AN EXPLORATION OF FACTORS INFLUENCING WILD ANIMALS POACHING IN RUVUMA REGION TANZANIA

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A THESIS SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF THE OPEN UNIVERSITY OF TANZANIA

2019

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by The Open University of Tanzania a thesis titled: ***"An Exploration of Factors Influencing Wild Animals Poaching in Ruvuma Region Tanzania"*** in fulfilment of the requirements for Degree of Doctor of Philosophy (PhD) of the Open University of Tanzania.

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Rev. Dr. Lechion P. Kimilike

(Supervisor)

……..

Date

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DECLARATION

I, **Jerome Metody Nilahi**, do hereby declare that, the work presented in this Thesis is Original. It has never been presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfilment of the requirement for the Degree of Doctor of Philosophy (PhD).

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Signature

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Date

DEDICATION

I dedicate this work to my beloved mentor the late Wayne Lottar who was my first advisor, inspired and encouraged me to conduct a research on wild animals' poaching in Ruvuma Region. Very unfortunately his life was cut short in 2017 when this study was in the proposal stage.

> *Dear Lottar, I thank you very much for your encouragement, intellectual advice and support. Indeed, you are and you will remain my anti-poaching hero forever. I wish you could be alive today and see this work! I loved you but God loved you more. I will always remember you. May your soul rest in eternal peace.* AMEN.

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ABSTRACT

The general objective of this study was to explore factors influencing wild animals' poaching in Ruvuma Region Tanzania. The study adapted the Theory of Planed Behaviour (TPB) in exploring the influence of individual attitudes, social factors and facilitating conditions on intentional wild animals' poaching. Moreover, the study adopted the pragmatic approach whereby qualitative influenced data collection using case studies while developing an in-depth interview of factors influencing wild animals' poaching. Field observation methods were also employed. To validate case study and field observation, quantitative method was also employed using self-administered questionnaires from a sample of 283 Game Wardens and Village Game Scouts. Qualitative data were thematically analysed using NVivo 10 software whereas quantitative data were analysed by correlation and multiple regressions techniques. The findings of the study indicated that individual attitudes (AT) and social environment (SO) have positive and significant influence on intentional poaching of wild animals in Ruvuma Region, while facilitating conditional (FA) was found to be with insignificant influences on intentional wild animals poaching. The study concludes that individual attitudes and social environment influence the intentional wild animals' poaching in Ruvuma Region. The study recommends the improvement of existing wild animals' poaching mitigation measures by addressing individual attitude and social environment in anti-poaching activities. Factors that hinder making FA to perform poorly in the model should be traced and be adopted to enhance wild animals' poaching mitigation measures in Tanzania.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AEWA	Agreement on Conservation of Africa- Eurasian MigratoryWaterbird
AGFI	Adjusted Goodness of Fit Index
AT	Attitudes
AVE	Average Variance Extracted
AWF	African Wildlife Foundation
CFI	Comparative Fit Index
CITES	Convention on International Trade in Endangered Species of Flora and Fauna
CFA	Confirmatory Factor Analysis
CMS	Convention on Migratory Species of Wild Animals
CR	Critical Ratio
DGO	District Game officer
DSO	Distinguished Service Order
EFA	Exploratory Factor Analysis
ESGR	Eastern Selous Game Reserve
FC	Facilitate Condition
GCAs	Game Controlled Areas
GDP	Gross Domestic Product
GFI	Goodness of Fit Index
GO	Game Officer
GW	Game Warden
IFI	Incremental Fit Index

IUCN	International Union for the Conservation of Nature
KMO	Kaiser Mayer Olkin
LRA	Lord’s Resistance Army
MI	Modification Index
MNRT	Ministry of Natural Resources and Tourism
NGOs	Non Government Organisations
NVIVO	"N" stands for Non-numeric data, "Vivo" means in real life
PA	Poaching intention
PBC	Perceived Behavioural Control
PGCR	Proposed Game Control Reserve
PhD	Doctor of Philosophy
RAS	Regional Administrative Secretaries
RGO	Regional Game Officer
RMSEA	Root Mean Square Error Approximation
RPC	Regional Police Commander
SADC	Southern African Development Community
SEM	Structural Equation Model
SPSS	Statistical Package for Social Science
SNWPC	Selous Niassa Wildlife Protected Corridor
SRMR	Standard Root Mean Residual
SRW	Standardized Regression Weight
TANAPA	Tanzania Nationals Parks
TAWIRI	Tanzania Wildlife Research Institute
TAWWA	Tanzania Wildlife Management Authority

TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UK	United Kingdom
UNWTO	United Nations World Tourism Organization
UNNESCO	United Nations Educational, Scientific and Cultural Organization
URT	United Republic of Tanzania
VGS	Village Game Scouts
WMAs	Wildlife Management Areas
WSRTF	Wildlife sector Reform Task Force
WTTC	World Travel and Tourism Council
WWF	World Wildlife Fund

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter presents the introductory information to the study by articulating aspects which include background to the study, statement of the problem, research objectives, hypothesis, significance of the study, limitation of the study and organization of the thesis.

1.2 Background to the Problem

Wild animals' existence can be traced back to the beginning of the world (Brown & Harrs, 2009; Genesis 1-2). Chivian (2003) pointed out that the existence of wild animals has major contributions in ecological, economic and socio- cultural development of humankind. Pastor (2010) comments that, the role of nature and non-human in civilization has been discussed throughout history. It has been found that wild animals have their own role in the realm of human morality and judgement. Plato (1991) argues that the idea of humans and animals coexisting in a peaceful manner has been considered since the days of the Greek Empire.

On the other hand, World Wildlife Fund (WWF) reports that globally, wild animals' population have decreased by 60% between 1970 and 2017 due to poaching (WWF, 2018). Some statistics point out that the most admired areas for wild animals' poaching are the rain forests of Brazil and Latin America, China, India and Africa, where some of the most diverse and colourful fauna are found (Giovanni, 2006). According to the Convention on International Trade in Endangered Species of Flora

and Fauna, [CITES] (1973), poaching has been unlawful for a long time ago; however, it was during the epoch of the late middle stone era when it became a punishable offence. Before this moment in time, the right to hunt was restricted to landlords and upper class that had the hunting resources. Peasants generally did not have arms, knowledge or spare time to hunt; as an alternative, they used snares to seize wild animals for food (Rivesa, 2016 & National Master…). Mackenzie (1988) argues that the tribes hunted for food, an act often considered wasteful.

However, due to low population and simple hunting technologies, wild animals were not reduced alarmingly. Additionally, some taboos existed that prohibited hunting of certain species or hunting at certain times of the year (Nwusu, 2006). Currently, due to social economic development, poaching of wild animals has become a source of illegal income (Jackson, 2013). Muth and Bowe (1998) write that the driving force for wild animals' poaching includes a complex mixture of impulsive and rational factors. Such factors include commercial gain, household consumption, recreational satisfactions, trophy poaching, thrill killing, protection of self and property, rebellion, traditional rights, disagreement with specific regulations, and gamesmanship.

According to Koponen (1994), historically the Arab slave trade and tusks hunting went hand in hand. Although historians argue that the accurate period is not about when slave trade began but slave trade prolonged and became more structured in the second half of 18th century. There was also a huge demand for tusks, and slaves were the ones to carry them from the periphery to the marketing centres. Throughout history, human trafficking and tusks trafficking have been linked (Alper, 1975).

Figure 1.1: Ivory Porter

Source: Photograph Courtesy of Ivory Ton Library Association

Coupland (1986) and Michelle (2015) mention Tippu Tip as the founder of the trade. He was an Arab slave merchant and wild animal's tusks agent operating in Zanzibar just about 150 years ago.

Figure 1.2: A Group of Men Sit atop a Pile of Ivory Tusks, Zanzibar, Early 1900s

Source: Photograph by Carl E. Akely/National Geographic Creative

Similarly, Middleton (1992) comments that slavery and wild animal's tusks trafficking were done through caravans of slaves for tusks trade. The trade was common in some parts of Zaire (modern Democratic Republic of Congo) and in the

Western and Central parts of Tanganyika (modern Tanzania). Slaves were brought to the coast carrying tusks and from there to be sent to Zanzibar islands. Slaves and tusks were sold further to the Arab countries, Persia and India, Mauritania and Reunion (United Republic of Tanzania [URT] 2006,). Croucher (2006) argues that one of the routes that were used by the traders' caravan started in Ujiji at the shores of Lake Tanganyika. Many experts view this as the main route of mainly three routes that were documented in East Africa. The pioneers of all the major routes were African traders.

Nyamwezi caravans from central Tanzania, getting to the coast about 1800, developed the most important route from their homeland to Bagamoyo on the mainland directly opposite to Zanzibar (Middleton, 1992). Kamba tusks traders from central Kenya opened a route that ended in Mombasa. Eventually, this route crossed Kamba and Maasai country, branching east towards Uganda and north to Lake Turkana. The oldest route stretched from Yao country to Kilwa (URT, 2006). A caravan of human porters carrying goods over long distances was a labour-intensive, and therefore expensive, means of transportation. There were no roads or railroads. Slave animals were too vulnerable to deadly tropical diseases such as sleeping sickness (Croucher, 2006).

According to Donald (2003) tusks were distributed from the nearer and farther surroundings of the coastal strip. The trade on wild animal's tusks, slaves, and firearms in East and Central Africa displays strong parallels in respect to persons and the tribal groups involved business-related structures and trade mechanisms from Somalia to Mozambique. Klein-Arendt (2015) found that the hubs for this trade were Mozambique Island and Kilwa in the south, and Mombasa, Zanzibar, and the Lamu

Archipelago on the north. It is believed that traders arrived from Greece by the end of 18th century; the southern trade route ran from the hunting areas in Zambezia and Malawi to Portuguese-controlled Mozambique Island. At the beginning of the nineteenth century, Kilwa became the main export centre for tusks (Vernet, 2009).

Freeman-Grenville (1965) postulates that by the end of the 17th century the trade had a well organised system whereby Europeans, Arabs, the Swahili, and Indians were figured as wholesale buyers of wild animals' tusks. On the same vain Ross (1965) advocates that, slave traders cooperated with the Yao and Makua people of Malawi and Mozambique, who were wild animals' hunters. Latter transported tusks from regions west and south of Lake Nyasa to Kilwa and Mozambique Island where then the goods were conveyed to farther destinations, particularly Zanzibar.

By the time Germany, a late comer in European colonial expansion confirmed Tanganyika a colony in 1885. By then, the murder of the wild animals had already escalated. Iliffe (1979) points out that business hunters of different nationalities, many supposedly Boers from South Africa, hunted not only for tusks, skins and horns, but also for meat that was sold in the villages. They often contracted local Africans to shoot elephants and other valuable game on their behalf (Rodgers. *et al.,* 1982).

According to Gray (1962) one episode documented poaching of the largest elephant ever recorded with ivories weighing 235 and 226 pounds respectively. They were 3.17m and 3.10 m long. This bull was shot in 1898 at Mount Kilimanjaro by Senoussi, an African slave of the tusks dealer Shundi, who was an Arab from Zanzibar. The tusks caused a consciousness even among the ivory merchants of Zanzibar, who were used to seeing big ivory at that time (Koponen 1994).

Adams and McShane (1996) pointed out that poaching of wild animals in Africa is also connected with the triangle slave trade from East Africa. Wildlife products like tusks and wild animal's skins were wild animals' hides such as lions, leopards, cheetahs and crocodiles traded to Europe. The United Republic of Tanzania [URT] (1973) reports such products are now in the British Museum in London and currently on exhibition. Detailed trade statistics, which were kept from 1903 onwards showed that between 1903 and 1911, 256 tons of tusks were exported, which represents approximately 1,200 to 1,500 elephants killed per year (Parker, 1983).

According to Wilson and Ayerst (1976) at the same time an amazing 53 tons of rhino horns were exported representing 2,000 to 2,300 rhinos shot per year. The eight year period also saw a good thousand live animals exported; that is 50 tons of antelope horns and 2.7 tons of valuable bird feathers. On the other hand it has been found that the tourism industry on wild animals contributes 10.5% Gross Domestic Product (GDP) globally and 8.1 GDP in Africa (United Nations World Tourism Organization [UNWTO], 2017).

Similarly, wild animals in tourism industry provide one in every ten jobs globally (World Travel and Tourism Council [WTTC], 2017). Most important, tourism in wild animals-based is included in the Poverty Reduction Strategies of more than 80% of low-income countries including Tanzania (Ashley *et al*., 2000). In Tanzania, it accounts for 17% GDP and contributes 25% of revenue in terms of foreign exchange (Kideghesho, 2016). Hence, realizing the importance of wild animals in economic development and tourism, most of the developed and undeveloped countries have put a lot of initiatives for mitigating wild animals poaching. Globally, efforts have been

made to lessen this illegal wild animals' poaching, including the banning of trade of tiger bones in 1993 in China, the attempted establishment of legal, captive bred wild animals' farms and the establishment of protected environments (Bennett, *et al.* 2007).

On the same vein the 2013 CITES conference in Bangkok labelled Tanzania, Kenya, Uganda, Malaysia, Vietnam, the Philippines, Thailand, and China as "the gang of eight" fuelling wild animals' products trade either as supplier, transit countries, or consumers (CITES, 2013). As a counter reaction against escalating wild animals' poaching, in March 2016, Jumanne Maghembe the then Minister for Natural Resources and Tourism suspended eleven senior officials on corruption allegations for allowing hunting of 300 monkeys without a permit (Mwalimu, 2016). Additionally, Tanzania's new wildlife policy gives local communities' rights to use wildlife, management opportunities and responsibilities (MNRT, 1998).

As a result in Ruvuma Region, it was revealed that certain initiatives like creating Village Game Scouts and law enforcements help mitigate poaching. For example from 2000-2015 the Ruvuma rangers captured 127 pieces of ivory. They also captured several kilograms of bush meat which included 202 kilograms of elephant meat, 246 kilograms of Hippopotamus meat, and 149 kilograms of buffalo meat. Other items seized were one skin of zebra, 17 teeth of common warthog and three scales of pangolin. Also education based on the importance of wild animals was being disseminated in the society and provision of licences authorising animals for hunting during holidays (Mmari, O. I. personal communication, 2016). However, poaching is far more valuable to the poachers and far more difficult to prevent. It poses a severe threat to the entire species. Wasser *et al*. (2009) point out that through DNA

fingerprinting shows how tusks seizures in Hong Kong and Taiwan provided further strong evidence that many tusks were poached in a relatively small area on the Tanzania and Mozambique border that includes the Selous and Niassa protected areas.

Despite notable importance of wild animals and initiatives taken, loss of biodiversity caused by poaching is quite alarming. Solovan *et al.* (2015) supportively argue that poaching in Asian countries is reaching critical levels, driven by irretentive demand for illegal wildlife products. Various authorities report high rates of poaching and undesirable result. African Wildlife Foundation (AWF) reports, rhino population has dropped by 97.6% since 1960 in Africa (Tanzania Wildlife Research Institute [TAWIRI], 2015). The report maintains that 900 mountain gorillas and only 2,000 Grev's zebra are available (Skinner, 2014). Lion is assumed to have lost 85% of its historical range (Young *et al.*, 2015). African elephant population dropped from 6.3 million in 1970s to less than 500, 000 (AWF, 2016). International Union for Conservation of Nature [IUCN] (2015) reported that in 1970s Tanzania had 110,000 elephants but in 2015 had only 43,000 elephants. It is also predicted that by 2020, populations of vertebrate species could have fallen by 67% over a 50-year period unless action is taken. If serious mitigating measures are not implemented by 2050, Tanzania will remain with only two wild animals protected area, Selous Game Reserve and Ruaha National Park (TAWIRI, 2017).

Given this situation, this study aims at filling the gap by exploring factors influencing wild animals' poaching in Ruvuma Region in Tanzania. The study also gives light on the conflicting conclusions drawn in the previous studies about factors influencing

wild animals' poaching. Therefore, building on the previous experience and studies, the current research takes up the aspect of exploring factors influencing wild animals' poaching that aims at helping in the minimization of wild animals' poaching.

1.3 Statement of the Problem

Poaching of wild animals in Tanzania is increasing at an alarming pace to the extent of extinguishing some or all species of wild animals. As a result, the Tanzania Government has tried to intervene this trend sometimes using the armed forces such as the Operation Uhai, in 1991 followed by operation Tokomeza in 2013 countrywide that included Ruvuma Region a joint operation of the Wildlife Department, Army and Police Force, had temporarily brought poaching under control by force. This is because, at that time every villager was perceived as a potential poacher and assumed to be an enemy of the Game Reserve Authorities.

Furthermore Tanzanian government has implemented a nationwide inspirational inspection of all licensed firearms in quest to curb proliferation of illicit small arms and light weapons, some of which are now being used in poaching. Even the formulation of Wildlife Management Areas (WMAs) in Ruvuma Region which aimed to benefit communities living near protected areas from wildlife with their care takers known as Village Game Scouts (VGSs) as law enforcements. Also education based on the importance of wild animals was being disseminated in society. Even though, the transformation of the Game Scouts Unity into a paramilitary force in 2017 poaching of wild animals is still a problem in Ruvuma Region.

Despite these intervention measures wild animals' poaching is on the increase. Studies done so far show how big the poaching is, but few studies if any, show the motives

behind the increase in poaching despite stern anti-poaching measures taken. For example, Kideghesho (2016) ascribed poaching of wild animals with social economic factors, Skinner (2014) associated wild animals' poaching with social cultural factors, while Saah (2012) attribute poaching of wild animals with political factors. This study therefore, was undertaken to find out the motives behind continued poaching in Tanzania particularly in Ruvuma Region despite the stern measures taken to prevent poaching. Further, the findings of the study will help the Government of Tanzania and other world organisations interested in wildlife conservation to find other means of eliminating poaching activities in Ruvuma Region Tanzania.

1.4 Objective of the Study

1.4.1 General Objective

The general objective of this study was to explore factors influencing wild animals poaching in Tanzania.

1.4.2 Specific Objectives

(i) To find out the significant influence of attitude on intention towards wild animals' poaching in Ruvuma Region Tanzania.

(ii) To investigate the significant influence of social environment on intention towards wild animals' poaching in Ruvuma Region Tanzania.

(iii) To analyse the significance influence of facilitating conditions on intention towards wild animals' poaching in Ruvuma Region Tanzania.

1.4.4 Research Hypothesis

Wisker (2008) pointed out that research hypothesis means to suppose, or suggest, something that can then be tested. The research hypothesis is central to all research

endeavours, whether qualitative or quantitative, exploratory or explanatory. The research hypothesis states what the researcher expects to find (Wisker, 2008). Kothari (2004) stresses that research hypothesis is the tentative answer to the research question that guides the entire study. The purpose of a hypothesis is to find the answer to a question.

In the context of this study, therefore, the predictive statements or hypothesis were developed in section 2.9.2. The developed hypotheses stated what the researcher was looking for. The independent variables which were extracted from theoretical and empirical literature review were attitude, social environment, and facilitate condition while the dependant variable was the intentional wild animals' poaching in Ruvuma region of Tanzania. The developed hypotheses which were under investigation are:

Null H1a: *Individual attitude does not have significant influence on intention toward wild animals' poaching in Ruvuma Region of Tanzania.*

Alternative H1b: *Individual attitudes have significant influence on intention toward wild animals' poaching in Ruvuma Region of Tanzania.*

Null H2a: *Social environment factors do not have significant influence on intention towards wild animals' poaching in Ruvuma Region of Tanzania.*

Alternative H2b: *Social factors have significant influence on intention towards wild animals' poaching in Ruvuma Region of Tanzania.*

Null H3a: *Facilitating conditions do not have significant influence on intention towards animals' poaching in Ruvuma Region of Tanzania.*

Alternative H3b: *Facilitating conditions have significant influence on intentions towards wild animals' poaching in Ruvuma Region of Tanzania.*

1.5 The Scope of the Study

This study puts forward aspects of factors influencing wild animals' poaching in Ruvuma Region Tanzania. As such they can potentially enhance ecological understanding responsibility and perspectives among Ruvuma people in Tanzania. This study concentrates on factors for wild animals' poaching as its limitation. Factors explored are based on physical environments of protected areas such as Game Reserve, Game Controlled Areas and Wildlife Management Areas.

1.6 Significance of the Study

1.6.1 Managerial Contribution

This study significantly lies in its potential to create awareness among communities on the seriousness of ecological crisis and particularly due to wild animals' poaching in Ruvuma Region and Tanzania in general. In addition, these findings stand up as a reference point to the Ministry of Natural Resources and other anti-poaching stakeholders. The anti-poaching should improve the social need and environments aspects of communities living near protected areas in order to decrease wild animals' poaching as summarized in sections 6.3.4.

1.6.2 Theoretical Contribution

Theoretically, the study advanced the Theory of Planned Behaviour (TPB) model into Tanzania wild animals' poaching context. TPB does not have indicator variable within its main constructs to predict behaviour like wild animals' poaching which leads in silence belief. This study contributed in theory by identifying the indicator variables imperically. The individual attitude and social environments variables have positive and significant influence on intentional wild animals' poaching in Ruvuma Region

Tanzania. Facilitating conditions on the other hand had insignificant influence as it is described in Figure 5.1.

1.6.3 Policy Implication

Findings on the subject of the exploration of factors influencing wild animals' poaching in Ruvuma Region Tanzania help to understand the influence level of intentional wild animals' poaching in Tanzania. For policy makers, the findings of this study have impact on policy aspects in terms of giving it a multi-sectoral integrative approach. It is also a motivational tool for enabling improved appropriate interventions on the key factors influencing wild animals' poaching in Ruvuma context. Therefore, the study findings produce new facts in this area. Results give out as data source to be used in policy decision making and assessment relating to factors influencing wild animals' poaching and utilization of the same at the national level as have been emphasized in section 6.3.4.

1.6.4 Academic Implication

To the researcher this study helps unfold factors influencing wild animals' poaching. Hence, the study contributes to the body of knowledge for scholars interested in knowing the factors influencing wild animals' poaching in Ruvuma Region Tanzania. The body of knowledge for scholars is widely based on main constructs of facts influencing wild animals' poaching specifically individual attitude, social environment and facilitation conditional as explained in the concluding chapter.

1.7 Limitations and Delimitation of the Study

The main limitation of this study was financial; this is because the researcher was self-sponsored. Financial hardship was experienced in the whole process of this study that

was the reason the report took a long time to be completed. Researcher was required some time to stop some activities until when he find money then continued what he stopped. The other limitation was serious diseases experienced during data collection. This study demanded field participant observation, in order to accomplish this objective, however, the researcher obtained diseases like malaria, urinary tract infection (UTI) and typhoid and severe diarrhoea which led to a three weeks admission in the hospital. This happened because the researcher was supposed to spend several weeks in protected areas whereby drinking water was not good and safe. After recovering from that illness then researcher continued with data entrees and data analysis processes. All in all the limitation and delimitation have not in any way impacted negatively in the quality of the data obtained and analysed and the discussion thereof.

1.8 Organization of the Thesis

The thesis is organized into six chapters as follows:

The first chapter presents the background of the study, research problem, research objective, research questions, hypotheses, scope of the study, significance of the study and limitation of the study of the study.

The second chapter presents both the theoretical and empirical literature review. These reviews consider different debates and researches related to this study. From such debated theories, that insights, hypotheses and conceptual framework were obtained.

The third chapter presents the methodology of the study. The chapter puts the study in context and data collection methods are indicated. Testing of the parametric

assumptions, reliability and validity tests as well as the measurement models are presented.

The fourth chapter presents the results of the study according to the study variables and hypotheses. The presentation is in the form of tables and relevant statistics.

The fifth chapter discusses the study findings. The discussion centres on comparing and contrasting literature with the results. New points of departure are identified and filled gaps presented. In this chapter, new knowledge is generated by stressing the theoretical implications from the study.

Chapter six concludes and recommends what should be done to solve the problems.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This chapter firstly presents a reflection on the theoretical literature that helped the researcher to identify the theory and address the study topic. Secondly, the researcher examines some empirical literature undertaken by different authors in order to concretise the envisaged statement of the problem. Thus, it helps the researcher to identify the research gap and conceptual framework for the proposed study;

2.2 Conceptual Definition of Terms

A conceptual definition is a definition outlining the basic principles underlying a term. In other words a conceptual means how reseacher would like it to be defined. For the purposes of this study, a conceptual definition was defined as some explanation of the reseacher's intended meaning through the use from current study.

Attitude means the degree way of thinking or feeling position in performing certain activities (Ajzen, 1991). In this study, attitude includes beliefs and opinions about the behaviour in poaching activities.

Buffer zone is an area peripheral to a protected area with the purpose of enhancing its protection. Restrictions might be placed upon resource and land use within the buffer zone (International Union for the Conservation of Nature [IUCN], 2014a).

Conservation area is an area preserved for its environmental or historical importance or interest, thereby protected by law against unwanted changes (Oxford University Press, 2014).

Game controlled area is a protected area where land and resource use other than wildlife is not restricted by law. Tourist hunting is the primary use of wildlife. Residence, cultivation and livestock keeping are allowed (Stolla, 2005).

Game reserve is a protected area where certain land and resource use are restricted. Activities such as burning, removing, cutting or injuring tree shrubs, saplings or seedlings as well as cattle grazing are prohibited (Stolla, 2005).

Human-wildlife conflicts are interactions between humans and wildlife that negatively impact social, economic or cultural life of humans, the environment, or wildlife conservation (WWF, 2005).

Intention means a concept formed by directing a mind towards an object (Downs & Hausenblas, 2005). This study describes intention as the reason for an individual's engagement in poaching activities.

National park is a large natural area set aside for the protection of the ecosystems and species within them. It also provides recreational, scientific, educational and visitor opportunities (IUCN, 2014b).

Poaching is an illegal hunting, killing or capturing of wild animals contrary to national and international conservation and wildlife management laws and regulations (Mace et al., 2005). This study understands poaching as any activity involving killing or hunting, capturing, selling, purchasing, possessing, transporting and using wild animals (or their parts) illegally or without permission in protected areas.

Social influence refers to the capacity of affecting character or behaviour of something (Ajzen, 1991). In this case, social environment measures the influence of other people institutions, natural environments and organizations in respect to poaching and illegal activities.

Facilitating conditions means a composition of control belief or beliefs about factors facilitating or impeding the behaviour (Downs & Hausenblas, 2005). In this study such aspects include internal factors such as occupation, educational level, and professional backgrounds of individuals towards poaching.

