

%	
Hunting of lions	
Lions traded	40
Tourism activities	60
By-products	
Skins	

Bones	
Nails	
Teeth	
Other, please specify _____	
Total	100%

27. What is the average price per lion sold by you and number thereof for 2014?

Male	R
Female	R
Cubs	R

28. What is your income from derivatives in 2014?

Lion bones	R
Skins	R
Other body parts	R

29. What was your total income from your lion farming only, without other predators business in 2014?

R

CERTIFICATE

D N R LEVEY (PROF.)

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TO WHOM IT MAY CONCERN

This is to certify that I have edited the following document for English style, language usage, logic and consistency; it is the responsibility of the author to accept or reject the suggested changes manually, and interact with the comments in order to finalise the text.

Author: Jauntelle C Els

Institution: Department of Tourism, Potchefstroom Campus of the North-West University

Degree: MA in Tourism Management

Title: Determining the economic significance of the lion industry in the private wildlife tourism sector

Sincerely

DAVID LEVEY

Electronically signed

2016-11-21