Wildlife corridor is an area utilized by animals for movement between suitable patches of habitat, often between protected areas like national parks. The wildlife corridor can help reduce wild animals' movement through human habitations (Mduma *et al.,* 2010).

Wildlife management area is a village land set aside for the conservation of wildlife with the purpose of enabling local communities in the participation of protection and utilization of wildlife resources, (Stolla, 2005).

2.3 Review of the Theory/Model

This section aimed at selecting a suitable theory. The theory that informed the researcher on the variables to be included in the development of a conceptual frame work while exploring factors influencing wild animals' poaching. The theory of planned behaviour (TPB) was selected to give a wide range of factors influencing wild animals' poaching in Ruvuma.

Theory of Planned Behaviour (TPB)

The theory of Planned Behaviour originated from the Theory of Reasoned Action (TRA) (Ajzen, 1991). Ajzen (1985) argues that TRA is insufficient when volitional action is unfinished. As a result, he proposed an extension of it and named the Theory of Planned Behaviour (TPB) with a supplementary variable of perceived behavioural control (Aronson *et al.,* 2003). TPB holds that behaviours are transformed through influencing intention. In the theory, the proximal predictor of one's behaviour is one's intention to connect in the behaviour. The intention is resolute by attitude toward the behaviour, subjective norm and perceived behavioural control (Ajzen, 1991).

Thus, attitudes, which are the combination of knowledge and a positive or negative judgment interact with social norms to decide behavioural intentions (Jacobson *et al*.2006). McCleery *et al.* (2006) argue that perceived behavioural control refers to perceived ability to successfully perform a particular behaviour, such as by possessing the necessary knowledge, resources and self-sufficiency, and exert control over one's life. This theory informed the researcher and provided further analysis on the influence of attitude, subjective norm and behaviour on wild animals' poaching in Ruvuma Region in Tanzania.

Despite empirical support of the TPB as with TRA, there is a controversial conceptualization of TPB construct because it does not have indicator variable, which measures the main variable. As result measurements of salient beliefs underlying the model remains a problem making it difficult to operationalize the TPB (French & Hankins, 2003). Carraro and Gaudreau (2013) found that TPB assumes that behaviour is the result of a linear decision -making process, and it does not consider that it can

change overtime. On the other hand, Rhodes and Courneya (2003) comment that TPB does not consider motivation such as fear, threat, mood or past experience on one's intentional to perform behaviour. Furthermore, the time frame between *intent* and *behaviour action* is not addressed by the theory. Beside those criticisms the TPB has almost 20 years of existence, and is proven that the theory is useful in predicting people's behaviour. Armitage (2001) has suggested that there is no need for omission of correlation studies for TPB. Sutton (2002) comments that intention, attitude, subjective norm and perceived behaviour control still have a role to play in predicting, thoughtful and changing one's behaviour. Satisfactory knowledge of these reasoned action variables and their role result to a broader theoretical approach.

Some empirical studies observe the suitability of TPB in studying wild animals poaching. Ward (2000) suggests that intentions to poach are strongly influenced by attitudes towards wild animals. Supportively, Daigle *at el*. (2010) explain that, subjective norm has a significant positive effect on individuals' intention towards wild animals poaching. Furthermore, Kaltenborn *at el.* (2011) carried out a study which aimed at extending understanding of adoption predicting hunting intentions and behaviour and TPB. Results revealed that poaching intentions strongly influenced perceptions of behavioural control, and this predictor correlated highly with theoretically derived set of underlying occupations and professional background.

2.4 Wildlife Policies and Legal Framework

In this study policy refers to recitation a statement of government priorities as explained in action and represented in law, operational orders and set of laws that elaborate rights and responsibilities on the use and management of natural resources

(Tyler & Mallee, 2006). Wildlife policy is traced back to 1891 when laws controlling hunting were first enacted by the German rule (Ministry of Natural Resources and Tourism [MNRT], 1998). United Republic of Tanzania [URT] (1973) indicates that the Governor had started to issue these in 1891, when the first hunting regulations were declared in Moshi District. This was only six years after the establishment of the Colony. It was a result of rapid advancement of commercial hunters from different nations. They hunted ivory, skin, horns, bush meat, due to cultural or religious belief, and personal ownership (Baldus, 1997). Tusks exports started to decline afterwards.

Chachage (1999) advocates that, the first general Wildlife Regulation for the then German East Africa dates back to 1896. Its intention was made clear by Hermann von Wissmann, the Imperial Governor, in a decree. Further decrees and implementing regulations were issued in 1898, 1900, 1903, 1905 and 1908, culminating in the Act of 1911 (URT 1973). Wilson and Ayerst (1976) argue that these policies regulated the hunting methods and the trade in wildlife with some endangered species being fully protected. According to the Hunting Act of 1911 the shooting of ostriches, vultures, secretary birds and owls as well as the collection of their eggs was forbidden.

Chimpanzees received full protection, as well as all female and young wild animals. Other species were put into classes of different levels of protection. They could only be hunted on the basis of controlled licenses. The Government was entitled to prohibit certain areas from hunting, if they had the impression that the pressure from hunting in these areas was too high (Baldus, 1997). These policies and regulations were more focused in protecting the interests of colonizers and their hunting agencies. Africans interests were not much thought out.

In 1905 the first Game reserve was established which now forms the larger part of Selous Game Reserve (MNRT, 1998). Mtahiko (2004) pointed out that in 1921, the British Government in Tanganyika established the Game Department. Its main role was to administer the game reserve, enforce hunting regulations, and protect people and crops from raiding animals. Again for Africans the emphases were to protect their crops against raiding animals, not considering how will Africans be benefiting from natural recourses. In 1928 and 1929 Ngorongoro Crater and Serengeti Game Reserve were established.

In 1949 Game Controlled Areas were established and divided into hunting blocks. Professional hunters and their clients were allowed to hunt trophy animals. Still communities living near protected areas were not concerned. After World War II in1951 the current frameworks of wildlife protected areas, national parks, game control areas, and game reserves were established. From 1961 to 1998 the Arusha manifesto guided wildlife conservation. Generally, these policies restricted entering, residing and hunting in national parks, game control areas, and game reserve without permission (MNRT, 1974; 1998; 2007).

According to Shauri (1999) the 1998 Wildlife Policy was the first comprehensive policy for conservation management and development of wildlife in Tanzania. Besides the 1998 Wildlife Policy, Tanzania has ratified international related natural resources conservation treaties. For example, Tanzania became member of CITES in 1981, Convention on Migratory Species of Wild Animals (CMS) in 1999, Agreement on Conservation of Africa-Eurasian Migratory Water bird (AEWA) in 1999, and signed the Lusaka Agreements in 1996. The country has also ratified Southern African

Development Community (SADC) protocol in wildlife conservation and law enforcement in 2002.

To implement policies for sustainable use and management of natural resources, the policies are backed by several laws which are Wildlife Conservation Act No. 5 of 2009 and its subsidiary legislation such as Ngorongoro Conservation Act (CAP 284 R.E. 2002); Tanzania National Parks Act (CAP 282 R.E. 2002); Local Government (District Authorities) Act (CAP 287 R.E. 2002); Natural Resources Act (CAP 259 R.E. 2002) and the Environmental Management Act No. 20 of 2004. The laws, among other things, prohibit human activities in areas considered hazardous.

Moreover, the new Wildlife Policy of 1998, with its revision in 2007 recognizes the need to empower local communities by giving them wildlife user rights management opportunities and responsibilities. The communities may have access through creating Wildlife Management Areas (WMAs) controlled by villages. The aim of this initiative is to ensure resources conservation within respective villages with the condition that villagers must bear significant cost of living with wildlife and managing them well (MNRT, 1998). Furthermore, Article 2 insists that benefit sharing in the WMAs and shall comply with guidelines issued by the Government from time to time shall also comply to mechanisms of equitable distribution of costs and benefits targeted at promoting wildlife conservation, enhancing economic development and poverty reduction (MNRT, 1998).

However, the policy is unclear on the procedures and processes for establishing WMAs. The Environmental Management Act No. 20 of 2004 demands the Minister

responsible for wildlife protection to declare any area that is ecologically fragile or sensitive environmentally as a protected area. But in most cases, the location, boundaries, and extents of hazardous lands, the fragile areas in rural areas are not gazetted so they are subject to wild animals poaching. Additionally, by-laws tend to guarantee effective participation of people in natural resource management by legitimizing and empowering local authorities. Furthermore, supervision to ensure sustainable conservation and utilization of these WMAs is still a challenge. The policy allows local community to use, to harvest wild animals, but in real sense local community are not utilizing, instead they are termed as poachers. This in turn community views wild animals are not for them.

In Tanzania, by laws have been used to protect and conserve natural resources. The policy speaks little about very old wild animals which according to their ages are vulnerable to poaching. The policy allows establishment of wildlife farming including zoo, but to attain permission to establish is a big challenge, since it has discouraging procedures. Field participant observation found that old wild animals' are largely subjected to being poached in Ruvuma Region because usually are easily found. The government needs to see the possibility of harvesting trophies from culling and elephants dying from natural causes (as once argued by Zimbabwe under Robert Mugabe), or taking them to zoos where by intensive care should maintain them.

2.5 Current Status of Wild Animals Poaching in Ruvuma Region and Tanzania

Southern Zone anti-Poaching Unit report of 2018 indicate that from 2015 to July 2018 rangers seized several items attributed to wild animals' poaching: 1,782 snares, 282 elephant tusks, 969 firearms; 1,531 rounds of ammunition; 6 vehicles and 15

motorcycles and arrested 563 people suspected of poaching. They also discovered 294 elephant carcasses and 67 other wildlife carcasses that were believed to have been illegally killed (Southern Zone anti-Poaching Unit, 2018). Rangers also seized several kilograms of wildlife meat: 235 Kilograms (elephant), 246 Kilograms (Hippopotamus), and 1 elephant found killed and 149 Kilograms of buffalo meat. Other items seized were 1skin of zebra, 17 teeth of common warthog, and three scales of pangolin.

Furthermore, Southern Zone anti-Poaching Unit (2018) reported that from July 2017 to July 2018 the patrol teams of Ruvuma Game Wardens arrested 92 poachers and seized ivory, illegal timber, traditional weapons, one land cruiser motor vehicle full of snares of both iron and ropes in Tunduru, half room in Nalika WMA, and quarter room in Mbarang'andu WMA found with poison and other poaching traditional related tools. From field observation, it is also evident that bombs are used to poach wild animals within the shores of river Ruvuma whereby Chingole, Kisungule and Kimbanda WMAs are found. It is believed that from 2016 to February 2018 about 302 hippos had been poached by bomb in the villages of Lukwika, Lumesule, Nanyumbu, Mbumule, Lusewa, Lingusenguse, Magazini and Matepwende. Nditi (2011) points out that the rare species of the Red Colubus monkeys in Iringa from the Udzungwa National Park is almost disappearing due to poaching.

On 02/06/2019 Iringa Anti-Poaching unity and police intercepted 13 pieces of elephants teeth worth 100milions of Tanzania shilings at Magubike and Wenda villages which were seized on 13 May 2019 belonging to Habibi Mkenja of Magubike village packed in a bag container with 10 pieces of elephants teeth . The other 3 teeth

of belonging to Nelson Kadure and Geofrey Kiswaga were being carried on a motorbike (*The Guardian* 02/06/2019). Baldus (2009) informs that due to wild animals' poaching UNESCO has declared Selous Game Reserve as endangered, meaning the Selous Game Reserve cannot remain a World Heritage Site despite being designated as a UNESCO World Heritage Site since 1982.

Fyumangwa (2017) commented that from poaching by snares in Serengeti ecosystem Ikoronga, Grumenti, Maswa, Kijereshi and Loliondo Wildlife Management Areas (WMAs) antelopes had decreased by 40 percent. Mara Regional Police Commander (RPC) Juma Ndaki told reporters in Musoma on 16/06/2018 that nine lions had been killed from a trap by laying a poisoned cow carcass on the lions' crossing path, which the animals proceeded to eat and died as a result. RPC Ndaki said the cruel act against the protected animals was committed in Nyichoka village, which is located adjacent to the Ikorongo Game Reserve in Serengeti District *(The Guardian* 20/06/2018).

On the same vain Jame Kandoya of *Guardian* on 17/02/2018 reported that at least six lions and dozens of vultures were found dead near Ruaha National Park, suggesting they had been poisoned by local herdsmen as part of the escalating human-wildlife conflict in the country. Meanwhile a report by Parliamentary Standing Committee on Natural Resources and Tourism, as just tabled in the National Assembly, advocated that poachers are no longer using firearms to kill wild animals. Rather, they use poison and therefore killing even animals that they actually do not need (Peter, 2018).

Kideghesho (2016) states that poaching has caused a dramatic decline of wild animals in Tanzania. Elephant population has dropped to less than 30 % from 203,000 in 1977

to 57,334 in 2014 (IUCN 1998) while only 275 rhinos remained in 2014 compared to 3,795 in 1981, a loss of over 93 % of the previous population. Literature also reports a lion population decline of 20% from 1981. In early September 2018 the 87 elephants' carcasses were discovered within Botswana interior with their tusks removed (Braczkowski *et al.* 2018). On the same vain Chaves *et al,* (2018) found that from 2016 has been experiencing an increase in elephant poaching within South Africa and particularly Kruger National Park when 46 elephants were poached.

In addition Chaves *et al,* (2018) argued that, throughout 2017, 67 elephants were poached in Kruger National Park (KNP) and one illegally killed elsewhere in the country. In 2018, 71 elephants illegally killed in KNP and one elsewhere in the country, demonstrating for a fourth year in a row the intentional targeting by organized criminal syndicates of elephants poaching in eastern South Africa bordering Mozambique.

2.5.1 Motivation of Wild Animals Poaching

Much and extensive studies concerning wild animals' poaching have been carried out across the regions of Tanzania. Surprisingly some studies have unique and conflicting findings. For example Knapp (2012) and Kideghesho (2016) attribute wild animals' poaching for bush meat, ivory, rhinoceros' horn and medicinal purposes. Skinner (2014), Core and Rizzolo (2016) advocate that cultural factors accelerate poaching practices. Some religions believe that certain animals are pests so they poach them to "keep their land clean" (Nwusu, 2006). Contrary to others, Adeola (1992) explains such factors as religious sacrifices, jewellery, piano keys and priceless religious art objects production encourage wild animals poaching.

On their take Marais *et al. (*2012) highlight several factors for poaching: criminality, corruption, proliferation of firearms, the failure of the judicial system, internal and external politics, poverty and conflict between wild animals and humans. Another study by Kalnon (2012) and Saah (2012) attribute poaching with terrorist rebel groups who exchange wild animals' products with arms and food. Such groups are such as Somalia's Al-Shabaab, Uganda's Lord's Resistance Army (LRA), rebels in the Democratic Republic of Congo (M23), Darfur's Janjaweed and Nigeria's Boko Haram.

Politically, illegal wild animals' trade involves poachers, armed non-state actors from source nations, international crime groups and international corruption across global network chains. Kideghesho (2016) contends that political interference on conservation work leaves wildlife officers unable to exercise their professionalism and enforcement of law effectively as many are demoralised and fear retaliation from politicians.

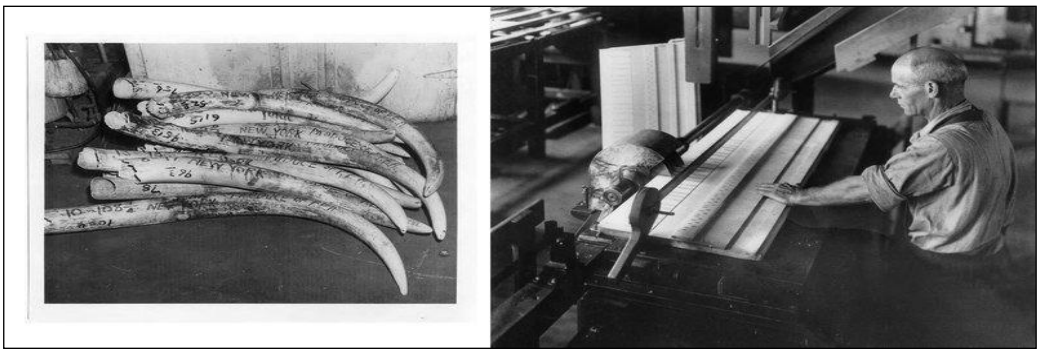

Figure 2.1: Ivory Tusks at Pratt

Ivory tusks at Pratt, Read, imported from Portuguese East Africa, now Mozambique, 1950. (Right) A Pratt, Read worker uses a five-bladed circular saw to cut ivory for a piano keyboard in the 1920s

Source: Ivory ton Library Association

Muth and Bowe (1998) highlight other mixture of complex impulsive and rational factors for poaching which are of commercial gain, household consumption, recreational satisfactions, trophy poaching, thrill killing, protection of self and property, rebellion, traditional right, disagreement with specific regulations, and gamesmanship. Economically, Lawson and Vines (2014) reveal that the worth resulting from wild animals' ranges between $8 and $10 billion per year globally.

Ivory value is believed to be $2,205 per kilogram in Beijing, rhino horn can cost up to $66,139 per kilogram more than the price of gold or platinum on the Chinese black market. Personal profit also seems as a major cause of wild animals poaching when wildlife parts or live animals have great financial value on international black markets (St. John *et al*., 2012).

On the other hand, Kahler *et al (*2013) found that, animals such as elephants, rhinos and tigers attract poachers because selling their tusks is extremely lucrative. Dickman *et al*. (2013) stress that economic costs may be used to legitimize other motivations to poach wild animals, testified to by evidence that wealthier individuals are more involved in promoting or implementing poaching of lager wild animals. Socially tusks are carved into jewellery, utensils, religious figurines, and trinkets (Stiles, 2004). Refugees are also cited to participate in wildlife poaching in host countries. Illegal bush meat hunting is considered a coping strategy for refugees (Kideghesho, 2016).

Meanwhile poaching warrants more systematic study given that wild animals' poaching is a major source of mortality that has slowed or reversed several population recoveries. Liberg *et al*. (2014) write that wild animals' poaching may also finance

illegal activities and insurgents or undermine biodiversity protections. Stoddard (2014) comments that other social aspects include conflict between wild animals and humans, firearms, population and corruption as the catalyst that binds poverty to organised crime like wild animals poaching activities.

2.5.2 Impact of Poaching

Poaching is one of the greatest threats to many species and could eventually result in the inexistence of such species if left unchecked. The removal of any species is a loss on its own. Experience shows that Tanzania is among nations experiencing a rapid loss of wild animals particularly the big five (elephant, buffalo, lion, rhino, leopard) due to poaching (Otieno, 2013; Yeager, 1986). Thomas (2014) indicates that poaching affects conservation of the targeted species. It is important to realize that the inexistence of just one species does not just impact that one animal, but has a larger range of effect. In a true ecosystem, there are usually multiple predator and prey animals that interact (Ives, 2009). However, it does show that the disruption of a single dynamic aspect can have severe effects on the surrounding environment. (Hastings *et al*, 2007).

Wild animals' poaching has negative influence on environment. For example Manel et al, (2002) clearly stated that wild animals' poaching and illegal trade is the most serious threat to the survival of many plants and wild animals in the world; when wild animal's population is harmed, the whole ecosystem is affected. Beyond the environment and the economy, poaching can have severe consequences on communities. Not only does it threaten traditional ways of living but it also relies on profiting from state weaknesses and corruption in wild animals. IUCN (2016) points

out that approximately 10–20% of all vertebrate and plant species are at risk of extinction over the next few decades mainly due to poaching. Musyoki et al. (2012) show that poaching also affects animals, plants and people in specific areas. Forests and grasslands that rely on wild animals' wastage nutrients have trouble finding enough nutrients elsewhere to grow and produce their food. Therefore, persistent poaching of wild animals puts plants and environment at risk (Hauk & Sweijd, 1999). According to Walker (2013), poaching wild animals by using snares and holes disturb the natural growth of plants and harmfully trap other animals. Wild animals' poaching also affects tourism industry.

Honey and Gilpin (2010) comment that wild animals' poaching drives tourists away. Poaching has become one of the ever-growing problems facing wildlife conservation and a potential threat to wildlife tourism development efforts. In economic terms, the disappearance of a species can have a negative effect on local tourism. The area not only becomes less attractive to potential tourists, but it also means that there is an increased chance of *"tourist boycott."* A boycott could have a detrimental effect on a local economy since restaurants, hotels, rentals, and other attractions would suffer great losses in revenue.

Caro *et al.* (2013) maintain that poaching causes loss of income and puts employments of workers at stake. Meanwhile wild animals' poaching has been liked with outbreak of diseases like *ebola* in Central African Republic and Democratic Republic of Congo by the human contact with and consumption of poached meat available on black wildlife markets and Severe Acute Respiratory Syndrome (SARS) in China and Hong Kong (Gordon *et al.*, 1967; Le Guenno *et al*., 1995 & Peiris *et al*,

20003). On his take, Kasnoff (2016) stresses that poaching costs African countries around USD $25 million annually in lost tourism revenue. This argument is supported by Meru (2015) who maintains that poaching threatens as many as 3.8 million tourism-sector jobs across Africa.

On the other hand Vira and Ewing (2014) point out that poaching presents significant security challenges for military and police forces in African nations. For instance, the killing in Geita (Tanzania) of a British anti-poaching pilot, Roger Gower, on January 29, 2016 illustrates the poachers' military strength. Poachers fired an aircraft and killed Captain Gower during his coordinated effort with wildlife authorities to track down and arrest criminals who had killed three elephants in Maswa Game Reserve, near Serengeti National Park (ITV, January 30, 2016). This argument is also supported by the evidence of killing of the wildlife conservationists Wayne Lotter on Wednesday 16 August 2017 while travelling in taxi in Dar es Salaam Tanzania. He regularly received death threats and on that date the threats materialised (ITV, 22/08/2017). Recently, Iringa Reginal Police Commander Juma Bwire noted that Ranger Rafael Mwita from Iringa Anti-Poaching Unity was killed by poacher after he was hit by sharp object on left side of his chest. The poacher went away with a Sub-machine gun (SMG) numbered 260332 TZWD/KDU/IR 1990 on June 1st . 2019 at Ihimbo village in Udzungwa Mountain forest (*The Guardian* 02/06/2019).

Furthermore, the president of International Ranger Federation found that in 2017, over 100 rangers were reported killed and 2018 is on track for the same, almost two a week in Kenya while in Virunga National Park in the Democratic Republic of the Congo has lost 150 rangers in the past decade. It is the world's most dangerous park.

Many of the rangers were killed in attacks by the Forces démocratiques de libération du Rwanda, (the Rwandan Hutu rebel group), and the Mai-Mai.

In addition he found that in the past 12 months they have lost a further 105 Rangers in the line of duty (Willmore, 2018). Martin and Caro, (2013) suggest increase in the understanding of the relationship between wildlife tourism and wild animals' poaching for sustaining both tourism and wild animals' populations. An on-going wild animals' poaching is the most serious threat to the survival of wild animals. Poaching has caused decline of African larger carnivore and threatens their existence (Shauer, 2015).

2.5.3 Initiatives against Poaching

According to Southern Zone Anti Poaching Unity, education based on wild animals' conservation has been offered to 31 villages. Meanwhile bee hives, heavy duty oil and chilli peppers have been used as means of a minimising conflicts between people and wild animals. Field participation observations from 2015 to 2018 experienced Ruvuma Region together with the southern zone anti Poaching and anti-poaching stakeholders had arranged several patrols within protected areas to identify people who are encroaching the protected areas. Those patrols managed to identify poachers with arms, grazing their domestic animals, some had established residents within protected areas and cultivated within protected areas. They captured them and took them to judicial courts for further actions.

Addressing this problem in 1990s, Tanzanian Government created an anti poaching programme known as Operation UHAI. The government deployed officers and

soldiers from the Tanzania People's Defence Force, Tanzania Police Force and the wildlife authorities (WSRTF, 1995). Furthermore, the Tanzanian Government has implemented a nationwide inspirational inspection of all licensed firearms in quest for curbing proliferation of illicit small arms and light weapons, some of which are now being used in poaching (Lwangili, 2016). The other methods proposed are dehorning animals like elephants and rhinos while they are under sedation and burning the seized tusks (Chitwood & Somervile, 2014; 2016). Charles the Prince of Wales and Duke of Cambridge William launched an Anti-poaching Campaign with a video plea calling for prompt action among the world leaders to end illegal wildlife trade. The two warned of the ecological, economic and political consequences of wildlife crime (UK Department for Environment, 2015). However, it is the nature of human being that if one takes from him anything that he or she values much it must be replaced with another item of the same or higher value; otherwise, he will find other means of getting it again. That is why, besides those efforts recently Tanzania and the world at large experience dramatic decline of wild animals due to poaching.

2.6 Empirical Literature Review

This part reviews studies of factors that influence wild animals' poaching. It determines the extent of each factor in influencing wild animals' poaching.

2.6.1 The Attitude on Wild Animals' Poaching

In the view of Urio (2012), the challenge facing communities living around protected areas is that they do not benefit from the wildlife products. They live in uncertain conditions haunted by wild animals' attack. Wild animals destroy crops as well. Woodroffe (2000) and Conover (2002) commented that, human–wild animals'

conflict has existed for centuries, but its frequency has grown in recent decades, mainly because of the exponential increase in human population and the resulting expansion of human activities including wild animals' poaching near or within protected area. Generally, costs associated with conservation, such as crop damage and livestock predation by wildlife, have negative effects on local community attitudes (Macmillan & Nguyen 2006). Community living near protected areas have been forgotten in terms of benefiting from wild animals since 1891 when the first drafts of wildlife policies and regulations established. There was no concern about how and which way they could benefit from wild life. These trends exist even at present time even though the policies and regulations are stating clear that they should.

According to Wang *et al (*2006) livestock losses together with crop damage, are considered major causes of negative attitudes and hatred towards wild animals and conservation policy around protected areas. Studies identify crop-raiding as the most problematic type of human-wildlife conflict for farmers and agricultural societies. It occurs often at the end of the rainy season, during crop ripening and at night (Kikoti *et al.*, 2010). Some studies such as that of Roque de Pinho (2009) hold the view that conservationists and the government are more concerned about wildlife than about human well-being.

A similar case is at Amboseli National Park in Kenya. This has resulted into local communities' activities like poaching to gain access to and benefits from the wild animals and other natural resources in the villages' areas. Oli *et al.* (1994); Williams *et al*. (2002) and also Bagchi and Mishra (2006) discovered that negative attitudes

toward wildlife often encourage communities living near protected area to poach wild animals. For example studies done in the Himalaya in India by Singh *et al* (2007) and Mukesh *et al* (2015) found that the rising human–animals' conflict in the region has in turn resulted in an alarming increase in retaliatory killings of leopards and bears, threatening their survival.

Knapp (2012) on his study shows that trappers' awareness of wildlife protection law was weak and wild animals were poached indiscriminately in traps and snares designed to catch a wide range of animal species. Raichev and Georgiev (2012) highlight reasons for breaking the law which are incorrect ideas of a species place in the ecosystem, misunderstanding of the wild animal behaviour reactions and believing in prejudices, and beliefs about some of the species.

Furthermore, the study indicates that many protected mammals and birds as well as some others under special hunting restrictions, is objects of poaching. This is a simplification of a complex historical and cultural milieu as motives for illegal hunting that may include many human desires such as skill development, identity formation, and opposition to authorities, boredom, and thrill seeking. Poverty is the main reason for this illegal act (Stoddard, 2014).

In 1921, the British Government in Tanganyika established the Game Department. One of its main roles was to protect people and crops from raiding animals. This problem has not yet solved from the colonial time till now. Community living near protected areas still suffers from their crops being damaged by wild animals seems like as if there is no serious plan to solve this problem. Does it's mean that it s there to stay!

2.6.2 The Influence of Social Environment on Wild Animals' Poaching

According to Kyando (2014) poaching patterns in the Eastern Selous Game Reserve (ESGR) were non-selective. The incidences of poaching were higher during the wet season. Hotspots of poaching were identified on the edges of the ESGR. This was attributed by the involvement of local people adjacent to the ESGR in poaching activities due to lack of economic opportunities. This was attributed by the involvement of local people adjacent to the ESGR in poaching activities due to lack of economic opportunities. The patterns of elephant poaching can help to study the impact of poaching on Selous Game Reserve elephant populations. Also, hotspots poaching serve as tool to guide and inform reserve managers involved in wildlife conservation in Tanzania.

On the other hand, the study suggested that improved economic opportunities of local people; enhanced conservation education and research; improved governance and law enforcement may address the elephant poaching problem. Spencer and Slabbert (2010) found that frequency of wild animals' poaching incidents may depend on the political stability of countries. Kenya and Zimbabwe have higher incidents of tusks poaching and are experiencing or have experienced civil unrest and political instability in recent history. Kenya has the highest frequency of tusks being confiscated followed by Tanzania.

In Asia, Thailand and China were found to be the most prominent end-user of tusks. Kahler (2010) identified a diversity of motivations to poach wild animals in which a number of motivations went further than subsistence "cooking pot" and economic "pocket book" explanations of poaching. Rapid population growth and poverty have

also resulted in several problems related with wild animals' conservation in the Sahara sub-region (Population Reference Bureau, 2013).

Some religions believe certain animals to be pests, so they hunt them to "keep their land clean" (Nwusu, 2006). Bell *et al*. (2007) report that poaching continues to persist on a global scale for a variety of reasons, which include economic greed, household subsistence and trophy hunting. Kateregga and Shenk (1980) and Lynn (1967) show how religious beliefs are justifiably used in poaching activities. Beliefs such as of human being seen as vice regency in Christianity and title of *Khalifa* (vicegerent of *Allah* on earth) in Muslim. Such belief has drawn much criticism in wild animal's ethics, since the publication of an influential article by historian Lynn White some thirty years ago. Adeola (1992) states that, religious sacrifices of wild animals, jewelleries made from tusks, tusks piano keys as well as priceless religious art objects production encourage wild animals poaching. Brayan (2013) reports that during Christmas in 1987 the US President Ronald Reagan and Nancy Reagan bought an ivory originally presented to them as a gift by Pope John Paul II. Lebanon's President Michel Suleiman gave Pope Benedict XVI an ivory and gold thurible. In 2007 Philippine President Glorian Macapagala-Arroyo gave an ivory Santo Nino to Pope Benedict XVI. The Kenya's President Daniel arap Moi once gave Pope John Paul II an elephant tusk (Linzy (2009).

Core and Rizzolo (2016) point out that, cultural factors are having the potential effect to both poaching practices and societal responses to poaching. Marais *et al.,* (2012) highlight six factors accelerating poaching as being increased criminality, corruption, the proliferation of firearms, the failure of the judicial system, internal and external

politics, poverty and conflict between wild animals and humans. Similarly, Bitanyi (2012) comments that another factor influencing wild animals' poaching may be cultural, such as leading one to hunt for the sake of prestige, tradition, or camaraderie.

Stoddard (2014) commented that this is a result of a complex historical and cultural milieu which motivate for illegal hunting. Some findings tragically show the complication wrapped in poaching. For instance, World's political and religious giants involve themselves in wild animals' products. Some are given items like ivory as presents.

Economically, Rivesa (2016) found that global poaching is instigated by valuable parts of animals such as ivory or fur, horn, organs, pelts, claws and bones, which are good business. Ripple and Newsome (2015) argued that wild animals' products trade is valued at $5-20 billion USD per year thus making it the fourth most lucrative global crime business after drugs, humans and arms. Poudya's study (2006) found that locally available economic opportunities reduce the level of poaching significantly. However, the penalties imposed on convicted poachers are reported to have little or no effect on the levels of wild animals poached in the Royal Chitwan National Park.

Furthermore, result shows a sharp rise in the number of rhino poached since the start of the Maoist insurgency in 1996.Spencer and Slabbert (2010) found that frequency of poaching incidents may depend on the political stability of countries discussed above with respect to ivory for Kenya, Zimbabwe, Thailand and China. Wilfred (2010) found that serious measures need to be taken to reduce loss of wildlife populations, and ensure that local people benefit from their conservation efforts. This will reduce

rapidly increasing human pressure management problems of WMAs. Political instability leads to community unsettlement further leads to poverty because they do not have time to engage in productive activities. For the community living near protected areas is highly tempted to engaging in illegal activities like poaching as their way of solving their economic problem to minimize their poverty status if not to reduce it completely. Religions and cultures are very important components in human life. Some religious and cultural rituals demand wild animal's products, since there are some beliefs that wild animals are there to save human being, and then can be poached.

2.6.3 Facilitating conditions on Wild Animals Poaching

Gadd (2005) the Ruvuma River patron reported that poaching of wild animals using wire snares persists in Ruvuma River in the district of Namtumbo and Tunduru district from the rivers Luhuhu and Lwekei and Lake Nyasa in Nyasa District. Commonly poached animals are hippos. Trapping of animals is widespread and motivated by financial gain. Other factors include non-pecuniary benefits such as social esteem and enjoyment, rather than by poverty per se (Macmillan & Nguyen, 2006).

Kideghesho (2007) on the other hand found that recently there has been a growing global interest in poaching practices, although recognition in official conservation policies is still minimal in many countries. Wilfred and McColl (2013) suggested that proximity to game reserves as influencing poaching condition for bush meat use. Solovan *et al.,* (2015) argue that poaching in Asian countries is reaching critical levels, driven by irretentive demand for illegal wildlife products. The study by Kaale (1981) found that forest clearance has resulted into loss of biodiversity such as wild

animals known as *Gazella soemmering* while deforestation in both natural and planted forest is very high. On the case in question, mineral exploitations and wild animals' poaching are activities that take place in Ruvuma Region and in the whole country as such. Eliason's (2011) report comments from game wardens which reveal five major issues confronting conservation law enforcement officers: inadequate funding, low salaries, non-wildlife law enforcement duties, lack of support from the judicial court system, and changing social and political climate.

Kyale *et al.* (2011) comment that in Kenya poaching hotspots are situated along the main rivers such as Tiva, Galana and Voi rivers. During the wet season, high density of poached elephants was recorded within the grassland, bush land and open bush land. In the dry season, the density of poached elephants was highest in the woodland, bush land, open bush land and grassland environments. The study also indicates that the distribution of poached elephants was significantly correlated with land cover, proximity to main rivers, surface water, ranger patrol bases, park gates, roads and park boundaries.

To combat poaching Wilfred (2010) suggests out that poor resource use diversification and lack of creativity constrain sustainable use of natural resources in the WMAs; consequently, their contribution to sustainable livelihoods is seriously undermined. Wilfred and McColl (2013) suggested that future researches and conservation should consider addressing bush meat poaching with respect to distances from human settlements near Ugalla Game Reserve boundary. Saunders (2009) found that major threats to tigers include habitat prey loss and poaching. On the other hand, higher rates of education, greater democracy, and lower levels of poverty were

significantly associated with successful tiger conservation. He also advocates for greater local participation, increased scientific and implementation capacity, and increased funding for conservation.

Bad infrastructure is a one of obstacle for rangers to attain their patrols goals to protect wild animals against poaching. Bad roads, up and down ward steep hills, small, medium and big rivers are obstacle for cars to reach targeted places in time. Sometime inequity recourses such as manpower, facilities and money to pay rangers and VGS are factors that facilitating wild animals poaching.

2.7 Research Gap

Contextual gap: Ruvuma Region hosts a large area of game reserves, game-controlled areas and wildlife management areas; therefore experiences long range of wild animals' poaching. Despite, the fact that diverse and extensive studies have been carried out across the regions of Tanzania little has been done in the Ruvuma region to explore the level of poaching and its factors in the region.

Furthermore, Shaame (2013) argues that the reasons for adopting TPB vary from one country to another and from one place to another. This idea supports the argument made by Ceccucci *et al.* (2010) that due to contextual differences among respondents, no single reason can fully explain the adoption of the theory but several factors have a significant influence on intention. This variation is explained by Gadd (2005) about the differences in respondent's culture as some socio-cultural aspects of respondents' communities negatively affected their experience. Negash *et al*. (2007) support that the TPB movement holds potential for least developing countries but the determinant

factors for its adoption are different from those in developed nations. Therefore, it can also be applicable to capture unique characteristics of Ruvuma Region where it has not been used.

Theoretical gap: Noar and Head (2014) found that TPB is seen as a theory that required further improvement to avoid its silence belief. Again, in case of predicting intentional behaviour like wild animals' poaching TPB requires further modifications based on critiques raised by behavioural scientists as it discussed on section 2.3 (Review of the Theory/Model). Furthermore, Rhodes (2014) commented that though TPB adds perceived behaviour control, it does not say anything about control over behaviour.

Empirical gap: most of the empirical studies have adopted TPB by using one or two of its variables to study factors that influence wild animals' poaching. This study adopts TPB model and its three variables to study factors influencing wild animals' poaching in Ruvuma Region. Scholars such as Olsson (2014) have used TPB to analyse factors of farmers' attitude towards wild animals. The study found that farmers have negative attitude towards wild animals. Wild animals are identified as problematic for crops and direct effects of lost lively-hood. Ward (2000) and Daigle *et al.,* (2010) adopt TPB by using attitude and social environment variables.

Results indicate that attitude and socio-environmental factors have significant positive effects on individuals' intention towards wild animals poaching. Meanwhile Kaltenborn *et al.* (2011) and Holmes (2007) found that facilitating condition is the strongest predictor of poaching intentions. Second it is evidential empirically that

findings of studies done in diversely and extensively have been carried out across the regions of Tanzania, surprisingly some studies have unique and conflicting findings.

2.8 Conceptual Framework

This conceptual framework is composed of three independent variables which are attitude, social influence and facilitating conditions. There is one dependent variable that is intention of wild animals' poaching which include three hypotheses as described in Figure 2.2.

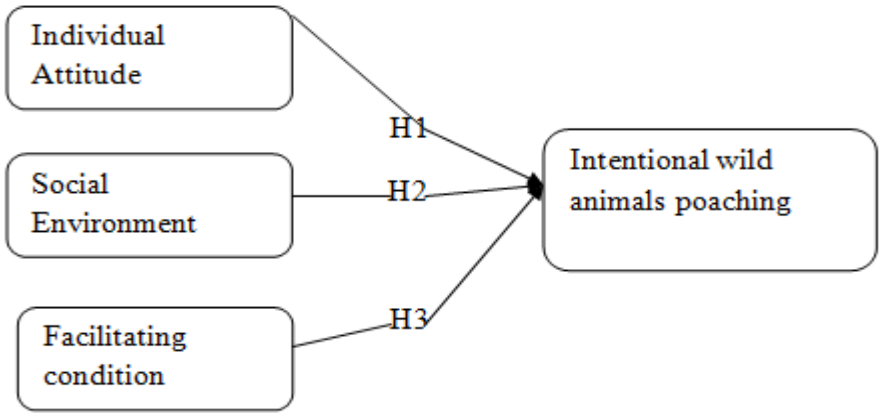

Figure 2.2: Conceptual Framework

Source**:** From Literature Review, (2018)

2.9 Operational Definitions for Dependent Variables

2.9.1 Intentional Wild Animals Poaching

The dependant variable in this study is intentional poaching which is measured by different indicator variables adopted from empirical literature reviews. Intentional poaching refers to the motivational factors that influence a given behaviour (poaching) where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed. Gillingham (1998) advocates that in principle, the main economic benefit of living near a game reserve (proximity) is that it is an asset for

economic activity based on the presence of wild animals and thus a potential source of local economic growth. Additionally, trade in wild animal meat, or bush meat, is also causing striking declines in other wild animals due to poaching (Nielsen, 2006). As an economic gain Stiles (2014) advocates that the demand for tusks has skyrocketed in recent years. Its price in consumer countries has increased exponentially.

Meanwhile Nguyen (2008) generally found that more African elephant carcasses are typically discovered with only the tusks taken, indicating that food and other subsistence requirements are associated with elephant poaching. Hamilton (2013) argues that poachers have a strong network. They have access to resources not available to rangers including satellite phones, GPS, motorcycles and vehicles, high calibre weapon, night vision goggles, silencers, and funds. Jachmann (2008) commented that, poaching as an economic gain is mostly done by gun, and snaring traps. Wire snares are mostly used for large herbivores, whereas for small and medium-sized prey poaching at night is done with dogs.

Given the empirical literature review, the most cited in intentional wild animals' poaching dependant variable on factors for wild animals' poaching are proximity to game reserves and parks, bush meat, tusks, firearms, poisoning, snares and traps. Thus, this study has adapted all these as indicator variables in preparing interview tools to measure intentional poaching dependent variable.

2.9.2 Independent Variables

The first component of **Theory of Planed Behaviour** is *attitude* that measures the extent to which an individual has a favourable or unfavourable evaluation of behaviour (Hamid & Isa, 2015; Towler & Shepherd, 1992). Attitudes may include

thoughts about the behaviour as being beneficial for the individual or not. This approach would suggest that the likelihood of an individual to participate in wild animals' poaching can be explained on the basis of the norms and behaviours of the networks of the individual (Montaño & Kasprzyk, 2008).

On the other hand, Olsson (2014) stresses that proximity of human settlement to protected areas increases the risk of animals being poached because of human-wild animal's conflict. Such circumstances caused direct impacts to human beings such as crop destruction, loss of livelihood income. Indirect effects include health impacts and security issues. Ormsby and Kaplin, (2005) hold that lack of tangible benefits to people neighbouring protected areas influences poaching. Furthermore, respondents in studies done by Holmes (2013), Allendorfn (2007), and Schmitt (2010) argue that poaching incidents are fuelled by the fact that staffs in protected areas and the government are viewed as primary beneficiaries.

Additionally, because of difficulties they face, usually local communities are accused of protesting against authorities on all matters regarding wild animal's conservational (Oldekop *et al.*, 2016). The protest has led to conflicts between local residents and conservation officers. Given the empirical literature review, the most cited in individual attitude variable concerning factors for wild animals' poaching are lack of tangible benefits, hate, enmity between poachers and game wardens, crops destruction, law and police, conflicts between wild animals and people, and opposition to authority. Thus, the present study has adapted all these as indicator variables in preparing interviews tools to measure individual attitude independent variable.

Understanding based on variables gleaned above therefore, it is hypothesized that:

Null H1a: *Individual attitude does not have significant influence on intention towards wild animals' poaching in Ruvuma Region Tanzania.*

Alternative H1b: *Individual attitude has significant influence in intention towards wild animals' poaching in Ruvuma Region Tanzania.*

The second component is *subjective norms*. Ajazen and Fishbein (1985) consider subjective norms as the product of normative belief and motivation to comply. Subjective norms are normally the influence of persons or organisations to individuals performing certain behaviour. Prell *et al,* (2009) refer such a social environment as 'nodes'. These nodes may be individual people, informal groups, and organisations. A node acts as a 'bridge' when it links two other actors or cluster of actors that are otherwise not connected. For example, in the case of wild animals poaching, middlemen would play such a role, connecting the providers and consumers of wildlife products.

Corbin (2008) convincingly supports that such nodes are found in many African local beliefs that, in God's creation there are things that can be used (destroyed) and others that cannot be used as such the destruction of such things constitutes a sin. Even those that can be used have the right time for their use; hence it is justifiable to kill them (wild animals). Baldus *et al,* (2001) indicate that wild animals also transmit zoonotic diseases (diseases transmitted between wild animals, people and livestock) such as anthrax and rabies. For that reason, wild animals are killed. On the other hand, Karki and Hubacek (2015) suggest indicators of wild animals' poaching as poverty and

corruption. It is found that some workers of the park benefit from fines by local people when found grazing in protected areas. Corbin (2008) found that poachers may come from different groups such as security forces, park staff and guards, the conservation community, professionals, politicians, militia groups, insurgents, terrorists, poor farmers and herders. Most of these groups poach in order to improve their economic status. Present-day poachers may turn to illegal hunting as a way to earn money needed for marriage. Economic and social problems such as poverty and population growth are commonly reported by Kideghesho (2016) as driving factors for poaching.

Skonhoft and Olaussen (2005) discovered that, land for cultivation and pasture has been lost, and anti- poaching laws have criminalized subsistence hunting. Moreover, local people are often prevented from eliminating 'problematic' animals to protect their crops and livestock resulting into land encroachment. UNEP *et al.* (2013) suggested that while hunting for meat or ivory has been a traditional source of protein and income for many rural communities generally one may call it an inheritance from fore fathers.

Given the empirical literature review, the most cited in social environment variable relating to factors for wild animals' poaching are sacred book, cultural aspect, poverty and corruption, identity formation, internal and external politics, population, economic, wild animals containing harmful pests, pasture seeking, land encroachment and inheritance from fore-fathers. Thus, this study adapted all these as indicator variables in preparing interview tools to measure the social environment variable. To test the influence of subjective norms, the researcher hypothesizes that:

Null H2a: *Social environment factors do not have significant influence on intention towards wild animals' poaching in Ruvuma Region Tanzania.*

Alternative H2b: *Social factors have significant influence on intention towards wild animals' poaching in Ruvuma Region Tanzania*

The third component in the theory is the *perceived behaviour control*. It is based on personal experiences and anticipated obstacles (Hamid & Isa, 2015; Towler & Shepherd, 1992). Perceived behaviour control is a composition of control belief or beliefs about factors facilitating or impeding the behaviour and the control power individuals have over these factors (Ajzen, 1991). Baldus *et al,* (2003) advocate, that the wildlife sub-sector has, since then, recorded a steep drop in its budgets and therefore failing to meet its conservation obligations effectively, including those of law enforcement (Hughes & Flintan, 2001). Budgets allocated are too low to combat commercial poaching in Tanzania. This has led in turn to equipment inadequacy low salary and low motivation for wild animal's officers which demoralized anti-poaching activities.

Minimal budget is a threat to existing human power. Johannesen and Skonhoft, 2002) show that increased climate change threatens wild animals. Given the empirical literature review, the most cited in facilitating condition variable with reference to factors for wild animals' poaching are inadequate resources, infrastructure, low salaries, low motivation and climate change. Thus, this study has adapted all these as indicator variables in preparing interview tools to measure facilitating conditions variable. It is hypothesized that:

Null H3a: *Facilitating conditions do not have significant influence on intention towards wild animals' poaching in Ruvuma Region Tanzania.*

Alternative H3b: *Facilitating conditions have significant influence on intentions towards wild Animals' poaching in Ruvuma Region Tanzania.*

Thus, given the applicability of TPB in wild animals poaching, the researchers intentionally used this theory. TPB provided with a view providing an in-depth analysis of the individual attitude, social environment and facilitate condition and how these influenced individuals to engage in wild animals' poaching activities.

2.9 Summary

This chapter aimed at familiarizing the readers with the most basic information about wild animals' poaching. The meaning of poaching and factors of poaching are also presented. It has reviewed the previous literatures about wild animals' poaching. It has also presented the dynamics of research reports and conflicting ideas about wild animal's poaching. This helps readers to understand the study of the theory of planned behaviour and its role in factors influencing wild animals' poaching in Tanzania specifically in Ruvuma Region.

CHAPTER THREE

RESEARCH DESIGN AND METHODS

3.1 Overview

The research methodology rationale is explained in terms of research philosophy, research design, study area, study population, sample size selection, data collection tools and data analysis tools.

3.2 Research Philosophy

Saunder *et al* (2014) define research philosophy as a method of beliefs and assumptions about the development of knowledge. This study adopted pragmatism research philosophy. Elkjaer and Simpson (2011) point out that pragmatism intended to bring together both interpretivism and positivism paradigms. Furthermore, it does this by taking into consideration theories, concepts, ideas, hypotheses and research outcomes not in an abstract form, but in terms of the roles they take part in instruments of thought and action, and in terms of their practical consequences in specific contexts (Watson, 2011). Pragmatists believe in an external world independent of the mind and the existence of different world views and assumptions and, therefore, choose research techniques that best suit their purpose (Creswell, 2009). The fittingness of the pragmatism paradigm is based on the nature of the use of hypotheses and the uniqueness of the context in which wild animals' poaching is taking place. Both quantitative and qualitative approaches are respected by pragmatists and their application depends on the nature of the study. The current study therefore, incorporated both interpretivism and positivism philosophy for both data collection and analysis.

The use of interpretivism philosophy helped the researcher to figure out and elaborate factors influencing wild animals' poaching in Ruvuma Region Tanzania. Kothari (1985) asserts that interpretivism is linked with the social constructivist paradigm, which emphasizes the socially constructed nature of reality. Major feature of qualitative research methods is in marking out and displaying phenomena as experienced by the study population (Ritchie, 2003).

Similarly, Snape and Spencer (2003) write that qualitative research emphasizes human values, interpretative aspects of knowing about the social world and the implication of the investigator's own interpretations and understanding of the phenomenon being studied. This paradigm has helped the researcher to get additional information that would be used to deal with the social context of Ruvuma Region Tanzania (Kombo & Tromp, 2006).

Positivism (Quantitative) research designs are based on the notion that social phenomena can be quantified measured and articulated numerically (Thomas, 2003). These measurements and amounts are termed in numeric terms that can be analysed through statistical methods. In this study the quantitative method is used to test hypothesis on the influence of individual attitude, social environment, facilitating condition and intention wild animals' poaching. Quantitative methods have been commonly used in social and technical research to know and quantify problems in technical fields and human society. Quantitative methods above all generate hypotheses and can be practiced to confirm which of such hypotheses are true. Based on these basics, this study, therefore, adopted quantitative philosophy which is suitable for providing quantifiable findings after testing research hypotheses

(Creswell, 2007). But before positivism was put to function, the interpretivism philosophy was used to identify indicator variables from the literature align with the context of the study and by establishment of supplementary information which were not captured by the literature to reflect the local context of wild animals' poaching in Ruvuma Region in Tanzania. Moreover, interpretivism was to provide clarification of relationships during the discussion of the finding. Thus, the study used the pragmatic stance and mixed methods (Creswel, 2009) focusing on qualitative and quantitative approaches.

3.3 Research Approach

Creswell (2007) points out that illustrating the research approach is an effective plan to increase the validity of research. Basing on the importance of research approach, this study therefore, adopted both inductive and deductive research approaches. In inductive approach emphasis on moving from data to theory and explains the essential relationship between variables (Wisker, 2008). Through an inductive approach, the researcher started with a set of observations and then he moved from those particular experiences to a more general set of propositions about those experiences. Meanwhile the deductive approach takes the steps described earlier for inductive research and reverses their order.

The relationship of variables which were researched in this study through deductive research approach were the factors influencing wild animals' poaching in Ruvuma Region. Through mixed research approaches the concept is operationalized to allow facts to be identified through qualitative and measured through quantitative (Collins, 2010). On the foundation of deduction research approach, the main construct of wild

animals' poaching was well postulated and the indicators of each construct described clearly to allow findings to be generalized for the entire Ruvuma Region in Tanzanian context.

3.4 Research design Strategies

According to Katz (2000) research design is the procedure of how information is obtained in the research. On the other hand, Kothari (2003) refers research design to all those methods that are used to conduct the research for relevant information on a specific topic. The research design can be exploratory, explanatory or mixed (Saunders *et al*, 2009). Saunders *et al*, (2009) advised that appropriate research strategy has to be selected based on research questions or hypothesis and objectives, the extent of existing knowledge on the subject area to be researched, the amount of time and resources available, and the philosophical that stimulated the researcher. Based on this point of view, the current study used a mixed research design with case study and survey designs in a sequential order from case study to survey.

Saunders *et al.* (2009) define case study as a plan for doing research which involves an empirical study of a particular contemporary observable facts within its real life context using numerous sources of evidence. Mills *et al.* (2010) points out that not only the several cases which are acceptable but also a single case could be considered good enough provided it meets the recognized objective. Meanwhile, Rowley(2002) advocate that, a case study strategy is the most flexible of all research designs strategy, allowing the researcher to retain the holistic characteristics of real-life events while investigating empirical events within an environment rich with contextual variables. As advocated above, the reason as to why case study strategy technique is

relevant in this study is the nature of wildife sector which tends to have unique characteristics and operation using their own laws and regulations.

Case study designs are those types used to collect data in qualitative research. Examples of these tools are participants' observation, focus group discussion and interviews. Case study tactics were used for the reason that Game Officers, NGOs representatives and WMAs chair persons might hesitate to participate due to the sensitive nature of the topic which called for disclosure of individual attitude, social environmental and facilitating conditions. The hesitation could have happened due to the fact that the questionnaires were internally distributed by the Game Wardens and VGS who would have a chance to check responses of each individual who participated within the communities living near protected areas in Ruvuma Region.

The study is also unique and has limited empirical evidence which has been conducted in a study area focusing on factors influencing wild animals' poaching in Ruvuma Region Tanzania. It was thus essential to conduct a case study in order to capture the opinions of those who did not play a part in the survey for generating themes. This means that the case study helped the researcher to provide him with a detailed picture of the variables used in quantitative study. The case study tactics also helped to get more information on the existence of the problem in daily endeavours of factors influencing wild animals' poaching.

With regard to survey, the researcher's most important assignment was to develop a model and test the relationships which existed within the model by using data collected from greater population of Game Wardens and VGS in Ruvuma region in

Tanzania. Additionally, due to differences in locations of these wildlife protected areas, the researcher used one research assistant to reduce errors as advocated by Xu and Han (2014). Based on the previous description, the study started with case study tactics to collect qualitative data whose findings were in the long run validated by survey design.

3.5 Research Area

The study was carried out in Ruvuma Region of Tanzania. Ruvuma Region is located in the southern part of Tanzania, bordering Njombe Region in the North West, Morogoro Region in the north, Lindi Region in the North east, Mtwara Region in the east and Republic of Mozambique in the south and Lake Nyasa on the west. The region borders Selous Game Reserve in the north, north east and east of it. Ruvuma Region lies between latitude 10S. 90 35' to 110 45’ South of equator and lies between longitudes 35E. 340 35' to 380 10' Meridian. The region occupies an area of 63, 669 square kilometres. Administratively, Ruvuma Region comprises six districts namely Songea rural, Songea Municipality, Mbinga, Namtumbo, Nyasa, and Tunduru. According to the 2012 National census, Ruvuma Region has a population of 1,376,891. Additionally, Ruvuma Region hosts Liparamba Reserve, Litumbandyosi and Gesamasowa proposed Game Reserves; Mwambesi, Muhuwesi, Game controlled areas and five wildlife management areas namely Mbarang’andu, Chingole, Kimbanda, Kisungule and Nalika. Moreover, the region has one game park known as Ruhila.

The area has been selected because it experiences a long range of wild animals’ poaching (Lotter & Clark, 2016). It hosts a large area of game reserves and wildlife

management areas. Potentially, the area borders Selous Game Reserve in the East, North East and North. It has also been indicated that it was a hotspot during the previous international ivory poaching crisis during the 1980s. The substantial losses in places like the Selous Game Reserve in southern Tanzania provided fuel for the international outcry and the many campaigns that led to the CITES ban on the sale of ivory (UNEP *et al*., 2013). Data collection from Ruvuma helps to develop the research hypothesis.

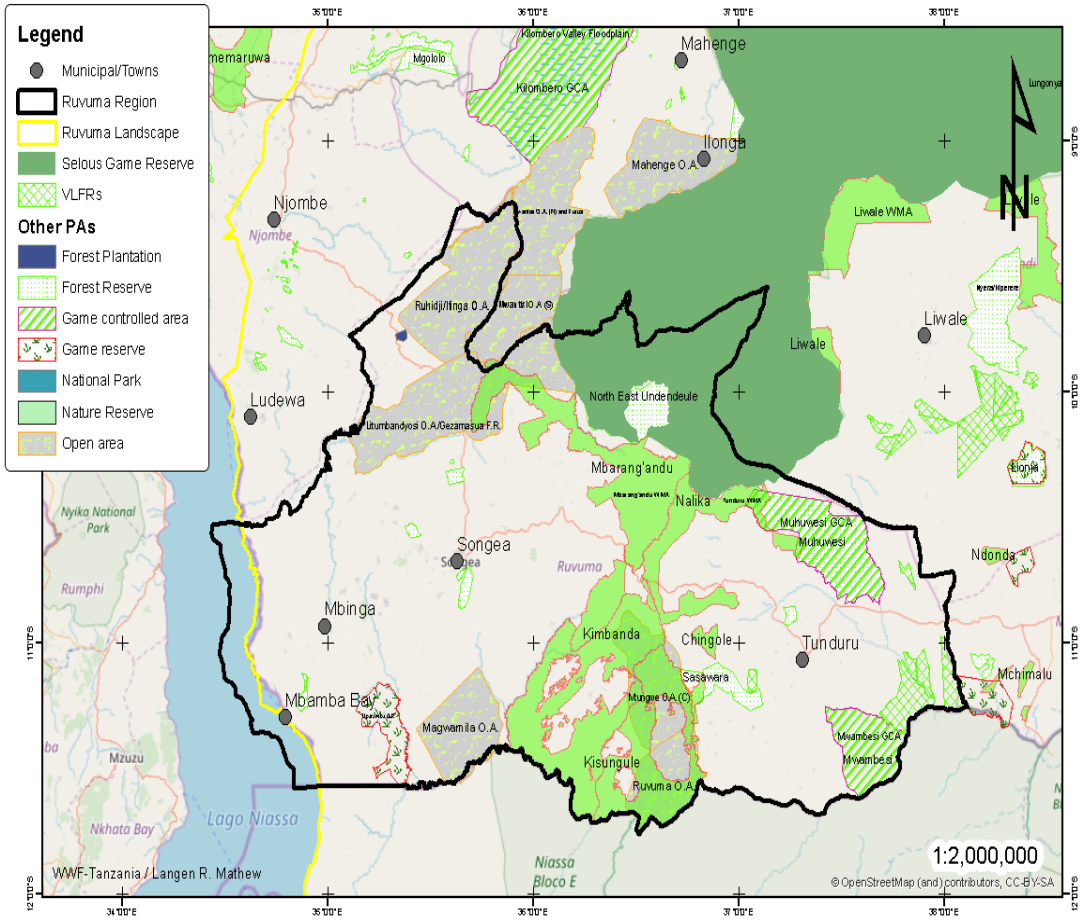

Figure 3.1: Ruvuma Map Showing all Administrative and Protected Areas

Source: TAWA (2019)

Furthermore, Ruvuma region has been greatly affected by poaching activities from immemorial times. The researcher grew up in Ruvuma Region and has witnessed

poaching activities since his childhood. His late grandfather who used to poach wild animals in the mountains of Matogoro near Selous Game reserve was nicknamed *Katoghoro* because of his frequent visiting of mountain Matogoro for poaching activities. In addition, the fact that Ruvuma Region was the home of wild animals such as wildebeests, elephants and buffaloes, zebra and rhino the evidence that rhino were living there was the present of the river Kipembele in Kisungule Wildlife Management Area which *Kipembele* simply mean rhino horn but today we are not seing them together with zebra and wildebeests anymore due to poaching. Therefore, it became apparent to him that the current trend of wild animals' poaching in Ruvuma Region has negative effects on the next generation because they might not see wild animals as we used during our time if serious mitigation measures will not be implemented.

3.6 Population and Sampling Design

3.6.1 Target Population

Kothari (2004) defines a study population as the total collection of cases or units about which the researcher prefers to draw conclusions. On similar note Goretti (2008) defines the sampling tactic, the mark population, as the entire set of units for which the case study data was used to make inferences. The target population for this study included wildlife officers, wildlife wardens, village game scouts (VGS), and WMAs chair persons and Anti-poaching NGOs operating around Ruvuma Region. These components of a population were selected because of the role they play in the area of wild animal's management and conservation. Firstly, they were responsible for taking care of wild animals and their main role was to protect wild animals against

poaching. Secondly, they possessed or experienced wild animals poaching. In this study 108 wildlife wardens out of 151wardens were interviewed. Also 171 VGS out of 333 were interviewed in quantitative basis. Meanwhile 14 out of 18 wildlife officers from regional and district offices and six WMAs chair persons and NGOs representatives were qualitatively interviewed. Therefore, from this population the researcher got the required data for the study.

3.6.2 Sampling Design

The sample for this study was designed to provide reliable estimates of the indicators for the variable of interest for the target population as a whole with a reasonable margin of error. A list of wild animals' experts working in Ruvuma Region Tanzania was taken as the sampling frame to select the sample of respondents required for the study as explained below.

3.6.2.1 Sampling Frame

Sampling frame consists of a list of items from which the sample is to be drawn (Kothari, 2004). In this study, the sampling frame consisted wildlife officers, wildlife wardens and VGS in Ruvuma region. This sampling framework was considered appropriate for this study because it consisted of numerous cases which helped the researcher to get a mixture of factors influencing wild animals' poaching in Tanzania.

Wildlife officers and wildlife wardens' respondents were sampled from Tanzania Wildlife Management Authority (TAWA) and the Ruvuma database for VGS were sampled where there are wildlife management areas. The researcher used database to construct a sampling frame of this study as described in Table 3.1. From the database

the researcher has managed to develop a sampling frame which comprises about 509 wildlife officers, wildlife wardens and VGS.

Table 3.1: Sampling Framework

Respondents Type	**Number of Wildlife Officers and Village Game Scout**				**Total**
	Regional and District Offices	Game reserves	Game Controlled Areas	Wildlife Management Areas	
Wildlife Officers	7	8	3		18
Wildlife wardens		98	59		151
Village Game Scouts				333	333
WMAs Chairs and NGOs				7	7
Total	**7**	**106**	**62**	**340**	**509**

Source: TAWA and Ruvuma Region, (2018)

3.6.2.2 Sampling Technique and Procedures

Kothari (1985) states that sampling is the technique a researcher uses in selecting items to constitute the study sample from a study population. In this study, simple random sampling was applied by partitioning wildlife officers, WMA chairpersons and NGOs wildlife game wardens and VGS from Ruvuma Region. To determine the representative sample size of the sampling framework, systematic random stratification was done by partitioning of the Game warden and Village Game Scout firm using their Game Reserves, Game Controlled Areas, and Wildlife Management Areas. The study adopted the Krejcie and Morgan (1970) table attached to the Appendix IV. The table uses the formula to calculate the percentage of the population to attain their sampling framework size as the results of the calculation indicated in Table 3.2.

Table 3.2: Sample Size in Stratification, Number of Game Officers, Game Warden and VGS in Strata

Type of Reserve	Number of GO, GW and VGS in a strata			Sample size
	GO	GW	VGS	
Game Resave	18			14
Game Control Areas		151		108
Wildlife Management Areas and NGOs			340	175
Total	**18**	**151**	**340**	**297**

Source: TAWA and Ruvuma Region Wildlife Management Office, (2018)

Table 3.2 shows the number of respondents for this study. The sampling framework of 297 forms the unit of analysis. Goretti (2018) defines the unity of analysis as the persons or objects from which the researcher collects data. In this study the unit of analysis comprises of game officers within the region, districts offices and game reserve, game wardens and VGS. After dividing the population to ensure representativeness of the sample then simple random sampling was used to draw a sample from each stratum in quantitative phase. Therefore, the researcher incorporates simple random in a quantitative phase because it is a basic type of sampling which can be a component of other more difficult sampling methods and at the same every object is given the same possibility of been selected and therefore it reduces the chance of biasness (Kothari, 2004).

Meanwhile, purposive sampling was also used to select cases during case study. Purposive involves selecting sample elements that the researcher deems resourceful and capable of providing necessary information for the study (Kothari, 2004). Bertram and Christiansen (2014) suggest that the researcher can make specific choices about which people or group to include in the sample. In this study purposive sampling

helped the researcher to get key informants on factors influencing wild animals' poaching among game reserves in all levels of management. Purposive selection was based on professionalism, possible possession of adequate information and background in wild animals' poaching activities. As such the researcher selected 14 wild animals' officers, which are one from regional office and 6 from 6 districts. The other seven were obtained from game reserves, game controlled areas, 4 from WMAs and 2 from NGOs in Ruvuma Region. Scholarly, this section is backed by Yin's (2003) case selection criteria.

3.6.2.3 Stratified Simple Random Sampling

Stratified Simple random sampling was applied in the selection of respondents from each stratum. After dividing the population to ensure representativeness of the sample simple random sampling was engaged to draw a sample from each stratum in quantitative study. The researcher integrated simple random in quantitative study. Simple random sampling can be a component of other more difficult sampling methods. Meanwhile every object is selected to reduce chances of biasness (Kothari, 2004).

In the absence of a number of units of analysis, the sample size used in this study in quantitative phase was determined by the quantitative research design adopted, the data analysis techniques, and the number of variables included in the conceptual model. According to Hair *et al,* (2006) the number of respondents requested for scientific analysis per variable in a quantitative is approximated to be at least 10. In this study during exploratory factor analysis there were 28 items in which for 283 respondents it forms a 1:10 ratio which has met the required sample as suggested by

(Hair *et al,* 2006). Meanwhile, sample size also depends on the estimation techniques used in structural equation modelling (SEM), the model complexity, the amount of missing responses, and the level of average errors of variance. When the sample size exceeds 400, the maximum likelihood estimation (MLE) technique tends to be very sensitive to any small variation in the data (Tanaka & Huba, 1984).

Therefore, based on this limitation the recommended sample size for SEM ranges from 150 to 400 respondents (Tabachnick &Fidell 2007). This study used SEM, the actual sample size of 283 respondents which met the SEM requirement of sample. Basing on this study, the survey phase had a sample size of 283 while a five case studies the number of sample size was 14 respondents which make a total of 297 respondents for the whole research project. A sample size of this study enabled to generate stable solutions, and the results were readily replicable as they met the criteria of data analysis technique (Hair *et al.*, 2006).

3.7 Data Collection Tools

The present study used interview, participant field observations questionnaire, and documentary methods as a data collection tools.

3.7.1 Procedure and Questionnaire Administration

The current study involved both field research and library research. The following research procedures were employed during data collection. First, the research clearance letters from the Open University of Tanzania referenced PG201404215 were submitted to the Ruvuma Regional Administrative Secretary (RAS) and from the Ministry of Tourism and Natural. Then the RAS and Tanzania Wildlife Management

Authority (TAWA) on behalf of the Ministry of Tourism Natural provided letters of authorisation to allow the researcher to carry out the study in all six districts in Ruvuma Region. The actual fieldwork took place between December 2017 and March, 2018.

3.7.1 In-depth Interviews

Interviews guide questions attached to Appendix II were used in qualitative phase to collect initial data that assisted the researcher to formulate data collection instruments for survey and in elaboration of the quantitative findings. The use of interview was considered important in this study at the initial stage as it is flexible to accommodate additional information and allows the researcher to capture more contextual variables which are fully rich in in-depth insight of the natural setting understudied. Bertram and Christiansen (2014) portray an in depth interview as detailed conversation between the researcher and the respondent. The objective of the conversation was to collect data in order to address a particular research objective. The study used semi structured questions as a method that allowed flexibility in probing more information from respondents. By using interview schedules the researcher received information concerning wild animals' poaching from wildlife officers, WMAs chairs and NGOs representatives.

Thereafter, interview was used in a case study strategy and in exploration of variables. This clarified and advanced existing theoretical area to reflect the contextual issue of wild animals poaching in Ruvuma Region. This strengthened the questionnaire by confirming on the variable established from literature. It also captured supplementary variables on the social environment of the targeted population. The transcriptions

were thematically coded. The deduced data acquired during interviews were analysed, interpreted and some presented in quotations in order to represent respondents' opinions about wild animals' poaching issues in Ruvuma region.

3.7.2 Structured Questionnaire

On the other hand, a structured questionnaire attached appendix III was used in this study to collect quantitative data for hypothesis testing and model validation. As argued by Kothari (2004) that structured questionnaire is mainly used to capture quantifiable data for statistical testing of the hypothesis of the study. In this study, the main focal point was to test the hypothesis which was developed to find out the significance influencing of individual attitude, social environments and facilitate condition on factors influence intentional wild animals' poaching. Within this circumstance, a questionnaire was appropriate in survey situations of this study as it presented a harmonized system of questions to collect measurable and factual data to classify a specific group of people and their circumstances in statistical characterization (Goretti, 2008). Hence, questionnaire was used in this study during the main quantitative survey due to its ability to capture data that is suitable for statistics analysis.

3.7.2.1 Pretesting and Pilot Study

Questionnaires created by the researcher were reviewed by Ruvuma Regional Game Office staff members and Namtumbo District Game Office staff members as well as Mbarang'andu WMA. The Ruvuma Region Game Office is responsible for monitoring all districts activities related to wild animals. On the other hand, Namtumbo District was selected because it consisted of three WMAs and was situated

very close to Selous Game Reserve and Likuyu Seka Camp. Consequent changes included the changing and addition of questionnaires. The pilot study (November 2017) included questionnaires handed to five game wardens in Namtumbo District Game Office and another five questionnaires were handed to VGS in Mbarang'andu WMA who were then asked to comment on its design.

Piloting the questionnaire allowed the questionnaire to be checke for length, checke for clarity of questions and whether respondents understood the Likert item format of statements. This did not increase any further issues with the questionnaire. Kothari and Garg (2014) maintain that pre-testing the survey questionnaire and doing pilot studies make it possible for the researchers to clean and guarantee validity and reliability of data. Thereafter, data were collected in two Selous Game Reserve camps Likuyu Seka and Kalulu. Data were then collected from Liparamba and Litumbandiyosi proposed Game Reserves. Then Mwambesi and Muhuwesi game - controlled areas and Gesamasowa proposed Game reserve. Finally, data were collected from WMAs in Mbarang'andu, Chingole, Kimbanda, Kisungule and Nalika.

3.7.2.3 Rating the Survey Questionnaire

In completing the survey questionnaire, the demographic section (age and gender) was measured by self-reported age in terms of years while for gender was measured by sex that is male or female. Also, social economic information (education, experience and occupations) was measured by reporting suitable indicators (Dutch, 2015). Education was measured by level of education on what wildlife experts had attained. The level of education ranged from primary education, ordinary level secondary education, advanced level secondary education, diploma education, bachelor's degree, and

master's degree and PhD degree. Also, expert skill was measured by range of years worked in wildlife department. Occupation was measured by indicating wildlife's professionalisms.

In addition, the summated rating scale (Likert scale) was applied to rate the survey questionnaire in dependent and independent variables. The summated scale was used because it is the simplest attitudinal scale construct used in measuring the variable. Chomeya (2010) describes a Likert scale as an arranged scale which respondents have a first choice on selecting the alternative which best fit their judgment, beliefs and attitudes based on the level of disagree or agree within the developed statements. Likert scale is simple to understand and quickens the study. Moreover it is straightforward to conduct quantitative research analysis. It also assists to build conclusions. In addition, during rating, respondents are not forced to express their opinion and feelings but are allowed to be unbiased as observed in this study.

By using Likert scale the main guess considered was that each statement reflects factors influencing wild animals' poaching in Ruvuma Region. Thus this study was mainly constructed of such factors as influencing wild animals' poaching (independent) intentional poaching (dependent variable); the variable was measured using 5- point Likert scale. When rating number 1 represented strongly disagrees, 2 disagree, 3 neutral, 4 agree and 5 were for strongly agreed. The questionnaire was distributed to 283 game wardens, and VGS in Ruvuma Region. These game wardens and VGS were asked to complete the questionnaire by rating the level of agrees or disagrees based on factors influencing wild animals' poaching in Ruvuma Region.

3.7.3 Written Documentary Reviews

Documentary data collection technique was used in this study to provide support and give evidence of the data collected in the field (Kothari, 2004). Documentation was used in providing data interpretation, support and give evidence of interviews and questionnaires. Social scientists use documentary research methods to supplement and confirm on the information collected through in-depth interviews and participant field observation. Great care was taken in the use of documentary resources because they might be out of date or inaccurate as suggested by Bailey (1994).

3.7.4 Field Observation

Observation is a primary method of data collection in field research within qualitative study. Singleton *et al*. (1993) argue that field investigators often start their work with field observations, even when they use other methods such as written documentary reviews or interviewing key informants for gathering information; and this generally serves as additional evidence or cross-checks to the research findings. This study used participant observation because what public say they believe and say that they do is often contradicted by their behaviour (Handwerker, 2001). Spradley (1980) advocates that, participant observation guarantees the researcher's flexibility. n some areas this researcher was covert 'under cover'.

The researcher's real identity and purpose are kept concealed from the group being studied. The researcher takes a false identity and role, usually posing as a genuine member of the group, participants do not know that observations are being made or that there is an observer. While on other areas he was overt, where the researcher reveals his or her true identity and purpose to the group and asks permission to

observe. Given the frequency of this very human contradiction, participant observation can be a powerful check against what people report about themselves during interviews. The researcher presumes that there are multiple perspectives within any given community. He was interested both in knowing what those various perspectives are and in understanding the relationship among them. Participant observation always takes place in community settings, in locations believed to have some importance to the research objectives. Normally, the researcher engaged in participant observation tries to find out what life is like for an "insider" while remaining, without doubt, an "outsider" (Handwerker, 2001).

During the four months of data collection, the researcher visited Mbarang'andu and the other sites in Nalika, Kimbanda, Kisungule WMAs and the communities living near Ruvuma Region protected areas. The researcher observed the WMAs management interventions such as anti-poaching guard posts and habitat management projects, including water ponds within the WMAs. The wild animal's management centre and anti-poaching guard posts donated by the PAM's foundation and WWF were observed during the trip from Mbarang'andu and Nalika. The other trip was in Gesamasova and Litumbandyosi proposed Game Reserves where the researcher noted education dissemination for villages arounds those conservation areas. Further trip was around the shores of River Ruhuji which borders Ruvuma and Morogoro regions, followed by Ruvuma River where he saw the big ponds with hippos and varieties of wild animals around both Ruhuji and Ruvuma rivers. These field trips helped the researcher to understand the physical settings of wild animal's conservation, such as beekeeping and anti-poaching guard posts.

3.8 Variable and Measurement

Identifying appropriate measurement scale is crucial. It enhances reliability and validity of the measure depending on the data analysis technique used to analyse a particular model or conceptual framework. In this study, linear factor analysis and Structural Equation Modelling (SEM) were used as data analysis tools. The application of linear data analysis directed the researcher to use categorical variables in the model.

Flora *et al,* (2012) indicate that linear factor model is good built-in to the analysis of continuously distributed variables than categorical variable. The parameter estimates may be biased and goodness-of-fit indices cannot be reliable when categorical variables are used in a linear factor analysis. The current study used continuous variables only during model development and hypothesis testing. That is the dependant variable and independent variables measured using the Likert scale.

This study, therefore, establishes intentional poaching as a dependant variable while individual attitude, subjective norms (social environments), and perceived behaviour control (facilitate conditions) are independent variables. Both independent and dependant variables are measured using the 5-point Likert scales. Table 3.3 presents the proposed model based on unobserved variables, observed variables and suitable measurement scale that are used in this study as proposed in the conceptual framework.

Table 3.3: Constructs of the Model

Variable	Main Variable	Measurements	Measurement Scale	Authors applied the indicator variable
Dependant variable	**PA**	Poaching network Proximity Bush meat Tusks Weapon like, firearms, poisoning, snares and traps -	5-Point Likert scale	Hamilton (2013), Jachmann (2008), Nguyen (2008),
Independent Variables	**AT**	- Lack of tangible benefits - Hate - Enmity between poachers and Game wardens Crops destruction - Law and police - Conflicts between wild animals and people - Opposing to authority -	5-Point Likert scale	Allendorf, (2007), Holmes (2003), Linnea (2014), Schmitt, (2010)
	SO	- Sacred book - Cultural aspect - Poverty and Corruption - Identity formation - Internal and external politics - Population - Economic Wild animals contain harmful pests - Pasture seeking - Land encroachment - Inheritance from fore fathers	5-Point Likert scale	Corbin (2008), Kideghesho (2016)
	FC	- Inadequate resources - Infrastructure - Low salaries - Low motivation - Climate change	5-Point Likert scale	Baldus et al. (2003 Hughes and Flintan(2001), Johannesen and Skonhoft (2002

Source: Researcher, (2018)

3.9 Data Analysis

This study used both qualitative and quantitative approaches; therefore, data analysis is divided into two parts described as follows:

3.9.1 Qualitative Phase

In the case analysis, the approach's mainly major point was to support the survey results. From the five techniques of case analysis recommended by Yin (2003), namely pattern-matching, explanation building, times-series analysis, logic models and cross-case synthesis, simply pattern matching and cross-case synthesis were used. This was because of their appropriateness to the type of data and specific objectives.

First, pattern matching was used to analyse the individual case through the use of a case pattern-matching matrix (see chapter four). During analysis the themes were coded using the NVivo software to make out issues falling in a given group as elaborated in the following. Second, a cross-case analysis matrix was intended to grant a general explanation of all cases. The cases were analysed next to the thematic area of the factors influencing wild animals' poaching in Ruvuma Region Tanzania.

Thematic data analysis technique was used in cases analysis using NVivo 10 software. Alhojailan (2012) commented that thematic analysis is more proper for analysing the data when the researcher's purpose is to uncover information to find out the relationship between variables and to match up to different sets of evidence that pertain to different situations in the same study. At the commencement of the study, the researcher wanted to verify indicator variables borrowed from the literature review to see if they aligned with the contextual and find out new variables using sets of facts pertained from the verbal response of the game officers, WMAs chairs persons and NGOs respondents in the interview. On the other hand, thematic analysis was used to present description of the variable (theme) during discussion of the findings. This means that thematic analysis helped to search for themes that come out as being

important to the series of events of the phenomenon and the use at verbal response for theme clarification and elaboration (Fereday & Muir-Cochrane, 2006).

Themes of this study came out from patterns, such as in-depth interview and vocabulary (Boyatzis, 1998; Guest & Namedy, 2012). From the codebook, the researcher identified themes and sub-themes: patterns that emerged from the coded data (Braun *et.al*, 2015). NVivo 10 is a software package designed to assist in the analysis of qualitative data. NVivo 10 allows a researcher to sort out and compare texts together and map out relationships in a diagrammatic form. Day (1993) points out that, thematic analysis is more suitable for analysing data when the researcher's focus is to extract information determining the relationship between variables, and to compare different sets of evidence that pertain to different situations in the same study. The researcher wanted to confirm variables from verbal responses of the wildlife officers, NGOs and WMAs chair persons in the interviews. Thematic analysis was used to provide exploration of the variable (theme) during discussion of findings. Thematic analysis is a form of pattern recognition within the data, where emerging themes become the categories for analysis (Gorett, 2008). Thematic analysis helped to search for themes that emerged as being important to the exploration of the phenomenon (Bertram & Christiansen, 2014). NVivo.10 was used for analysing data from the interviews. The package assisted the researcher to rapidly and accurately analyse research items such as transcripts of interviews.

3.9.2 Quantitative Phase

In a quantitative phase, after collecting data, the returned questionnaires were entered into IBM SPSS version 20. Data were both analysed descriptively and inferentially.

Gupta and Gupta (2013) highlight that descriptive data are significant to explore hunches that may have come up during research process. They are also used to look at normality while inferential statistics are used to test statistical significance, which is important for testing the hypothesis. Hence, the study applied descriptive data analysis to see the normality of the numbers and inferential statistics were used for testing the hypothesis.

3.9.3 Descriptive Data Analysis

Ambrose (2009) points out that frequency and percentage are considered useful for profiling characteristics of the phenomena. Descriptive data analysis assisted to gain insights on the general characteristics of game wardens and VGS in Ruvuma Region's protected areas in Tanzania. Furthermore, descriptive data analysis helped to gain a deep understanding on the general characteristics of useful information on factors influencing wild animals' poaching in Ruvuma Region in Tanzania. Descriptive data analysis approach helped in providing a picture of a sample in general which facilitated discussions on the findings.

3.9.4 Multiple Regression Analysis

Multiple regression analysis was applied using Structural Equation Model (SEM) to test the hypothesis and determine the relationship of variables. The basic reason for using SEM is the nature of the study. The study involves numerous variables, which SEM can explore at the same time (Asparouhov & Muthén, 2015). Also, SEM has the ability to run a confirmatory factor analysis testing multiple variables; and where errors are found they can be removed. Thus, it makes the reliability of measurements error free. In addition, the sample size in this study is suitable to using SEM during

analysis. Tanaka and Huba (1984) explain that SEM is complex in the sense that when the sample size exceeds 400, the Maximum Likelihood Estimation (MLE) technique tends to be very sensitive to any small variation in the data. Thus, the recommended sample size for SEM ranges from 150 to 400 respondents (Tabachnick & Fidell 2007). As in this study, a sample size of 283 Wildlife Wardens and VGSs is within the proposed range and is considered to be statistically adequate for survey study and for reaching valid conclusions (Ambrose, 2009).

3.9.4.1 Validity and Reliability

According to Hair *et al.* (2010), reliability and validity are the two main essential quality control objects in research design. In any scholastic study, whatsoever research methodology is adopted for a particular research, validity and reliability matters have to be well thought-out as they are tests of the trustworthiness of the measurement instruments used in research (Eeva-Mari & Lili-Anne, 2011).

3.9.4.1 Validity of the Study in Qualitative Phase

Validity refers to the degree to which a measurement tool measures what it is expected to measure (Drost, 2012). To ensure that the measurement instrument measures what it is aimed to measure. Scholars propose some criteria to be used in the qualitative paradigm to ensure trustworthiness; these criteria are credibility, transferability, and conformability (Golafshani, 2003; Morse & Richard 2002).

3.9.4.2 Credibility

According to Morse and Richards (2002) credibility is about whether the research findings capture what is really occurring in the context and whether the researcher

learned what was planned to be learnt. To ensure credibility in the current study, triangulation was applied to involve assessing and verifying a wide range of informants' viewpoints and experience (Kuzmanić, 2009). An opportunity for enquiry of the project by colleagues, peers and academics was done. Feedback was offered to the researcher at any presentation for example; conferences that were made over the duration of the project (Maxwell, 1992) were taken in to account accordingly.

3.9.4.3 Transferability

Transferability is linked to whether the research findings are relevant to similar contexts (Morse & Richards, 2002). The researcher exposed that the findings from case studies were similar to other contexts by comparing and citing empirical study's findings done in Tanzania, East Africa, Africa and worldwide (Maxwell 1992).

3.9.4.4 Conformability

Morsen and Richards (2002) recommend that steps be taken to ensure that the work's findings are the products of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher. To ensure conformability, the researcher used the broad range of respondents and member checks were used to reduce investigator's biases (Kuzmanić, 2009).

3.9.4.5 Reliability in Qualitative Research

Drost (2012) commented reliability that is an appropriateness or meaningfulness of the measurements. In addressing reliability in qualitative research it proposes the role of dependability. Dependability is based not on whether particular findings can be reproduced by another researcher but rather whether they are convincingly based on

the data collected (Kuzmanić, 2009). In order to address dependability this study has reported in detail, thereby helping a future researcher to redo again the work, if not necessarily to gain the same results (Bertram & Christiansen, 2014).

3.9.5 Validity and Reliability in Quantitative Phase

To ensure reliability and validity the questionnaire was translated from English into Kiswahili language and the pre - test of the instruments and a pilot study was done keenly.

3.9.5.1 Validity

Content Validity

Morse (2002) advocates that, content validity is whether or not the items on a specified test correctly reflect the theoretical domain of the latent construct it claims to measure. It helps to agree on whether a tool appears to others to be measuring what it says it does. To ensure a content validity in this study, a case study followed by pilot study of survey instrument was done to decide and ensure that the items on a given test exactly reflect the theoretical domain of the latent construct it claims to measure. Pre-test of survey instrument and pilot study was conducted in Ruvuma Regional Game Office and in Namtumbo District Game Office. This ensured that the measurements on a given test accurately reflect the constructs.

Construct Validity

Mello and Collins (2001) explained construct validity as the level to which a measure 'behaves' the way that the construct it purports to determine should behave with regard to established measures of other constructs. In any statistical study, the

construct validity of a measure is directly concerned with the theoretical relationship of a variable to other variables. Construct validity happens on statistical procedures where the greater the variance attributable to the constructs the higher the validity of the instruments (Ambrose, 2009). Yammarino *et al.* (2005) comment that confirmatory factor analysis is thought to be fit if the value of chi square test is an insignificant result at a 0.05 threshold and at least one of incremental fit index (CFI, GFI, TLI, AGFI) and one badness fit index (RMR, RMSEA, SRMR) meets the predetermined criteria. On the same vain supportively Cohen (1979) argues that when testing construct validity the researcher requires exploring the use of convergent, discriminate and nomological testing.

To ensure construct validity, factor analysis whereby exploratory was carried it dropped the indicator variable that are performing poorly in the model, since the construct involves multiple variables. Convergent validity is concerned with whether a test is similar to those to which it should theoretically be similar. Fornell and Larcker (1981) recommended the use of average variance extracted (AVE) in testing the convergent validity of the model. In convergent validity the factor loading unto the AVE should be at least 0.5. To measure the convergent validity, AVE extracted achieved the minimum requirement as recommended by Fornell and Larcker (1981).

Table 3.4 indicates that all AVE values were above the recommended value of 0.5 thus demonstrating sufficient convergent validity. Furthermore, it has also been suggested by seamiest that despite the construct validity the researcher needs also to test discriminant validity. Discriminant validity is the degree to which the agreed scale can be distinguished from other scales which are measuring different concepts or

traits. This study assessed discriminate validity by comparing the AVE of each individual construct with the shared variances between this individual construct and all of the other constructs. A higher AVE than shared variance for an individual construct suggests that discriminate validity is attained (Fornell & Larcker, 1981). Table 4.17 in chapter 4 shows the inter-construct correlations of the diagonal matrix. A comparison of all of the correlations and square roots of the AVEs on the diagonal indicated adequate discriminate validity.

Table 3.4: Composite Reliability (CR), Convergent and Discriminate Validity of Construct

	CR	AVE	MSV	Marx(H)	AT	PA	SO	FC
AT	O.724	0.543	0.279	0.750	**0.635**			
PA	0.696	0.537	0.287	0.716	0.528	**0.608**		
SO	0.782	0.582	0.287	0.818	0.443	0.536	**0.694**	
FC	0.763	0.553	0.243	0.794	0.493	0.393	0.338	**0.673**

Source: Researcher, (2018)

Table 3.4 Shows that all variables had a composite reliability (CR) greater than 0.6 and had scored AVE value greater than 0.4 which is recommended. Additionally, nomological validity was tested by relating measurements to a theoretical model that lead to further deductions, interpretations, and tests. To assess nomological validity all standardized coefficients must have significant values greater than 0.2. In this study all measurement models had standardized coefficients significant values greater than 0.2. Table 3.5 shows that all measurement models precisely attitude (AT), intentional poaching (PA), social environments (SO) and facilitating conditional (FA) had standardized coefficients significant values greater than 0.2 (Fornell and Larcker, 1981).

Table 3.5: Assessment of Nomological Validity

Measurement	Model	Standardized Regression Coefficient
PA <---	SO	.352
PA <---	AT	.277
PA <---	FC	.058
PA9 <---	PA	.686
PA6 <---	PA	.662
PA10 <---	PA	.672
AT7 <---	AT	.711
AT8 <---	AT	.734
AT5 <---	AT	.596
AT2 <---	AT	.462
SO2 <---	SO	.761
SO1 <---	SO	.816
SO3 <---	SO	.673
SO7 <---	SO	.478
FA9 <---	FC	.751
FA14 <---	FC	.576
FA10 <---	FC	.822

Source: Researcher, (2018)

Face validity

According to Ambrose (2009) face validity is whether instruments are valid from earlier study. Kumar (2010) proposes that face validity happens when each question or indicator variable in the scale has a logical relation with objectives and hypothesis. To ensure face validity the research tool reflects research objectives covering the full range of issues to be measured. The instrument requires being simple, specific, short and accommodates all requirements for getting required the data.

Criterion Validity

Criterion Related Validity is based upon the principle that processes and instruments used in a study are validity if they are matching similar to those used previously,

validated research. According to Maxwell (1992) criterion validity is a type of validity which gives proof about how well scores, on the new determine connection with other measures of the same construct or very similar underlying constructs that theoretically should be linked. To ensure criterion validity the instrument was personalized to fit the research variables and hypothesis. In addition, concurrent validity ensured through the instrument being developed by considering strong validated theoretical and empirical literature. This resulted to having well established instruments to determine the relationship of variables of the study Table

Table 3.6: Summary of Assessments of Constructs Validity

Validity	Definition of Validity	Assessments
Content Validity	The extent that measurement instrument variables are relevant and representative of the target constructs.	A theory was engaged on item generation group and expert assessment of items.
Face Validity	The amount that measurement instrument items linguistically and analytically look like what is thought to be measured.	Theory review and expert assessment of items was in employment.
Predictive Validity	The degree that a measure predicts another measure.	Regression analysis and discriminate analysis was used to weigh up the predictive validity of the construct.
Concurrent Validity	The level that a measure simultaneously relates to another measure that it is supposed to relate.	Covariance correlation matrix analysis was applied
Convergent Validity	The extent that different measures of the same construct converge or strongly correlate with one another.	Correlation analysis and confirmatory factor analysis (CFA) was applied.
Discriminant Validity	The point that measures of different constructs diverge or minimally correlate with one another.	Correlation analysis, confirmatory factor analysis (CFA) and AVE was applied.
Known-groups Validity	The point that a measure differentiates between groups that are known to differ on the construct.	Means analysis and standard deviations analysis was employed.
Nomological Validity	The extent that a measure relates to other measures in a theoretical network.	Correlation analysis, regression analysis, path analysis, structural equation modelling (SEM) was engaged.

Source: Adopted from Engallant *et al.* (2016**)**

3.9.5.2 Reliability

Golafshani (2003) defines reliability as the degree to which results are consistent over time and precise representation of the total population under study is referred to as reliability and if the findings of a study can be repeated under a similar methodology, then the research tools are considered to be reliable. Thus, exact representation of the total population under study is referred to as reliability. If the results of a study can be reproduced under a similar methodology, then the research tools are reliable. If this is attained then, measurements are free from error and provide away consistent result (Ellis & Levy, 2009). Because reliability is consistency of measurement over used, Zikmund (2003) proposes the use of test-retest method which advocates that, the same measure is administered to the same respondents by breaking up in two points in time

To attain reliability the study applied Cronbach's alpha (α) analysis test reliability of the predictor variables to measure external consistence of variables. The findings showed very consistent variables since they attained the Cronbach's coefficient varying from 0.756 to 0.900 as shown on Table 3.7. Wu, Yu, and Weng (2012) pointed out that the Cronbach's coefficient required to be very reliable if it ranges between $0.70 < \alpha \leq 0.90$. The study has met the proposed criteria.

Table 3.7: Reliability of Variables

Variables	No attributes	Cronbach's Alpha
Attitude	7	0.849
Social Environment	11	0.900
Facilitate Condition	5	0.775
Intentional Poaching	5	0.756

Source: Researcher 2018

In addition the researcher also uses also composite reliability to weigh up the internal consistency of variables. Internal consistency measures the level within the instrument and questions on how well a set of items measures a particular characteristic within the test. Internal consistency is also known as scale homogeneity, in other words, the ability of items in a scale to measure the same construct or trait. In the analysis a *p*-values above 0.5 are considered significant while the coefficients that range from 0.6 and above are considered more acceptable in scientific research although lower *p*-values can be used as well and accepted (Tabachnick & Fidell, 1996; Hair *et al,* 2003).

The Composite reliability *p*-values>0.5 was obtained in the current study as indicated in Table 4.15 in chapter four. It meets this rule of thumbs and thus shows that the indicator variables used measured what they were purported to measure. Otherwise, low composite reliability p-values of equal or less than *p* 0.5 suggest a short of internal consistency of the measures, with indicator variables measuring different things for a given factor.

3.9.6 Validity and Reliability Issue in Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) was used to test sample adequacy in order to test sample adequacy for exploratory factor analysis. Kaiser (1974) suggests the KMO statistic is required to bear minimum of 0.5 and that values between 0.5 and 0.7are mediocre, values between 0.7and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. For these data the overall value for KMO is 0. 880, which falls into the range of being good as shown in Table 3.8. The result gives this

self-confidence that the overall sample size was adequate for factor analysis in this study. On the other hand, sample adequacy for individual variable was measured in this study using an anti image correlation matrix as indicated in Table 3.8.

KMO values for individual variables are produced on the diagonal of the anti- image correlation matrix. The KMO value was above 0.5 for all items as shown on the diagonal of the anti image correlation matrix in table 3.8 which is well above the recommended threshold of 0.5 (Kaiser, (1974). With this KMO value the researcher is confident that the sample size for all items and for overall was adequate for factor analysis.

Table 3.8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.880
Bartlett's Test of Sphericity	Approx. *Chi*-Square	7.644E3
	df	561
	Sig.	.000

Source: Researcher (2018)

Bartlett's test results as indicated in Table 3.8 helped to measure the null hypothesis that the original correlation matrix is an identity matrix. A significant test tells us that the matrix is not an identity matrix which provides evidence that, there are some relationships between the variables we hope to include in the analysis. For these data, Bartlett's test is highly significant (p<.001) which give reason for some relationships between the variables existing in correlation matrix which support to include the items found in the correlation matrix for the exploratory analysis. Hooper (2008) argues that Bartlett's Test of Sphericity reached statistical significance indicating the correlations

were sufficiently large for exploratory factor analysis. Hence, Table 3.9 with $p<0.001$ helped to justify that there were correlations in the data set that were appropriate for factor analysis.

Table 3.9: Summary of Validity and Reliability in Exploratory Factor Analysis Issue in EFA

Reliability and validity	Criteria	Methods Used
Variables	Continuous	All variables were continuous
Sample size	At least 150 400	Sample size used was 283 which are more than 150.
	KMO P value Should be greater than 0.5	KMO P-values found to be greater than 0.5. This demonstrates the sample size is adequacy.
	Heterogeneous	Different gender, different age, different experience, different professionals, different status of protected areas
	Homogenous	All were wildlife experts in Ruvuma Region Tanzania.
Retaining Factors	Eigen value greater than 1	All reserved factors have Eigen values greater than one
Retaining items and absence of Multi collinearity	High loading should be 0.9 and low loading should be 0.4	High loading had 0.9 and low loading had 0.5

Source: Adopted from Hooper and Coughlan (2008)

3.9.7 Validity and Reliability Issue in CFA

According to Oke *et al,* (2012) Confirmatory Factor Analysis (CFA) is important in quantitative studies which contain multiple variables because it ensures the normality of the data, makes the reliability of measurement clear and relationships measurements free from measurement error. Through the procedure of confirmatory factor analysis a variety of fit indices were used to address validity and reliability issues. Some of the fit indices used were goodness of fit index (GFI), adjusted good fit

index (AGFI) and average variances extracted (AVE). Meanwhile, comparative fit index (CFI) used to find out uncorrelated variables in the model. Furthermore, composite reliability was used to address the issues of reliability. Table 3.10 indicates the summary of the technique used to guarantee validity and reliability in confirmatory factor analysis.

Table 3.10: A Summary of Validity and Reliability at Confirmatory Factor Analysis

Validity component	**Technique used**	**Heuristic/*de facto* standards**	**Study model validation**
Discriminant validity	CFA as used in SEM	GFI>.90, CFI>.90, AGFI>80, AVE>share AVE	GFI=.914 , AGFI=.873 CFI=.903, see figure 4.7 AVE>share AVE See Table 3.4
Convergent validity	CFA as used in SEM	GFI>.90, CFI>.90, AGFI> .80,	GFI=.914 AGFI=.873 CFI=.903, see figure 4.7
		AVE at least 0.5	AVE are 0.5 see Table 3.4
Reliability *(Internal consistency)*	Composite reliability (C.R)	All C.R p-value > 0.6 or 0.7	*p*-values are above 0.6 see Table 3.4
Content validity	Literature Review, Expert panels	Higher degree of consensus	Study instrument reviewed and consider experts opinion, pilot tested
Nomological validity	SEM	Standardize path coefficients	All standardized coefficients have significant values greater than 0.2
Predictive validity	SEM	Explained variances in the 0.40 range or above are desired.	Achieved for all unobserved variables

Source: Adopted from Tabachnick and Fidell (2007)

3.9.8 Ethical Consideration

Ethics are norms or values of behaviour that direct moral choices about our behaviour and our interaction with others (Cooper and Schindler, 2003). According to Cooper and Schindler (2003), the target of ethics in research is to assurance that no one is hurt or suffers adverse consequences from research activities. According to Saunders *et al,*

(2009) a number of key ethical issues happen across the stages and duration of a research project which relate to: privacy of possible and actual participants, voluntary nature of participants and the right to withdraw partially or completely from the process, consent and possible deception of participants, maintenance of the confidentiality of data provided by individuals or identifiable participants and their anonymity, reactions of participants to the way in which data are sought and collected including humiliation, stress, discomfort, pain and harm, effects on participants of the way in which the data are used, analyzed and reported; in particular the avoidance of embarrassment, stress, discomfort, pain and harm and behaviour and objectivity of the researcher.

Each of the above ethical issues was taken care of in data collection stage and in reporting the research findings. The ethical principle governing this study was that respondents were not disturbed by the course of research, and gave their informed consent. To ensure this, the researcher applied for permits from the Ministry of Tourism and Natural Resources and Ruvuma region office. The ministry and regional offices provided a formal permission letter that were presented to all targeted places intended to conduct the research and then arrangement were for conducting the research. Participants were given privacy atmosphere to respond to research instruments, they were told to willingly participate and consent in the data collection process, they were assured of the maintenance of the confidentiality of data provided by not featuring their names in research instruments as well as in the research report.

For example, the foreword in the research questionnaire said that, ‘your answers are anonymous and confidential’. Embarrassment, stress, pain and harm to participants

were avoided by submitting to whatever arrangement was proposed by the participant for the researcher to collect the data, Reactions by some participants with regard to the way follow ups were made were contained and the researcher was free from any coercion from the sponsor or any related part. The researcher observed the objectivity in both stages as well as in research topic formulation, research designing and data analysis. Eventually, the researcher acknowledged any help and any academic other scholarly work used, by citations.

CHAPTER FOUR

PRESENTATION OF THE STUDY RESULTS

4.1 Introduction

This chapter presents the results of the study. It highlights the demographics sample distribution; age distribution, education level distribution, gender distribution as well as occupational level distribution of respondents. The chapter presents the findings in the form of case by case followed by thematic presentation. Finally, the chapter presents findings by specific objectives together with model formulation and validation followed by conclusion.

4.1.1 Data Screening Process

4.1.1.1 Questionnaire Checking

By using pre-test and pilot study, the questionnaires were checked to determine their quality. The pre-test and pilot studies were also applied to ensure the clarity of sentences in the questionnaires. This process also helped to minimize the issues of missing values.

4.1.1.2 Data Editing

This study involved field and central editing whereby field editing concerned a watchfully inspection of the completed questionnaire. Thus, the process of determining the collected raw data in survey questionnaires in order to detect errors for corrections was done right away after receiving the questionnaire from the respondents. In field editing, the researcher applied a fast check for minor editing directly after obtaining a questionnaire. Additionally, some of the respondents' hand

writing styles were not easy to read, therefore, respondents were asked to make clear the aspects to be sure with what was written. Such editing was focused in a way that it helped the researcher to keep away from guessing as well as making the study logical.

On the other hand, during the process of data editing, the accuracy of data entrance was checked through proof against the original data on the questionnaire to check if the items were entered rightly. This process of ensuring the accuracy of data related with Tabachnick and Fidell (1996) who advocate that to ensure the correctness of data, data editing and proofreading is required to be conducted. This process helped the researcher to find out that out of 283 questionnaires distributed, nine were not returned; five were filled more than twice in the Likert scale whereas three questioners were not filled.

4.1.1.3 Missing Values

In this study, the missing values were controlled from the initial stage during data collection and during field editing process. Furthermore, the research protocol was applied by doing a courtesy call to the Ruvuma Region Administrative Office as well as all heads of the targeted respondents aiming at introducing the subject matter. Thereafter, respondents were informed about the study. This kind of research protocol developed a comfort habit during filling the questionnaire.

On the other hand, the research protocol, questionnaire checking and editing of data controlled the presence of missing value in the study. Statistical procedure was conducted using SPSS to preview the presence of missing value. The researcher applied missing value data analysis that was conducted for all dependent, independent

and demographic items. After analysis, the findings revealed that there were no variables with 5% or more missing values. The findings looked similar to Draves and White's (2005) who pointed out that if the values of missing data in statistical computation are less than 5% they cannot affect the intended results of the study.

Table 4.1:Example of Missing Values Analysis Descriptive Statistics

	N	Mean	Std. Deviation	Missing	
				Count	Percent
SO1	266	2.9436	.97932	0	.0
SO2	266	3.1429	1.00672	0	.0
SO3	266	3.4586	.95175	0	.0
SO4	266	3.4699	.91168	0	.0
SO5	266	3.4850	.80198	0	.0
SO6	266	3.4135	.91221	0	.0
SO7	266	3.4887	.82523	0	.0
PO2	266	3.1429	.85687	0	.0
PO1	266	3.3684	.89421	0	.0
AT2	266	3.5301	.91168	0	.0
AT3	266	3.5977	.88586	0	.0
AT4	266	3.5301	.80155	0	.0
AT5	266	3.6767	.68459	0	.0
AT6	266	3.7180	.84195	0	.0
AT7	266	3.5977	.73705	0	.0
AT8	266	3.5564	.77131	0	.0
FC9	266	3.6579	.82386	0	.0
FC7	266	3.7180	.82383	0	.0
SO1	266	3.6203	.90000	0	.0
SO8	266	3.5489	.97102	0	.0
SO14	266	3.7331	.77715	0	.0
SO12	266	3.7481	.83355	0	.0
SO13	266	3.7368	.82777	0	.0
FC8	266	3.5789	.75945	0	.0
FC1	266	3.9023	.73577	0	.0
FC2	266	3.8759	.75961	0	.0
FC3	266	3.6541	.73762	0	.0
FC4	266	3.8459	.75406	0	.0
FC6	266	4.0451	.77083	0	.0
PC6	266	3.3835	.96130	0	.0
PO7	266	3.6917	.77392	0	.0
PO8	266	3.7632	.74246	0	.0
PO9	266	3.5714	.72462	0	.0
PO10	266	3.3383	.87210	0	.0

Source: Field Data (2018)

This statistical analysis evidenced that the data were unbiased and measured the values of phenomena which intended to measure. Table 4.1 indicates the examples of missing value.

4.1.1.5 Normality of Data

Johnson and Wichern (2007) comment that most of the theories in multivariate data analysis have been developed assuming multivariate normality. Therefore, data are required to follow a normal distribution in order to make stronger assessments. The reason behind is that procedures based on normality are simple and more efficient.

Furthermore, it was confirmed that for any study that involves big sample size, it is assumed that the data were approximately normal regardless of the underlying distribution. Even though the study with big sample size has been considered to have normal distribution, other scholars such as Rencher (2002) recommend making assessments for multivariate normality by checking univariate normality. On a similar vein, Johnson and Wichern (2007) suggest investigating multivariate normality by using univariate techniques. This meant the univariate methods of assessing normality ought to check normality of each variable first for ensuring multivariate normality.

The mostly applied methods in testing for normality is goodness of fit techniques, Skewness and Kurtosis values, consistent and invariant tests, and graphical and correlation approaches (Patrick *et al.*, 2006). Tabachnick and Fiddell (1996) suggested that the skewness and kurtosis values need to be within the range of -3.3 to 3.3, in order to mean there is normal distribution. In the context of this study, skewness and kurtosis were measured and the results showed normal distribution. This is because

the values obtained were between the require range which is -3.3 to 3.3. In the context of this study generally, Table 4.2 captures the values of skewness, which is 0.149 and kurtosis 0.298. These values indicate normal distribution of the data.

Table 4.2: Normality of Data using Skewness and Kurtosis Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SO1	266	1.00	5.00	2.9436	.97932	-.251	.149	-.784	.298
SO2	266	1.00	5.00	3.1429	1.00672	-.245	.149	-.544	.298
SO3	266	1.00	5.00	3.4586	.95175	-.688	.149	.312	.298
SO4	266	1.00	5.00	3.4699	.91168	-.407	.149	-.181	.298
SO5	266	1.00	5.00	3.4850	.80198	-.614	.149	.618	.298
SO6	266	1.00	5.00	3.4135	.91221	-.403	.149	-.041	.298
SO7	266	1.00	5.00	3.4887	.82523	-.390	.149	.053	.298
PA2	266	1.00	5.00	3.1429	.85687	-.460	.149	.514	.298
PA1	266	1.00	5.00	3.3684	.89421	-.540	.149	-.112	.298
AT2	266	1.00	5.00	3.5301	.91168	-.647	.149	.363	.298
AT3	266	1.00	5.00	3.5977	.88586	-.627	.149	.285	.298
AT4	266	1.00	5.00	3.5301	.80155	-.675	.149	.769	.298
AT5	266	1.00	5.00	3.6767	.68459	-.481	.149	.670	.298
AT6	266	1.00	5.00	3.7180	.84195	-.651	.149	.857	.298
AT7	266	1.00	5.00	3.5977	.73705	-.968	.149	1.782	.298
AT8	266	1.00	5.00	3.5564	.77131	-.638	.149	.859	.298
SO10	266	1.00	5.00	3.6579	.82386	-.678	.149	.724	.298
SO9	266	1.00	5.00	3.7180	.82383	-.496	.149	.245	.298
SO11	266	1.00	5.00	3.6203	.90000	-.772	.149	.879	.298
FA2	266	1.00	5.00	3.5489	.97102	-.787	.149	.535	.298
SO14	266	1.00	5.00	3.7331	.77715	-.711	.149	.812	.298
SO12	266	1.00	5.00	3.7481	.83355	-.601	.149	.528	.298
SO13	266	1.00	5.00	3.7368	.82777	-.562	.149	.510	.298
FA8	266	1.00	5.00	3.5789	.75945	-.947	.149	1.716	.298
FA10	266	1.00	5.00	3.9023	.73577	-.875	.149	2.101	.298
FA13	266	1.00	5.00	3.8759	.75961	-.569	.149	.888	.298
FA14	266	1.00	5.00	3.6541	.73762	-.373	.149	.594	.298
FA5	266	1.00	5.00	3.8459	.75406	-.695	.149	1.444	.298
FA7	266	1.00	5.00	4.0451	.77083	-.625	.149	.526	.298
PA6	266	1.00	5.00	3.3835	.96130	-.500	.149	-.046	.298
PA7	266	1.00	5.00	3.6917	.77392	-.980	.149	1.526	.298
PA8	266	1.00	5.00	3.7632	.74246	-.480	.149	.498	.298
PC9	266	1.00	5.00	3.5714	.72462	-.641	.149	.658	.298
PA10	266	1.00	5.00	3.3383	.87210	-.544	.149	.265	.298
Valid N (listwise)	266								

Source: Field Data (2018)

4.1.1.6 Measure of Variability and Homoscedasticity

Tabachnick and Fidell (2007) pointed out that homoscedasticity can be applied to multiple linear regression and canonical correlation. It applied in both multiple regressions and canonical correlation. To approve homoscedasticity, it is suggested that the variability in scores for one continuous variable has to be roughly the same at all values of another continuous variable.

It was also recommended that once it happens that the homoscedasticity assumptions are violated, researchers might delete outlying cases (Osborne, 2012). Variables are known to be homoscedastic when the variability score of variables are roughly the same at all values of continuous variables. This is related to normality because if both variables are normally distributed that means there is homoscedasticity.

In this study, variability of different values of the sample was measured by using standard error of the mean. The standard error plays an important role in reliability and precision of estimates and is used to measure the variability of the sample. The smaller the standard error found represented the greater uniformity of the sampling distributions and hence greater reliability of the estimates. This study found small standard error which justifies the uniformity of the sampling distribution.

Therefore, basing on the normal distribution of the data and variability of the score of continuous variables in this study, the researcher concludes that the issue of homoscedasticity has been addressed. Table 4.3 shows the variability of the variables in this study.

Table 4.3: Measure of Variability and Homescedasticity Descriptive Statistics

	N	Minimum	Maximum	Mean	
	Statistic	Statistic	Statistic	Statistic	Std. Error
SO1	266	1.00	5.00	2.9436	.06005
SO2	266	1.00	5.00	3.1429	.06173
SO3	266	1.00	5.00	3.4586	.05836
SO4	266	1.00	5.00	3.4699	.05590
SO5	266	1.00	5.00	3.4850	.04917
SO6	266	1.00	5.00	3.4135	.05593
SO7	266	1.00	5.00	3.4887	.05060
PA2	266	1.00	5.00	3.1429	.05254
PA1	266	1.00	5.00	3.3684	.05483
AT2	266	1.00	5.00	3.5301	.05590
AT3	266	1.00	5.00	3.5977	.05432
AT4	266	1.00	5.00	3.5301	.04915
AT5	266	1.00	5.00	3.6767	.04197
AT6	266	1.00	5.00	3.7180	.05162
AT7	266	1.00	5.00	3.5977	.04519
AT8	266	1.00	5.00	3.5564	.04729
SO10	266	1.00	5.00	3.6579	.05051
SO9	266	1.00	5.00	3.7180	.05051
SO11	266	1.00	5.00	3.6203	.05518
FA4	266	1.00	5.00	3.5489	.05954
SO14	266	1.00	5.00	3.7331	.04765
SO12	266	1.00	5.00	3.7481	.05111
SO13	266	1.00	5.00	3.7368	.05075
FA8	266	1.00	5.00	3.5789	.04656
FA1	266	1.00	5.00	3.9023	.04511
FA2	266	1.00	5.00	3.8759	.04657
FA3	266	1.00	5.00	3.6541	.04523
FA4	266	1.00	5.00	3.8459	.04623
FA7	266	1.00	5.00	4.0451	.04726
PA6	266	1.00	5.00	3.3835	.05894
PA7	266	1.00	5.00	3.6917	.04745
PA8	266	1.00	5.00	3.7632	.04552
PC9	266	1.00	5.00	3.5714	.04443
PA10	266	1.00	5.00	3.3383	.05347
Valid N (listwise)	266				

Source: Field Data (2018)

4.2 Sample Distribution

The sampling distribution of a given population is the distribution of frequencies of a range of different outcomes that could possibly occur for a statistic of a population sampling distributions are important in statistics because they provide a major simplification route to statistical inference. Sample distribution measures the frequency with which the number of subjects that make up the sample is actually drawn for a given research study. The samples are drawn when the population size is large, and it is not possible for an investigator to completely enumerate all the items of the population.

This is because a lot of data drawn and used by researchers are actually samples, not population. They allow analytical considerations to be based on the sampling distribution of a statistic, rather than on the joint probability distribution of all the individual sample values. In this study the researcher explored the data in order of the nature and characteristics of respondents in the study area. The nature and characteristics of respondents from WMAs, PGCA, GCA, and GR helped the researcher in informing the essential rationalization of respondents and to build the insights about it as well as helping in final data analysis.

4.2.1 Demographics Sample Distribution

Demographic respondent's characteristics are crucial part in research. They provide data regarding research participants. They also help the researcher to differentiate between different sub- groups within the sample. These are gender, education, occupation and age. They play a big role in all kinds of surveys. Demographic sample distribution provides data regarding research participants and is necessary for

determining whether the individuals in a particular study represent the target population for generalization purposes.

Demographic respondent's characteristics allow the researcher to determine whether the researcher is actually reaching his or her target audience and whether or not the researcher is gathering the target information. Furthermore, if the researcher aims at a representative sample of a population, knowing the distribution of the demographic characteristics of respondents determines how close the sample replicates the population. Most important, if sample sizes are large enough, it enables the researcher to differentiate between different sub-groups. Therefore, by considering such needs, in the present study respondent's gender, education, occupation and age were profiled in this section as described below.

4.2.1.1 Respondents Distribution by Age

Table 4.4 shows the distribution of the age of the respondents who are working in GR, GCAs, PGCR and WMAs in Ruvuma Region. Among 266 respondents, 24.1% were aged between 18-27 years, 52.6 % aged between 28-37 years, and 14.7% were aged between 38 –47 years, while 8.6% were above 48 years of age. Therefore, this shows that the majority of the respondents were aged between 28 to 37 years of age.

This is a group of workers who are energetic in providing wildlife conservation services. The reason is that the respondents are young adults and potential workforce on wild animals' conservation socio-economic development. In addition, the presence of an active age of youth tells that in the organization the job is done since some of the work force is active in performing their work. Moreover, it shows that youth are

willing to participate in wildlife conservation duties although the question of their experience in wildlife conservation can be a subject of discussion. Furthermore, the presence of older age groups indicates that there is succession to youth who are already performing well in the wild animal's conservation fields.

Table 4.4: Respondents' Distribution by Age

Age	Frequency	Percent
18-27	64	24.1
28-37	140	52.6
38-47	39	14.7
Above 48	23	8.6
Total	**266**	**100.0**

Source: Field Data (2018)

4.2.1.2 Respondents' Distribution by Gender

The gender of the respondents consisted of both male and female who are wildlife experts as summarized in Table 4.5. Among the 266 respondents contacted, 91.1% were male, and 9.0% were female. Based on these findings most of GW and VGS were male. This indicates that males were more involved in wildlife conservation than females. Women lacked conservation knowledge and were not employed as game warden postion as compared to men.

The gender compositions were 58.7% male 41.3% female. The findings reveal that 52 were old respondents aged 48 and above. These findings imply that there was slightly equal representation by age group of the respondents and this composition justify the credibility of the collected data and indicate that interims of age wise wildlife experts working in Ruvuma Region will last longer.

Table 4.5: Respondents` Distribution by gender

Gender	Frequency	Percent
Male	242	91.0
Female	24	9.0
Total	**266**	**100.0**

Source: Field Data (2018)

4.2.1.3 Age and Gender Cross Tabulation

Kothari and Garg (2014) point out that, cross tabulation is the process of summarizing raw data and displays the same in compact form to facilitate comparison of variables in a logical order. Cross tabulation is crucial in research in the sense that it helps to sum up the data in categorical variables and provides charts that show how many individuals (or cases) are present in each group. In this study, cross tabulations provided a detailed picture on the distribution of age of respondents by gender consideration. The results show that out of 266 respondents, 64 were aged between 18 - 27 years old whereby male were more that female (85.9% male and 14.1% female). The age of 28 - 37 years old was found with 140 respondents where male respondents constituted 90.0% but female respondents constituted to 10%.

On the other hand, there were 39 respondents aged between 38 and 47 years old; the gender compositions were 100% males 0% females. The findings reveal that 23 respondents were aged 40 years and above; out of which 100% were males. These findings imply that there was slight equal representation by gender on each age group of the respondents and this composition justify the credibility of the collected data on view of the influence of intentional wild animals' poaching in Ruvuma Region Tanzania. Table 4.6 is a summarized analysis of information extracted from

respondents` partly showing the representation of gender on each age group of the respondents.

Table 4.6: Age and Gender

		Age of Respondent				Total
		18-27	28-37	38-47	Above 48	
Gender of Respondent	Male	55	126	39	22	242
		22.7%	52.1%	16.1%	9.1%	100.0%
	Female	9	14	0	1	24
		37.5%	58.3%	0.0%	4.2%	100.0%
Total		**64**	**140**	**39**	**23**	**266**
		24.1%	52.6%	14.7%	8.6%	100.0%

Source: Field Data (2018)

4.2.2 Social Economic Distribution

4.2.2.1 Respondents Distribution by Education Level

Table 4.7 is a summarized analysis of information extracted from respondents` part showing the representation of education in each age group of the respondents. This study discovered that education is one of the most important aspects that might affect the person's attitudes and the way of looking and understanding the problems within the current study.

Educational level affects the response of individual in the field; therefore, it becomes important for this study to examine the educational level of respondents. The findings show majority of respondent's possessed primary education as portrayed by Table 4.7 as follows.

Table 4.7: Respondents' Distribution by Education

Education	Frequency	Percent
Primary Education	115	43.2
Form I-III	26	9.8
Secondary education	10	3.8
Certificate	97	36.5
Diploma	18	6.8
Total	**266**	**100.0**

Source: Field Data (2018)

4.2.2.2 Age and Education Cross Tabulation

Table 4.8 shows respondents' distribution by level of education and age. Among 266 respondents, 43.2% possessed primary level education, 9.8% attended form one to form three, 3.8% held ordinary level secondary education, 36.5% were wildlife certificate holders, 6.8% were diploma in education holders. This suggests that the majority of wildlife workers had acquired basic education. Meanwhile, the results show that out of 266 respondents 64 were aged between 18 - 27 years old whereby 140 respondents were aged 28 - 37 years. On the other hand, 39 respondents were aged between 38 and 47 years old and finally 23 were aged between 48 and above.

Education is a major means of providing individuals with opportunity to achieve their full potential. This involves the ability of acquiring knowledge, skills, values and attitudes needed for various social and economic roles, as well as for their all-around personal development (URT, 2000). Thus, low education level may constrain development at the wildlife conservation. One of the enemies the late Mwalimu Nyerere fought against for was that of ignorance. This is based on the fact that without proper education getting important knowledge is very hard.

Table 4.8: Age and Education Cross Tabulation

		Age of Respondent				Total
		18-27	28-37	38-47	Above 48	
Education of Respondent	Primary Education	13	58	30	14	115
		11.3%	50.4%	26.1%	12.2%	100.0 %
	Form I-III	1	19	3	3	26
		3.8%	73.1%	11.5%	11.5%	100.0 %
	Secondary education	1	5	1	3	10
		10.0%	50.0%	10.0%	30.0%	100.0 %
	Certificate	44	47	3	3	97
		45.4%	48.5%	3.1%	3.1%	100.0 %
	Diploma	5	11	2	0	18
		27.8%	61.1%	11.1%	0.0%	100.0 %
Total		64	140	39	23	266
		24.1%	52.6%	14.7%	8.6%	100.0 %

Source: Field Data (2018)

4.2.2.3 Respondents Distribution by Occupation Level

Table 4.9 demonstrates the respondents' distribution by occupation. It has been revealed therefore that a large proportion of respondents about 57.1 % are from Village Game Scout. This is because Ruvuma Region consists of five WMAs owned by communities. VGS are neither government employees nor WMAs permanent employee. They get allowances only on patrol duties. Meanwhile Game wardens consist of 42.9% who are more professionals in the fields of wildlife management. In

addition, these are government employees and are paid both salaries and patrol allowances. Hence, employees from wildlife section have been placed in the Selous Game Reserve, Southern Zone Anti-Poaching Unity, Game Controlled Areas which justifies the reliability and validity of the collected data.

Table 4.9: Respondents` Distribution by Occupation

Occupation	Frequency	Percent
Game Warden	114	42.9
Vallage Game Scout	152	57.1
Total	**266**	**100.0**

Source: Field Data (2018)

4.2.2.4 Occupations and Gender Cross Tabulation

Impede of comparison was conducted based on occupation and gender. The findings indicated that the majority of respondents were from VGS experts, whereby out of 266 respondents, 152 equivalents to 57.1% were from this section. The composition of respondents by gender from VGS experts were 61.6% males and 12.5% females. The other group of respondents was game wardens that consisted of 114 respondents whereby 38.4% were males and 4.5% were females.

Based on these findings, the general results show that males (83%) outnumbered females (17%). This study concludes that although male wildlife experts outnumbered women that does not generalize that males were more capable than women. Table 4.10 indicates the detailed cross tabulation on the analysis of the data extracted from respondents showing the experts with respect to genders of respondents.

Table 4.10: Occupations of Respondent Cross Tabulation

		Occupation of Respondent		Total
		Game Warden	Village Game Scout	
Gender of Respondent	Male	93 38.4%	149 61.6%	242 100.0%
	Female	21 4.5%	3 12.5%	24 100.0%
Total		**114** 42.9%	**152** 57.1%	**266** 100.0%

Source: Field data (2018)

4.3 Findings from Case Studies

A case study is a research strategy and an empirical inquiry that investigates a phenomenon within its real-life experience. Case studies are based on an in-depth investigation of an individual, group or event to explore the causes of underlying principles. A case study is a type of research approach commonly used in social sciences. The main objective of the case study approach in this research was to conduct an in-depth exploration of factors influencing wild animals' poaching in Ruvuma Region Tanzania. The case study built the foundation of the survey result.

The case studies involved interviewees from Ruvuma Region Game Reserves officers and its six districts game officers, Selous Reserves Camps such as Likuyu Seka and Kalulu, Liparamba Game Reserve, proposed Game Reserves, such as Litumbandyosi and Gesamasowa, Game Controlled Areas such as Mwambesi and Muhuwesi, Wildlife Management Areas, Anti-poaching NGOs operating in Ruvuma Region and Southern-zone Anti-poaching Unity in Ruvuma Region. These cases were selected based on their size, background on operation and possibility of getting adequate information (Yin's (2003). Data were collected through semi-structured interviews

with the RGO, DGOs, Heads of NGOs, departments WMAs chair persons and Camps Managers.

Ruvuma Region covers an area of 64,493 square kilometres out of which 54,839 are arable land, 6,425 forests, and 29,79 consists of water surface. In one of the case studies the interviewees were asked to mention the kinds of wild animals found in Ruvuma Region. One game officer responded that presently it contains elephants, the largest herds of African buffalo and more than half of Africa`s if not worldwide remaining wild dogs. The main species are elephant, buffalo, eland, greater kudu, sable antelope, hippo, lichtenstein hartebeest, common waterbuck, bushbuck, common duiker, southern reedbuck, wildebeest, zebra, impala, klipspringers, warthog, bush pig, spotted hyena, jackal, civet cat and other carnivore species are also common. Leopards are common in the entire Ruvuma Region where as lions are many in the northern part.

In this study, pattern matching and cross-case synthesis were used out of the five techniques of case analysis (Yin, 2003). Firstly, the cases were analyzed individually through a case pattern matching matrix. Then patterns were related to the factors influencing wild animals' poaching. The case study interviewees were asked questions about their knowledge towards the key indicator variables on factors obtained from attitude, social environment and facilitating conditions and how do they influence wild animals poaching in their region, districts, game reserves, game- controlled areas and wildlife management areas. This was followed by cross-case synthesis to analyse the cases and draw conclusions.

The following section summarizes the analysis of the case studies. It presents a summary of five cases followed by discussion and conclusions on the case studies using NVivo 10 software.

4.3.2 Summary of the Case Studies on Exploration on Factors Influencing Wild Animals Poaching in Ruvuma Region in Tanzania

4.3.2.1 CASE A: Game Officers

Game officers are law enforcement officers who protect wild animals (Clark, 2017). Game officers academically generally possess university degrees in areas specifically related to wildlife management, recreation management, wildlife resources, or a science major related to these. Most start out their careers as trainees under the supervision of experienced conservation officers **(**Huss, 2009). As a case study in this study, the researcher aimed at understanding the factors influencing wild animals' poaching in Ruvuma Region. Through game officers who supervise the other game wardens in protecting wild animals, it was evident that there were incidents of poaching in the region under this study. It appears that there were different types of poaching. Respondents' code #1 stated "there are different types of poachers in Ruvuma Region, and they require different policy responses". The first type is called "*Subsistence poachers:* these are indigenous communities living adjacent to protected areas, e.g., trackers and *sangomas* who target small game (e.g. antelope) and poach for food (meat) needs. Subsistence poaching is categorized by such low equipment (e.g. the use of dogs and fire, traps and snares) and tends to have a minimal impact on wild animals' populations". They are not big-game poachers and do not kill high-value wildlife with the intention of selling their trophies.

This type of poaching is part of theory of planning behaviour, they do plan, prepare and they fulfil their intention that is to poach wild animals. Participant field observation also experienced that a category of poachers living in Marang'andu, Nalika, Kisungule WMAs and Gesamasova is acting as traditional healers and agriculturalist nearby protected areas, but in actual sense they are wild animals' poachers. Furthermore experience from field participant observation in the whole Ruvuma Region protected areas found that during dry season subsistence poachers poach wild animals using wild fires which direct wild animals to the place where they set snares and dogs are there. This also targets small games like rats, rabbits, dik -dik, common duicker, African hyenas, hedgehog, wild cat, serval cat, ground pangolin and all kinds of snakes, e.g. python, cobra, green mamba and medium size game such as bushbuck, waterbuck, vervet monkey, yellow baboon, and mountain reedbuck.

These wild fires also destroy millions of small wild animals, insects, chameleons and deforestations which destroy the habitats of wildlife. Participant field observation in villagers surrounding Gessamasowa proposed Game Reserves identified that type of poaching, the presence of bush meat, which usually villegers nicknamed *kodo*. Meanwhile in villages surrounding Marang'andu WMA bush meat is known as *mahuku* and Kimbanda, Kisungule and Chingole WMAs bush meat are known as *inchinjili*. This is evidence that poaching of subsistence is performed there.

The second category of poachers is called *Shooters.* These are the people who commit crimes by killing protected wild animals, illegally hunting, or hunting on private or protected areas. Participant field observation within both the shores of Ruhuji and Ruvuma rivers witnessed poachers collecting money from the villagers before killing

hippos. The shooters include the *"Commercial poachers:* who operate within organized groups that target commercially valuable species like rhinos and elephants".

Further, the observer stated that "this kind of poachers may use different techniques typically more advanced technologies including firearms, GPS and mobile phones". According to respondents code #1 "commercial poaching can have an overwhelming impact on wildlife populations (e.g. elephant, rhino, lion, buffalo and hippo)".

The third category is called *brokers or middlemen;* these are involved in distributing goods purchased from low-level poachers to national and international buyers. The knowledge and connections of this category are fundamental to many kinds of poachers and wildlife traffickers profiting from the unlawful wildlife trade. According to respondent code #1 "The rise in commercial poaching for tusks and bush meat, for example, shows how a traditional subsistence poacher has been transformed in response to the arrival of logging companies in remote protected areas, where a workforce has to be fed, or transport links like bicycle and motorcycle (bodaboda) give easier access to urban markets". She further adds "poaching as part of that kind cannot be easily categorized as subsistence or commercial since it blends elements of both and results from the rise in demand for tusks and bush meat".

The fourth category include the *Hired or Employed by tusks agents* who are military leaders, high-ranking officials, and state employees taking advantage of their positions to exploit their country. Some choose the low-risk, high-reward illegal wildlife trade as their means of supplementing their income or currying favour with foreign governments.

The fifth category is of *tusks agents or Kingpins hybrid forms of poachers:* These are commercial poachers of blended categories". Respondent code #1 asserted that "the boundaries can be blurred at the margins". She further added that individuals, regional syndicates, and transnational organizations around the world participate in the trafficking and sale of exotic animals and protected or endangered species without respect to local environmental sustainability, the protection of the animal, or

These are commercial poachers of blended categories". Respondent code #1 asserted that "the boundaries can be blurred at the margins". She further added that individuals, regional syndicates, and transnational organizations around the world participate in the trafficking and sale of exotic animals and protected or endangered species without respect to local environmental sustainability, the protection of the animal, or justifiable pet shops and breeders that are forced to compete with poaching which undercuts their business. Respondent code #1 added that, some of these individuals also engage in cross-over crim by helping to poach wild animals, falsify hunting or fishing licenses, traffic both human beings and drugs, or smuggle undeclared goods.

On the other hand, another factor influencing wild animals poaching is human-wild animals' conflict that clearly occurs in many situations in Ruvuma Region. This explanation is supported by respondent code #2 in Tunduru District who states that "incidents of men-eating lions have been recorded for decades. Several protected areas of wild dogs are often observed in all parts of the Kimbanda, Kisungule, and Chingole WMAs" which largely are made of wildlife corridor and wild animals buffer zones.

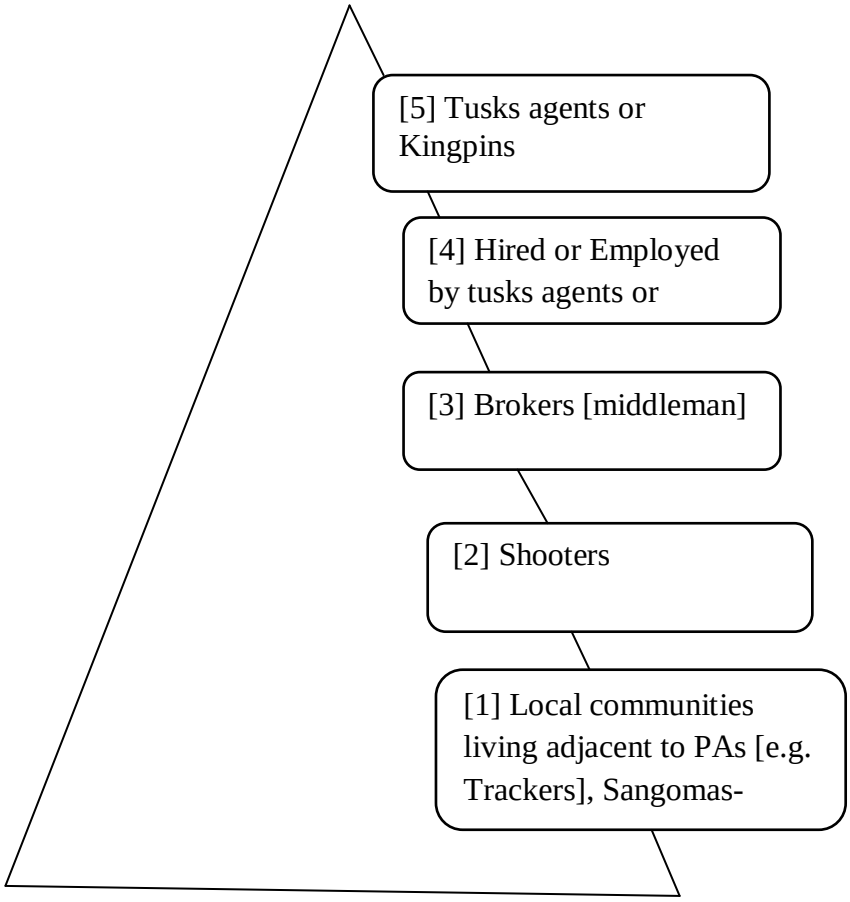

Figure 4.1: Five Levels of Wild Animals Poaching

Source: Researcher (2018)

Several factors spearhead human-wild animal's conflicts. For example, code #2 adds that "the predation upon livestock was the most common issue causing conflicts between humans and carnivores in Ruvuma Region". He adds that the problem is extremely widespread in almost all districts. In particular, surprise killings like sheep, goats, and cows, where predators kill multiple animals in one attack, can result in severe financial hardship to the stock-owners concerned". He further added that the impact of such losses can also be exacerbated further if the stock concerned is particularly valuable, represents an important bloodline, or has cultural and financial significance, as is the case in many traditional communities. In turn the option is poaching wild animals for compensation".

Respondent's code #2 added "another factor that causes human animals' conflict is attacks on humans". In her own words she said "although not as common as attacks upon livestock or game species, wild animals attack upon humans causes intense conflict". She also informed about several cases that had been reported in the region. "The intensity of conflict can have very significant impacts in terms of hostility towards conserving potentially dangerous species". This scenario has an implication to poaching incident.

Furthermore, respondent code #1 stated that "Crop-raiding is a common flashpoint for human-wildlife conflict in Ruvuma Region. Commonly, crops are damaged by species such as bush pigs, cane rats, elephants, hippo, and monkeys because of their destructive nature animals are being poached." Meanwhile respondent code #3 shows that some wild animals do not settle in conserving areas as factors for wild animals being poached because such areas lack water and suffer food shortages.

Finally, the other factor influencing wild animals poaching in Ruvuma Region is low motivation. On this factor, respondent code #1 stated that "there are gaps between game wardens who work in the districts and those who work under TAWA". He added that "those working under TAWA have better terms items of training, facilities and allowances compared to those within the district that lack facilities such as uniforms which in some districts' cases they get from PAMS foundation and WWF as well as patrols allowances". They do not have strong guns. In this particular district, the researcher found that they only had RAT 375, 458,303 and one shot gun. These facts demoralized them. He adds that "sometimes we patrol without food and are given food by village's chairperson when protecting wild animals raiding community

crops". Thus, comments from game officers indicate that poaching in Ruvuma Region is still persistent.

4.3.2.2 CASES B: NGOs

The Protected Area Management Solutions (PAMS) foundation is not for profit conservation organization in Tanzania. It started as state supporting anti-poaching activities in Ruvuma Region in August 2011. The foundation is still supporting intelligence led anti-poaching activities in Ruvuma WMAs. Despite the system of getting WMA leaders, PAMS normally provide capacity building trainings aiming at improving leadership skills to available WMA leaders. The WMAs have little access to funds to pay for rangers' patrol. They greatly rely on both WWF and PAMS's foundation to provide funds for the scouts on patrol, a move considered unsustainable.

The NGOs representatives in Ruvuma Region were interviewed in regard to factors influencing wild animals' poaching in this region. As a result of the good anti - poaching efforts, wild animals' particularly elephants are safer and their population is increasing. Respondent code #4 stated that consequently human-wildlife conflict has increased dramatically even though. Further he added that "stakeholders are working to implement mitigation measures. However, because of the destruction nature of animals protecting wild animals is still a challenge". On the other hand, respondent code #4 held that "the border between Tanzania and Mozambique is just a shallow river, and so provides an easy escape route for poachers. The respondent added that dealing with poachers is difficult because some informants act as double agents who feed information both to poachers and rangers.

Some investors provide education to students in schools surrounding conservation areas. Respondent code #4 stated that this education has helped conservation efforts because students are of wild animals' conservation potentiality. He added; "generated revenues from the hunting investors are distributed to the village members of the WMA for the purpose of their own development projects". Meanwhile those WMAs such as Kimbanda, Kisungule and Chingole which do not have tourists and tourist hunters' things are different. Communities do not see tangible benefits as stated by one of the respondents' codes #3 saying: "for them the only benefit is to kill or to poach wild animals in order to get bush meat and to earn income".

Poaching in Ruvuma Region is significantly influenced by firearms. According to respondent code #4 "most of the firearms used for poaching in Ruvuma are from Mozambique. There are many uncontrolled firearms in Mozambique because of long time civil war". He added: "some Mozambican residents migrated to some villages in the Tanzanian side for the reason of running from civil war in their nation. When in Tanzania, they poach or facilitate poaching activities both in Tanzania and Mozambique". Respondent code #5 mentioned the difficulties of arresting such people because they do not have permanent addresses.

Meanwhile, respondent code #4 stated that lack of wild animals' conservation knowledge among the public encourages wild animals poaching. The respondent asserted that "the public is unaware of what to do when they encounter wild animals". They are unaware of the basic conservation phrases such as "be calm and walk away slowly, do not scream and shout. This makes wild animals aggressive." Respondent code #5 added other factors such as increase in human population, which leads to

farming/settlement in protected areas. He stated: “lack of ecological manipulation that is there are less ecological practices such as prescribed burning, which allows new vegetation to grow in protected areas”.

In this case, animals shift from wild animals’ conservation area’s to village land searching for other palatable pastures apart from homogeneous vegetation available in the conservation area. He further added that “some wild animals are easily poached by using weapons such as guns once they enter in the village land. Animals turn hostile against humans, a fact which may endanger the ranger’s life while executing anti-poaching activities”. According to him this reason “affects them negatively in terms of income generation from their own valuable resources”. He further said “WMA leaders’ are appointed by Authorized Association (AA) members regardless of their conservation knowledge, background and experiences; thus, resulting into poor planning and coordination of the WMAs”.

WWF indicates that wild animals poaching in Ruvuma generally did not show much significant reduction after the introduction of a stricter wild animals protection law, mainly due to lack of effective enforcement. Respondent code # 4 stated that “although the increased number of patrols and use of intelligence network have reduced poaching significantly over the years, lack of these measures has resulted in higher levels of poaching in this region.” He emphasized that “poachers are familiar with the anti- poaching efforts and adapt to the techniques used by enforcement personnel”. Also, by “knowing what the enforcement officer’s the GW and VGS would do, how they would do it and when they would be at a given location, poachers could increase their poaching success”. Another respondent code #5 reported that the

other factors influencing wild animals poaching in Ruvuma Region are issues of penalties. She stated that "the type of penalties poachers face when captured and convicted, include fine, prison sentences or a combination of both, and confiscation of trophies. Theoretically, these reduce the poacher's incentive to poach".

However, she added "high fines might have a deterrent effect on a poacher to not hunt". From her understanding, "higher fines may cause poachers to poach at a higher level to offset greater fines when arrested and convicted". Respondent code #4 opines that "due to poverty, fines are likely to deter local poachers from poaching wild animals, however too high a penalty could exacerbate poaching instead of reducing it." He also says "proximity to wild animals protected areas influence poaching". Some NGOs supportively advocate the above findings on factors influencing wild animals poaching such as ignorance of communities surrounding protected areas, climate change, human population, opposition to authorities and proximity.

4.3.2.3 CASE C: Game Reserves and Control Areas

Both Selous and Liparamba Game Reserves and Game Control areas are under Tanzania Wildlife Management Authority (TAWA) which is an authority organization under the Ministry of Natural Resources and Tourism. TAWA was established under Section 8 of the Wildlife Conservation Act. No.5 of 2009 vide Government Order through Government Notice No.135 published on 9th May 2014 read together with its amendments of Government Notice No.20 of 23rd January 2015.

Baldus (2009) pointed out that, Selous is named in honour of the Englishman *Frederick Courtney Selous*, who lived and hunted in the region in 1871 for around

forty years. When the First World War broke out Selous, at the age of 60, was made Captain of the 25th Royal Fusiliers, winning the Distinguished Service Order (DSO) in 1916. DSO is a military decoration of the United Kingdom, and formerly of other parts of the Commonwealth (Abbort & Tamlin, 1981). This was awarded for meritorious or distinguished service by officers of the armed forces during wartime, typically in actual combat (Ducker, 2010). With his detailed knowledge of the bush, Selous led the chase after the German guerrilla army that presided in southern Tanzania.

On New Year's Day in 1917, Selous was shot dead by a sniper close to the banks of the Beho Beho River. His remains were buried in a place known today, near Beho Beho Camp (Baldus, 2009). Five years after Frederick Courtney Selous' death, the British colonialists incorporated a number of existing game reserves south of the river to extend the plains of the aptly named Selous. In 1921 the British Government established the Game Department followed by the gazettement of the first Game Reserve, the Selous Game Reserve in 1922. The Game Reserve reached its present size and shape in the 1940s, when the colonial government moved the remaining tribes out of the area to combat a sleeping sickness epidemic. It was inscribed as a UNESCO World Heritage Site in 1982.

Meanwhile Liparamba Game reserve which obtains hosts of Miombo woodland is found within three Ruvuma Districts namely Songea, Nyasa and Mbinga. It was gazetted in 1959. (Baldus, 2009). Game Controlled Areas (GCA's) are another type of protected areas provided for in the Wildlife Conservation Act (WCA). But unlike the Game Reserves, land and resource uses in GCA's other than wildlife are not

restricted under the law; residence, cultivation, and livestock keeping are all unrestricted. These GCAs in Ruvuma Region have two statuses. First, they are game controlled areas because inside there are wild animals; and second, they act as forest reserve because of consisting varieties of trees, particularly Miombo. Because GCA's allow residence and human activity and were created on areas of traditional use and settlement, many GCAs are entirely overlapping with customarily managed village lands. In GCA, tourist hunting administered by the Wildlife Division and resident hunting managed by the districts is the primary form of wildlife use.

According to respondent code #5 "Selous Game Reserve Kalulu Camp consists of sharp hills with permanent and seasonal rivers. This physical geographical area is a bit challenging for conservation strategies since it is not easy to reach during patrols as a result the poachers usually use this loophole to poach wild animals". He further added that "low income or poverty contributes to poaching in his camp, for this area poaching of wild animals is one of sources of income. Poachers sell elephants and hippo tusks." Respondent code #6 revealed that "the community living near Selous Game reserve poach for bush meat and business. In these villages poachers are valued more than, the game wardens, because villagers are benefiting much from them".

On facilities and equipment, the respondent stated that "there are no radio calls in both patrol cars and in camps." He further commented that "because we usually go far away from the camp so there is lack of communication between rangers who are in the field and those in the camp" Hence, when one encounters heavy armed poachers, it is difficult to combat them."

Respondent code #5 added that “the community tries to find fertile land and decides to encroach game reserves. Unfortunately, they come with snares and poison to poach wild animals”. Also the respondent further said that “politicians encourage wild animals poaching in defending their votes. Sometimes politicians interfere with conservation efforts by prohibiting rangers not to disturb their voters”.

He added that political support from poachers to get donations and votes weakens law enforcement and encourages wild animals poaching. Respondent #6 said that the other factor that influences wild animals poaching in Selous Game Reserve in Kalulu Camp is conflicts between wild animals and people; he said that “the habitual loss and fragmentation is the source of those conflicts. We experienced several times when we chased them away; they are just hovering, not understanding where to go”. He continued by commenting that “the wild animals’ migrations such as that of elephants and wildebeests sometimes lose direction so usually have the tendency to stay wherever they want”.

Further, he added that this habit sometimes led to animals entering villages and killing people or destroying their crops which automatically encourage conflicts between wild animals and people”. In addition, “increasing human–wild animals’ conflicts have become a challenge for policy-makers”. Meanwhile respondent code #5 added that “in general, costs associated with conservation, such as crop damage and livestock predation by wild animals, have negative effects on local people’s attitudes, while benefits from conservation may have positive effects”. Finally, he added that the other factor that influences wild animals poaching in Kalulu Camp is cultural belief on which he commented that “usually people believed that lion oil helps men’s

sexual power while, wildebeests and elephant tails are used by traditional leaders as leadership symbols".

Concerning Gesamasova proposed game reserve respondent code #8 held that "quick wealth earned through poaching influences acts of poaching in a grand scale." According to her, "poachers can profit more easily than any other economic opportunities such as employment and legal business". She added that "the availability of resources such as motorcycles *(bodaboda*) and money to carry out operations helps poaching". Respondent code #6 in Likuyu Seka Maganga Camp stated that "The villagers usually kill wild animals when found out of game reserve without informing us. This is particularly for old animals since we do not have by laws that protect old animals except for those who are supposed to be poachers".

He added that "sometimes villagers are coming to us and asking why we do not kill wild animals for them". He further stated that "some corrupt game wardens can assist poachers by discharging them from legal cases. This encourages them to continue poaching". In much the same way respondent code #5 in Liparamba Game Reserve said that "the presence of bush meat in the community and the presence of iron and plastic snares indicate that poaching is done". She surprisingly stated that, "baboons are also poached and eaten". On the other hand, respondent code #5 from Muhuwesi Game control area said that "the Ruvuma Region is having different types of tribes within GCAs such as Wandonde, Wayao and Wandendeule, poaching as their occupation, sometimes involving 2 or 3 generations". He added that "wire snaring is the main poaching method because of its relatively low probability of being detected by law enforcement personnel. The main target prey appears to be migratory

herbivores". Respondent code #5 asserted that "poor infrastructure during rainy season also influence wild animals poaching".

On the other hand, respondent code #6 mentioned culture as another factor influencing wild animals poaching because "people believe that animals are made for them to use for either food or income. He also added that some animals' parts such as common warthog and lion claws as well as their oil are used for medicine". Thus, in Game reserve and Game control areas poaching of wild animals are still the problem. Factors such as the presence of firearms, traps, snares and poisoning, politicians interfering conservation professionalism, poverty and corruption and land encroachment are the common factors influencing wild animals poaching in protected areas.

4.3.2.4 CASE D: WMAs

Wildlife in Tanzania has been the property and responsibility of the state since the colonial period. Community wildlife management emerged in Tanzania in the early 1990s in response to challenges facing state wildlife management agencies. It was also linked to the broader political and economic reforms (democratization and liberalization) taking place at the time. In 1995, a government Wildlife Sector Review Task Force concluded that "… local communities who live amongst the wildlife should directly derive benefit from it." It called for devolving wildlife user rights and management responsibilities to communities, and suggested the creation of Wildlife Management Areas (WMAs) on Village Lands as a means of pursuing conservation and rural development goals. The first Wildlife Policy of Tanzania was adopted in 1998, and revised in 2007. The policy recognized that conservation outside

protected areas must generate benefits for villagers and communities. In the late 2002, the Tanzania Government released the Wildlife Conservation (Wildlife Management Areas) Regulations and, in January 2003, it formally launched the WMA process. Pilot projects were established in several parts of the country, including around the Selous Game Reserve, the Africa's largest protected area. It is within this basis that Ruvuma WMAs were established.

WMA members described their twin roles as protecting game and natural resources. Present Ruvuma Region has five WMAs, three in Namtumbo District namely Mbarang'andu, Kimbanda and Kisungule and two are within Tunduru District namely Nalika and Cingoli. Almost all WMAs are part of the Selous-Niassa Wildlife Protected Corridor (SNWPC) as it is indicated in Figure 4.2. The areas border Selous Game Reserve in the north but borders Mozambique in the south.

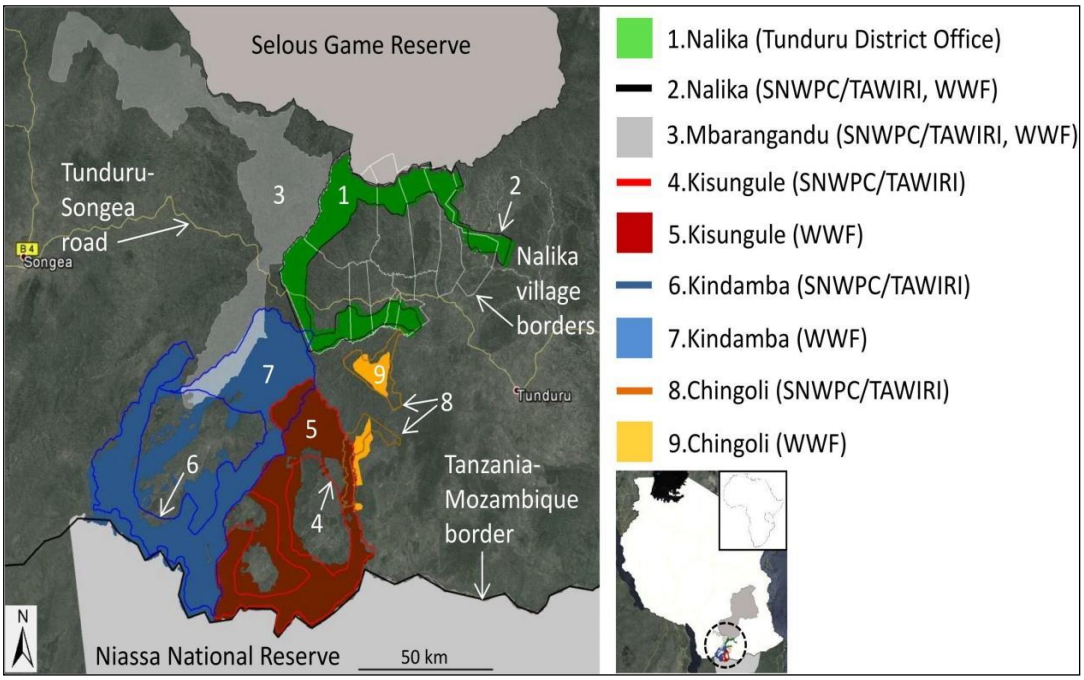

Figure 4.2: Map Showing Positioning of WMAs in the SNWPC

Source: Southern Zone Anti-Poaching Unit-Songea

Common animals in the area are elephants, hippopotamus, leopards, buffalos, lions, hyenas, zebras, bush pigs, warthogs, hartebeests, wildebeests, sable antelopes, reedbucks, wild dogs, aardvarks, silver backed jackals, pythons, variety of small mammals and variety of reptiles, amphibians and birds. Significantly, the areas are believed to have half of the world's wild dog. Furthermore, the areas consist of large number of salt mineral and water which is important for wild animals.

Respondent code #7 from Mbarang'andu stated that" as such, the indigenous people of the area (who are mainly Wayao, Wandonde and Wandendeule) are crop cultivators but have a long tradition of game hunting as an alternative source of food and household income; hence, "poaching of wild animals in the area is very common. The main species that suffer from poaching are elephants (for ivory), buffalos and small animals for meat". Respondent code #8 asserted that poaching had been exercised for a long time and caused disappearance of rhinos in Mbarang'andu and Nalika WMAs." Regarding the techniques used to poach, respondent code #8 said that "in Mbarang'andu WMA consists of small anthills called *Vingwenyo* (in local Ndendeule language) which are small anthills with salt. Wild animals are poisoned to death with cake".

In respect of law and policies, respondent code #7 from Nalika WMA said that "some VGS expressed frustration with the response of the justice system toward cases of wildlife law violation and felt that some actors in the process undermined their efforts to prosecute offenders". From time to time, when suspicious people are arrested inside the WMA, they pretend to be farmers or pastoralists, or resource collectors, such as fire wood and grass". Furthermore, he added that "if the WMA's patrolling team

encountered them they start to cut grass or collect firewood. In reality, they might be illegal workers, even the wild animals' poachers.

Such context can make the poachers' easy access in the area. In addition, respondent #9 argued that it had been stated that "all wild animals are government properties but it does not seem that this statement is true". According to him:

> *"... this statement is not true because some are protected with strong arms that is those which are in game controlled areas and game reserves, while others which are in WMAs are protected by rungu which are just (sticks with knob on the end) bow and arrows".*

Respondent code # 8 stated that the other factor that influenced wild animal poaching was the conflict between animals and people. According to respondent code #9 in December 2017 about 36 hectors of crops were destroyed and about at least seven people were killed. The destroyed crops included onions, bananas, rice, cassava, maize and varieties of vegetables. Such animals' crop raiding caused peoples' life to be very hard. He added that "previously when you go to borrow onion in neighbourhood for preparing food you may be given up to five kilograms, but today you buy one onion for Tanzania shillings 200 and is not enough for preparing your food". Since the majority of these wild animals are from Selous Game Reserve, the respondent had these words "we assumed that may be inside there they are not safe or maybe there is shortage of food or water".

The other problem is the response from our game wardens from Kalulu after detecting wild animals raiding crops in fields. Respondent code #10 said "the experience I have is that it usually takes long to respond. Sometimes when they come, half of the field has already been destroyed". Furthermore, he added that "it seems some of them are

not well skilled in terms of this exercises because they do not know how to drive the wild animals away back to game reserves" As a result, the community living near this WMA tend to hate them. Respondent code #10 added that "inadequate working tools such as vehicles, tents, uniforms, firearms and other wildlife management tools is an obstacle for wildlife management duties in the Kimbanda WMA".

On the other hand, respondent code# 11 from Kisungule WMA stated that inadequate income from wild animals is a factor influencing wild animals poaching. He said "even WMAs that have investors like Mbarang'andu and Nalika one finds that the income that is generated from the licenses fees and 25% game fees is inadequate to support WMA operations and village development". He added: "revenue that is generated from wildlife utilization in the district is shared amongst the villages in the entire district making the revenue retained to focus in wildlife protection in WMA insufficient". In response respondent code #9 from Kisungule said that there were new methods of poaching of wild animals that was by putting poison in *Ching'ung'uno* the anthill that consist of salt usually loved by wild animals because of salty taste".

Respondent code #10 from added Chingoli WMA said that poverty and ignorance of all kinds is evident in the area. He said: "income poverty, diseases and hunger force the local people in the protected area to engage in illegal wild animals poaching for food and income". He added: "ignorance is also common in the area. Inadequate knowledge on values of conservation necessitates certain people to cause unnecessary problems to the wildlife conservation authorities in the area".

In general, according to respondent code #11 from Chingoli WMA the infrastructure factors influence wild animals poaching. He added that "the rivers in this area play an

important role in the ecology and socioeconomic activities of the Namtumbo and Tunduru people". He further added: "seven major rivers along with their numerous tributaries make up the river system of Mbaranga'andu. These rivers are Lukimwa, Litetelimo, Liwoyowoyo, Kipembele, Mtigiti, Luegu and Mtimbira".

He further said that "this easily explains why nearly all the major villages of the Ruvuma Region villages are located by the banks of some major rivers that either go through the WMA or originate from it". He added that "the survival of wildlife of the area is highly dependent on these rivers and river system of the area". Meanwhile, respondent code #9 said that "from the rivers they also have an important role in mythology of the people of Namtumbo and Tunduru and are considered holy by all or many people in our WMAs". He also added that "the mountains and hills, stones and valleys are one of the obstacles for VGS patrols because poachers are using this as their advantage for poaching". On the other hand, respondent code #8 stated:

> *...the land encroachment for domestic animals for all WMAs in Ruvuma Region was reported as one of the threats to the existence of lions, and all cats related wild animals because they are predators of livestock in turn livestock keepers are poaching them to keep their livestock safe*

Finally respondent code #11 on cultural aspect stated:

> *… lions' oesophagus are used by leaders on the local belief that people will fear and listen to them, while the person who possesses caused people led by him to keep quiet and stay calm all the time when they see him or her and obey whatever he or she orders them to do.*

Thus, the experience from WMAs indicated that poverty, corruption within judicial systems, ignorance, infrastructure, land encroachment, crops destruction are the factors influencing wild animals poaching within WMAs in Ruvuma Region.

4.3.2.5 CASE E: Southern-Zone Anti-Poaching Unity

Apart from operating in three regions of Ruvuma, Mtwara and Lindi, they are also responsible for Mwambesi and Muhuwhesi Game Controlled Areas. According to the head of Zone Anti-poaching Unity, these areas are possessing two statuses, first they are game controlled areas because inside there are wild animals and second, they act as forest reserve because of consisting varieties of trees. When he was asked to comment on the following factors influencing wild animals poaching within these areas he commented as follows:

The factors that make the community to engage in poaching activities are that the authorities do not act in consistence with the conservation law and policy. This is what respondent code #12 said:

> *... the law and policy allowing community living around protected areas to have a quarter for hunting, and was so for a long time; today as I talk to you that has been stopped. This makes the community to use other ways to access wild animals, and the only way they know is to poach.*

On the other hand, the same respondent found that within protected areas there are a number of seasonal roads which are a bit of obstacles during patrol especially during rainy season. He added; "these benefit poachers simply because they can trace us where we are and then go to another side to poach very easily".

Moreover, respondent code#14 found that another factor for community engaging in poaching activities is the fact that "crops like maize, beans and cash crops such as coffee, tobacco and cashew nuts take a long time to harvest and sell so the only simple and immediate solution for source of income is to poach wild animals". He added that "they believed that wild animals are made for them because even the sacred books are

commanding that". On the other hand, another factor influencing wild animals' poaching is a culture. For example, respondents' code #13 stated:

> *"Leopards' skins are used to make uniforms for the chiefs of the local people particularly Wandonde, Ngoni, Ndendeule and Yao while buffalo, elephants, lion, eland and wildebeest tails are used as leadership symbol and for house decoration. Poachers cut elephants trunks at the tip and crocodile skins and keep them in their houses believing that they will not be seen by rangers during their poaching activities".*

This statement was also supported by respondent code #12 who stated that "elephant ivory tips are used to make charms which hang on the neck or wrist to protect poachers from being seen by rangers while poaching". He added that "other people put it on their field believing that it can cause their crops to grow healthy and yield good harvests".

Old animals are most vulnerable because their ability to find their own food decreases. Sometimes they move from protected areas and destroy villagers' crops, cats, pigs, sheep and goats and sometimes human beings. This happen within WMAs which do not have hunting tourists and investors such as Chingole, Kisungule and Kimbanda. Respondents' code # 11 stated that "usually law and policy allows those old animals to be harvested (hunted). Unfortunately, we are not having laws or policies which direct us what to do, unless when identified that it is very aggressive the best alternative is to kill it".

In the same, this study found that corruption amongst state officials created the conditions necessary for organized criminals to exploit wild animals. Corruption undermined the creation and application of laws designed to protect wildlife, eroding

the capacity of law enforcement and the judiciary. For example, respondent code #14 stated that "high-level government officials, even at times those charged with protecting wildlife, sponsor hunts and traffic wildlife, undermining cohesive efforts to monitor" Furthermore, he added that "police in some areas are complicit, as are rangers, soldiers, and other government employee in the illegal wildlife trade.

Corruption trickles down to lower levels". This claim was supported by respondent code #13 who stated that "poachers are being pushed by business persons to engage in these activities. Some corrupt leaders are behind these activities by being corrupted with these business people". He further claimed: "unfortunately some of the rangers are also engaged in corruption activities. They act as double dealers sometimes, giving poachers information, particularly during patrols as to where we are so that they can go the other direction to poach". Respondents' code #14 stated that "by living near these protected areas (proximity) the only important thing for them is how these wild animals could be their source of income".

Finally, the study also found that in Ruvuma Region there is spread of firearms, together with local weapons such as wire and plastic snares, bows and arrows. Despite the government's efforts to control firearms, still some are uncontrollable. Respondent code # 12 advocated that "poachers have created new tactics of poaching by using local snares and poisoning within and around buffer zone for poaching wild animals". He added that "efforts to combat firearms are still needed in this area because we are living very close to Mozambique where firearms are still a threat". Further, he added saying "now they put poison into salt anthills which are found within protected areas.

The other method that is on track is the use of rope and iron snares which are placed in the wild animals' path". Thus, according to the Southern-Zone Anti-Poaching Unity's experience in poaching of wild animals in Ruvuma Region it is still a challenge in conservation activities. Hence, the factors that are influencing poaching are proximity, sacred books, cultural aspects, law and policy, firearms, snares, poison and traps.

4.3.3 Pattern Matching and Cross-case Synthesis

Game officers, WMAs chair persons and NGOs representatives in Ruvuma region have the same goals and different strategies for protecting wild animals against poaching. As indicated in specific objectives that poaching is influenced by attitude, social environment and other facilitate conditions. Accordingly, poachers use these contexts in taking advantage to fulfil their needs. This part discusses the patterns from cases which were related to the factors influencing wild animals poaching as described in following subsection.

4.3.3.1 The Factors Influencing the Intention Towards Wild Animals Poaching in Tanzania

In almost all cases this study found, human behaviour component such as attitude, social environment, and other facilitating conditions have become indicator variables as real factors influencing poachers to poach wild animals in Ruvuma Region in Tanzania. For instance, case B reveals that a lot of uncontrolled firearms in Mozambique used during long -time civil wars crossed to Tanzania and are used to poach wild animals. This was clarified in Case C that community living around protected areas are found with poaching material such as firearms, traps, snares, dogs and poisoning materials. Case B from NGOs was pointed out that intentional poaching

attribute was contributed by factors such as proximity. Participant field observation also experienced numbers of firearms returned to Liparamba Game Commander in November 2018 in Mbinga District and from Kimbanda and Kisungule WMAs.

The communities living around protected areas were tempted to poach wild animals because they lived much closer to them. (Kaartinen *et al.* 2009). On the other hand, wire snaring is the alternative method because of its relatively low probability of being detected by law enforcement personnel (Arcese *et al.*, 1995). Participant field observation from patrols in both Kimbanda and Mbarang'andu experienced first-hand wire and ropes snaring and sharp wood sticks and iron sharp instruments placed on wild animals corridors. Meanwhile, Campbell and Hofer (1995) advocate that snares are relatively inexpensive, readily obtainable in most markets, and may be set up under cover of darkness, which reduces the chances of detection. The communities surrounding protected areas have created a thriving market for bush meat with its associated consequence of poaching of wild animals. Poachers may keep the meat largely within their households to meet basic caloric and protein needs, trade it for goods, or sell it to obtain cash. The contributions that bush meat sales make to an individual, or an individual's household, are difficult to tease apart (Knapp, 2009).

Field participant observation in Kisungule WMAs in Namtumbo District in November 2018 identified that one buffalo bull was caught by wire snares and antelope meat. The buffalo meat was distributed to villages of Matepwende, Lusewa, Milonji and Msisima. In December, two days before Christmas, eight sebo antelopes six pregnant and two males were found dead by VGSs while on patrols in Marang'andu WMA also in Namtumbo District.

4.3.3.2 The Influence of Attitude on Intention Towards Wild Animals Poaching in Tanzania

Approximately in all the cases, the individual attitude towards wild animals played a significant influence for poaching in Ruvuma Region. For example, the community living around protected areas shows that they hate wild animals because of many factors. For example, in case A from both regional and district game officers' support that human-wild animals' conflict clearly occurs in an extremely wide range of situations in Ruvuma Region. The genesis of that conflict is because of "surprise killing of livestock such as sheep, goats, and cows, where predators kill multiple animals in one attack, can result in severe financial hardship to the stock-owners concerned", commented by respondent code # 2. Participant field observation on Mwambesi and Muhuwesi Game Controlled areas experienced that some people are engaged in poaching habit as revenge because of losing their dear ones killed by hippo while they were in rice fields. This was observed also in case B by respondent code #4 who adds that "the intensity of conflict that it generates can have very significant impact in terms of hostility towards conserving potentially dangerous species".

Meanwhile, the reason as to why community does hate wild animals was also in case A by respondent code # 3 who found that crop-raiding was the main reason for community to hate wild animals, "this is a common flashpoint for human-wildlife conflict in Ruvuma Region, with species such as bush pigs, cane rats, elephants, hippo, monkeys, small wild animals inflicting significant impacts on people in terms of crop damage" This means that because of the difficulties the community face as a result of the presence of wild animals, in turn they poach them. Thus, in most cases

the individual attitude towards wild animals was found to be a pushing factor for community living near protected area on intentional poaching.

The preceding explanations which support the survey result and prior study by Sitati *et al* (2003) and Naughton-Treves and Treves (2005) who found that the crop damage and livestock predation by wild animals, have negative effects on local peoples 'attitudes. On the other hand, the findings from cases on the influence of attitude indicated that usually people who had suffered crop damage or livestock predation by wild animals had significantly high negative attitudes toward wildlife conservation (Badola, 1998). Furthermore, the study done in Idodi-Pawaga area adjacent to Tanzania's Ruaha National Park indicated that the main reasons given for conflict were the risks of wild animals' damage, particularly livestock depredation, and attacks upon humans (Dickman, 2008).

4.3.3.3 The Significant Influence of Social Environment on Intention Towards Wild Animals Poaching in Tanzania

Roughly all the cases the attribute of social environment played a significant influence of wild animals poaching in Ruvuma Region. For example, in case C, the influence from social system such as cultures, religion, and friends are some of social factors which were found to influence the individual to participate in wild animals poaching activities in Ruvuma Region. Notably is in case B of NGOs which indicated that social environment had significant support of wild animals poaching in Ruvuma Region. This argument was similar to the case of WMAs where it was found that poverty within communities surrounding protected areas influenced people to poach wild animals.

According to respondent code #18, "the local level is essentially an economic phenomenon and hence the availability of alternative economic opportunities locally plays an important role in determining the incentives for poaching". This was also observed in case C from game reserve that social environment factor such as population influenced wild animals' poaching.

Cultural uses of wildlife and forest products include medicinal and ceremonial uses. Such consumption can also be based on certain beliefs in the product's effect on one's power and strength (Azakozu, 2009). On the other hand, in Case A, it was found that the population increase of people is another factor that contributes to wild animals poaching. When the population increases but land remains the same automatically it leads to peoples' scramble for land".

On the other hand, in case C it was advocated that the politicians also encourage wild animals poaching because they usually defend their voters. Sometime politicians interfere conservation professionalism by prohibiting rangers from disturbing their voters. On the context of cultural aspects, Case E reported that another factor influencing wild animals poaching is the cultural aspect. Respondent code #9 stated that "usually people believed that lion oil helps men's sexual power meanwhile wildebeest and elephant tails are used by traditional leaders as leadership symbols".

Furthermore, in case E it was found that religions' sacred books encourage wild animals poaching. Respondent code #14 stated that "people believe that wild animals are made for them so they can use them as they want for food as well as being source of income". The social environment is also found active in supporting wild animals'

poaching in Tanzania. Therefore, in most cases intentional poaching attributes were found to be a pushing factor for wild animals poaching in Ruvuma region.

These factors are supported by the survey results and prior studies that showed that corruption is also a major influence factor of wild animals poaching across the continent (Jackson, 2013); Smith *et al,* (2003) found that corruption has detrimental ecological consequences. It is one of the main factors hindering the efforts geared towards combating wild animals' crime globally. On the other hand, Kideghesho (2016) advocates that corruption as the misuse of public office for private gain, including but not limited to, nepotism, bribery influences peddling and fraud and he identifies diversion of conservation funds for personal gains in African countries as the biggest problem weakening the law enforcement.

Meanwhile, the findings from the case on the influence of poaching in Selous Niassa done by Clark and Lotter (2014) who found that poverty also facilitates the ability of profit-seeking criminal groups to recruit local poachers who know the terrain, and to corrupt poorly remunerated enforcement authorities; hence, poverty and crime are inextricably linked. Likewise, Kelly (2000) discovered that those living in poverty, therefore, have a much greater chance of committing property crime.

On the other hand, Kideghesho *et al* (2006) found that wild animals' crime is one form of property crime occurring in Tanzania. Numerous research findings indicate that illegal hunting in Tanzanian protected areas is pursued as a coping strategy against poverty and as an employment opportunity for a growing population of youth. Efforts to curb wildlife crime are also hindered by political interference when political

interests seem to override professionalism. Some politicians frustrate these efforts on the grounds of defending their voters. For instance, politicians have often stood for people who are living and earning their livelihoods illegally inside the protected areas and have been putting pressure on government to degazetted some or parts of the protected areas.

According to Campbell and Hofer (1995), high human population, coupled with poverty and limited employment opportunities increase demand for resources and high possibility for engagement in criminal activities. The impact of population growth as a driver for wildlife crime is more evident in regions bordering the wildlife protected areas.

4.3.3.4 The Significant Influence of Facilitating Conditions on Intention Towards Wild Animals Poaching in Tanzania

Nearly all cases facilitating conditions played a significant influence for factors influencing wild animals poaching in Ruvuma Region in Tanzania. For example, in case A of region and district game officers, it was evident that the factor influencing wild animals poaching in Ruvuma Region was low motivation. Respondent code #1 said that "there are gaps between game wardens who work in the districts and those who work under TAWA". He added:

> *…those who are working under TAWA are better in terms of training, facilities and allowances while those within the district lack facilities such as uniforms which in some district cases, they get them from PAM's foundation as well as patrol allowances*.

On the other hand, in case C from Selous Game Reserve, respondent code #1 argued that "they have enough guns and bullets, the only problems are working facilities like

night goggles which help them during patrol to prevent their eyes from pests and help the eyes to see effectively during night". He added that "the other big problem is lack of radio call communication within the patrol cars and in the camps" Meanwhile, the infrastructure has been also found as a factor influencing wild animals poaching in Ruvuma. Respondent code #2 from case D of WMAs said that "the mountains, rivers and hills, stones and valleys are one of the obstacles for VGS patrols and poachers are using this as their advantage for poaching".

Thus, in most cases intentional poaching attributes were found to be a pushing factor for wild animals poaching in Ruvuma Region, which supports the survey results and prior study by Kideghesho (2016) who found that minimal budget allocation to wildlife sector crippled law enforcement activities including patrols, prosecution, investigation and intelligence. Further to minimal budget, the existing manpower and equipment are inadequate. Bruner *et al.,* (2001) advocate that poaching incidences are well detected within the protected areas where infrastructure is not friendly for patrol roads, anti-poaching camps and wireless equipment.

4.3.4 Factors Influencing Intentional Wild Animals in Ruvuma Region Tanzania

The attributes which were observed in all cases to influence wild animals poaching in Ruvuma Region, Tanzania are the results of individual attitude, social environments and facilitating conditions as depicted in Figure 4.3 using NVivo 10.

Figure 4.3 demonstrates the main themes which were extracted from the cases based on the verbal responses of the respondents and were used in preparation of the survey instruments.

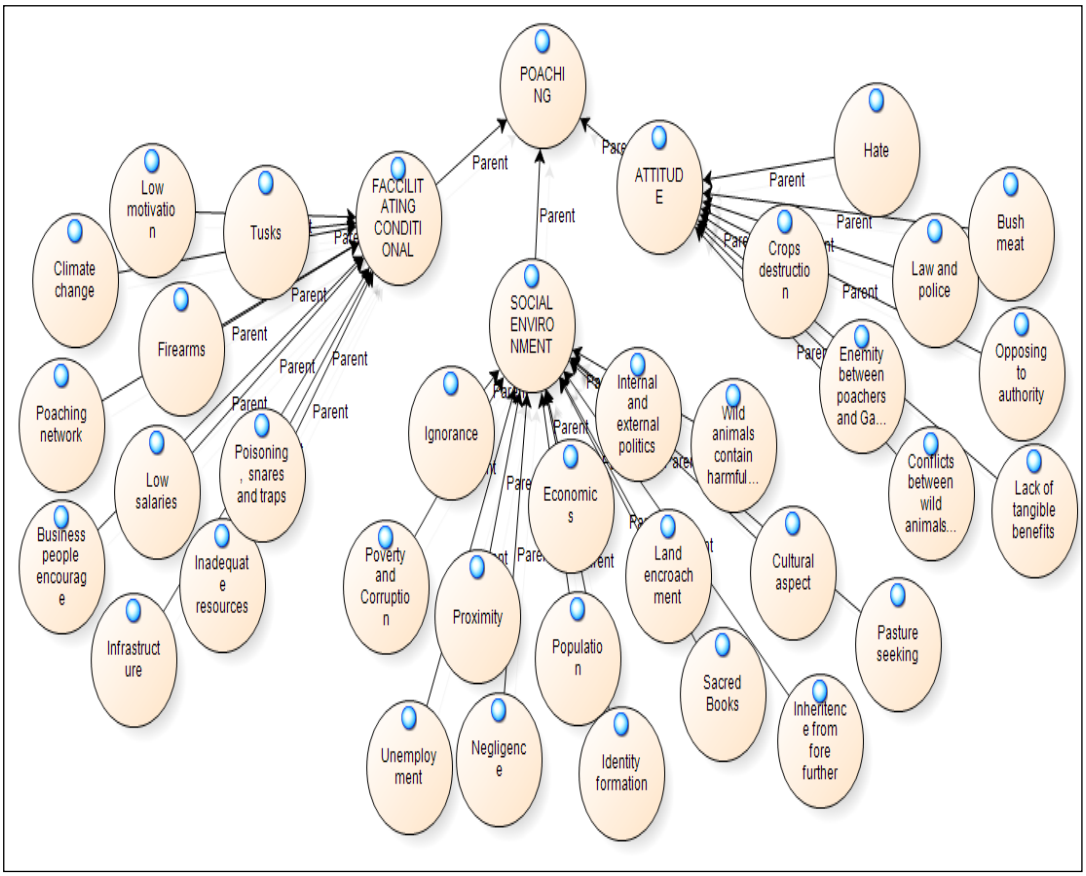

Figure 4.3: Model Summary of Factors Extracted from all Cases

Source: Researcher, (2018)

4.4 Findings on Specific Objectives

4.4.1 Model Formulation and Validation

This section checks whether the proposed factor structures are indeed consistent with the actual data. The reason is based to the fact that the researcher developed the conceptual framework from theoretical and empirical findings from various contexts. Hence, it is not clear if the construct is aligned with their underlined measure. Based on these facts, the researcher used factor analysis of both exploratory factor analysis and confirmatory factor analysis to ensure that the constructs are aligned with their indicator variables as described in the following section.

4.4.1.1 Exploratory Factor Analysis

Exploratory factor analysis was applied in order to make sure that constructs are aligned with their indicator variables. The reason is that at the start of any study, the researcher used hypothesized variables from empirical and theoretical measures of a construct from different contextual settings without data. Stuive, (2007) commented that in a case where there is incongruence between the researcher, theory and data, a poor model fit will always result. Therefore, researchers use exploratory factor analysis to find out a set of unobserved factors that reconstruct the complexity of the observed data in an essential form (Henson & Roberts, 2006).

Field (2005) sees an exploratory factor analysis as an instrument intended to help to reconstruct the theory by exploring latent factors that best account for the variations and interrelationships of the manifest variable. It is used to estimate the unknown structure of the data. In this study, the researcher adopted the Ajzen (1991 conceptual framework using the main construct and indicator variables from planning behaviour theory and empirical literature. To complement the data with the research hypotheses, empirical and theoretical dimensions of constructs, exploratory factor analysis was applied to provide a diagnostic tool to evaluate whether the collected data are in line with the theoretically expected pattern, or structure of the target construct and thereby to determine whether the measures applied have indeed measured what they are expected to measure.

4.4.1.2 Exploratory Factor Analysis Procedure and Output

In performing exploratory factor analysis, principal axis factor analysis with varimax rotation was conducted to find out the fundamental structure of 28 items of the model

forming the attitude, social environment and facilitating condition questionnaire as independent variables and the intentional wild animals' poaching in Ruvuma Region Tanzania as dependant variable. Initially, the exploratory factor analysis was run to know the nature of the model. Hoyle, (1995) commented that exploratory factor analysis helps to identify and remove the weakness of the model by using more than one criterion. The first round results of exploratory factor analysis are shown in Table 4.11. These results show that some of the items had poor fit and some had double loading. Yong and Pearce (2013) suggested dropping items with poor fit and double loading in order to improve the model. Hence, some of the items with poor fit and multiple loading were removed.

Table 4.11: First Round Factor Analysis

	Component			
	1	2	3	4
SO1	.630			
SO2	.677			
SO3	.706			
SO4	.533	.445		
SO5	.550	.446		
SO6	.541	.466		
SO7	.547			
PA2	.408			.440
PA1				.478
AT2		.484		
AT3		.578		
AT4		.698		
AT5		.693		
AT6		.696		
AT7		.700		
AT8		.629		
FC9	.694			
FC7	.716			
SO11	.741			
SO8	.580			
SO14	.635			
SO12	.716			
SO13	.664			
FC8	.552			.407
FC1			.733	
FC2			.741	
FC3			.682	
FC4			.660	
FC6			.484	
PA6				.750
PA7			.452	
PA8			.432	
PC9				.504
PA10				.746

Extraction Method: Principal Component Analysis. **Rotated Component Matrix**[a] Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.

Source: Field Data (2018)

The first round results of exploratory factor analysis are shown in Table 4.11.These results point out that all of the items had good fit. In order to retain the appropriate items *eigen* values and *scree* test (i.e., *scree* plot) were adopted. There after five factors were applied based on selected criteria which they explain 50% of the cumulative variance. The five factors had *eigen* values >1 which meets Kaiser's criterion which proposes retaining all factors that are above the *eigen* value of 1 (Stuive, 2007).

For assessing the suitability of each item to the underlying structure, the following criteria recommended by Yong and Pearce (2013) was used for retaining/eliminating an indicator as follows:

(i) First, all items loaded into their associated factors were retained and those loaded into more than one factors were dropped.

(ii) Second, all items with KMO *p*-value greater than 0.5 were left.

(iii) Third, all items with loading ranging from 0.4 to 0.8 were left. Furthermore, the four factor/components were produced and all the produced factors were aligned.

(iv) Finally, all left factors that had remained with the following attitude (seven items), facilitating condition (five items), social environment (eleven items), and five of intentional poaching items.

(v) These are the criteria adopted for either retaining or dropping the items in order to improve the model, Table 4.12, shows the dropped items.

Table 4.12: Dropped Items on Exploratory Factor Analysis Rotated

Variable	Item dropped
FC: Facilitate Condition	FC7: Negligence FC8:Ignorance
PA: Intentional Poaching	PA7: Pasture Seeking PA8: Business people encourage
SO: Social Environment	SO5:Identity formation SO6: Unemployment

Source: Researcher, 2018

Social Environment (SO) SO5 and SO6 were removed from the analysis because of multiple loading which affected model fitting. For example, both SO5 and SO6 had multiple loading. In Facilitating Condition (FC), FC7 and FC8 were eliminated from the analysis because of multiple loading and weak loading which affected model fitting. For example, FC8 was eliminated because it has multiple loading with PA where FC7 had weak loading. Meanwhile PA7 and PA8 were eliminated because of weak loading which affected model fitting. Given this condition, those items that meet the model fit criteria were retained as described in Table 4.13.

Table 4.13: Exploratory Factor Analysis Rotated Component Matrixa

Rotated Component Matrix[a]

	Component			
	1	2	3	4
SO3	.735			
SO9	.720			
SO10	.708			
SO12	.704			
SO11	.704			
SO2	.697			
SO13	.635			
SO1	.632			
SO4	.629			
SO14	.627			
SO7	.603			
AT6		.738		
AT4		.686		
AT7		.681		
AT5		.680		
AT3		.674		
AT2		.605		
AT8		.598		
FC2			.772	
FC10			.752	
FC13			.659	
FC5			.655	
FC14			.466	
PA10				.745
PA6				.696
PA9				.609
PA2				.533
PA1				.508

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A Rotation converged in 7 iterations.

Source: Researcher (2018)

Table 4.14 defines the items which were retained to account for each factor which was retained in model during exploratory factor analysis as elaborated in Table 4.9.

Table 4.14: Definitions of Constructs and their Measurements

Key Note	
SO: Social Environments	SO1: Sacred Books supports SO2: Cultural aspect SO3: Poverty and Corruption SO4: Unemployment SO7: Internal and external politics SO9: Population SO10: Economics SO11:Wild animals contain harmful pests SO12: Pasture seeking SO13: Land encroachment SO14: Inheritance from fore fathers
AT: Altitudes	AT2: Lack of tangible benefits AT3: Hate AT4: Enmity between Poachers and Game wardens AT5: Crops destruction AT6: Leisure AT7:Confilict between animals and people AT8: Opposition to authority
FC: Facilitate Condition	FC9: Inadequate resources FC5: Infrastructure FC10: low salary FC13: Low Motivation FC14: Climate change
PA: Poaching intention	PA1: Poaching network PA2: Proximity PA6: Bush meat PA9: Tusks
PA: Poaching intention	PA1: Poaching network PA2: Proximity PA6: Bush meat PA9: Tusks PA10: Firearms, snare, traps and poisoning

Source: Researcher, (2018)

After establishment of the study framework from the exploratory factor analysis, then the confirmatory factor analysis was performed as indicated in the following subsection.

4.4.1.2 Confirmatory Factor Analysis

In this present study, confirmatory factor analysis was used to analyse the theoretical constructs through assessing the loadings of the measures, error variances and covariance (Hooper et al., 2008). The researcher used EFA to discover whether the original variables were organized in a particular way reflect another latent variable, at this particular stage the researcher wanted to confirm and harmonize a belief about how the original variables are organized in a particular way using CFA.

The measurement model was applied to test for specification error and correlation between the latent variables (Steiger, 1990). In this part, measurement models of different variables were validated based on the conceptual framework, then the measurement models for the composite structure also were presented.

4.4.2.3 Criteria of Evaluation in Confirmatory Factor Analysis

Schumacker and Lomax (2004) criteria were used to guide the model refinement process to achieve a better fit as recommended. The standardised regression weights and modification indexes that reveal high covariance between measurement errors, accompanied by high regression weights between these errors' construct and cross loading items were observed as shown in Table 4.15.

Table 4.15: Model Fit Assessment Indexes

Indices	Recommended value	References
Absolute Fit Indices		
Goodness of Fit Index GFI	GFI > .0.97 is Acceptable Fit 0.85 < GFI < 0.97 Acceptable fit	Schumacker and Lomax, 2004
Adjusted Goodness of Fit Index AGFI	AGFI closer to 1 Good Fit AGFI > 0.91 Acceptable Fit RMSEA <0.08 Good Fit	Byrne, 2013 Hooper *et al*, 2008 Byrne, 2013
Root Mean Square Error Approximation	0.08 < RMSEA <0.1 Acceptable Fit	Gaskin, 2014 Schumacker and Lomax, 2004
Incremental Fit Indices		
Normed Fit Index NFI	NFI > 0.95 is Good Fit 0.9 < NFI < 0.95 Acceptable fit	Byrne, 2013 Schumacker and Lomax, 2004
Comparative Fit Index CFI	CFI > 0.95 is Good Fit 0.9 < CFI < 0.95 Acceptable fit	Byrne, 2013 Schumacker and Lomax, 2004
Average Variance Extracted AVE	AVE > 0.5 Is acceptable	Fornell and Larcker, 1981

Source: Researcher (2018)

4.4.2.4 Measurement Model for Attitude (AT)

IBM SPSS Amos 20 was run to test for individual Attitude (AT) measurement model fitness, which comprised seven factors namely, AT2, AT3, AT4, AT5, AT6, AT7 and AT8. At the initial stage of confirmatory factor analysis, the model fit index produced the following indices: CMID/DF shows nothing, GFI= 1.000, *P* = shows nothing, AGFI indicated nothing, CFI =1.000 and RMSEA=0.355 which indicated poor fit, showing that further improvement was required to attain a model fit.

The model improvement process was done in order to improve the model which includes scanning the AMOS output and applying the following criteria as suggested by Schumacker and Lomax, (2004) that only those items that demonstrate high covariance plus high regression weight in the modification indexes (AT) should be candidates for deletion. Further, those items with standardized regression weights (SRW) values less than 0.5 also were supposed to be deleted. The AMOS was run two times and the following three items were deleted AT3, AT4, and AT6 in their order in each run and four items remained in the model AT2, AT5, AT7 and AT8.

The reason for the removed three items is based on the fact that they were having high values of standardized regression weight, covariance and regression weight at the modification index compared to other items in a model, which resulted into an inadequate, fit in the model.

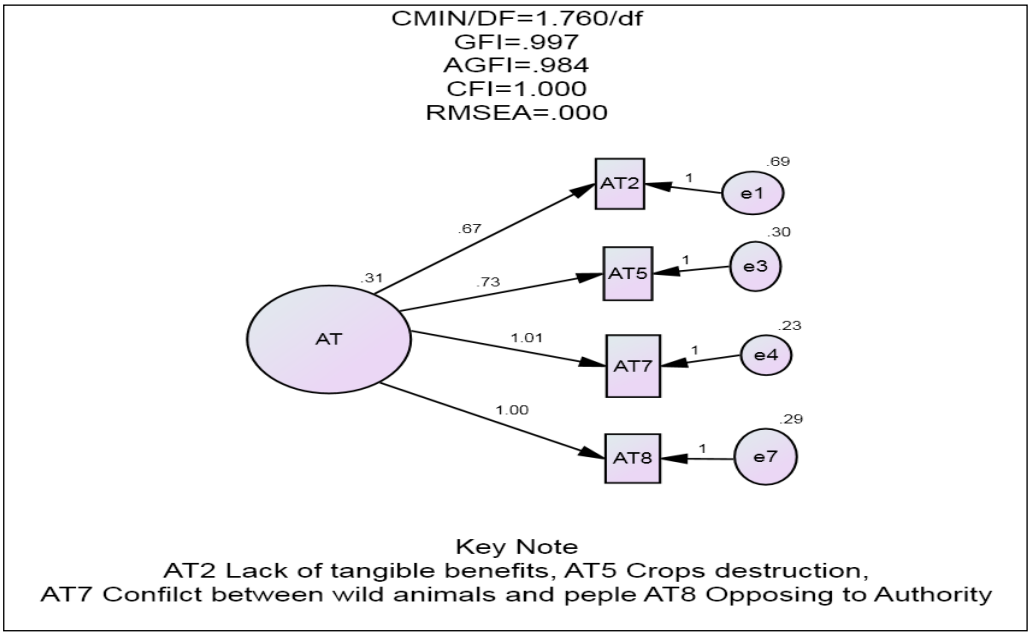

Figure 4.4: Attitude Measurement Model

Source: Researcher, 2018

After the elimination of those items, the results of CFA using IBM Amos 20 indicated the model fit indexes as follows: CMIN/df = 1.880; P. = 0.415, GFI =0.997; AGFI=0.984, CFI = 1.000 and RMSEA = 0.000. All items left had a standardized regression weight (S.R.W) values cut off of 0.5 or greater as the accepted fit, therefore meeting the criteria of the acceptance framework which means that the selected observed variables used fit the model relating to the technological characteristics in the present study.

4.4.2.5 Measurement Model for Social Environment (SO)

The model was initially identified with the following observed variables namely SO1, SO2, SO3, SO7, and SO10 to form social environment (SO) measurement model. After initial specification of the model, a maximum likelihood estimate was run using IBM AMOS 20 which created the follows: CMID/DF=8.712, GFI= 0.908, P = 0.00, AGFI=0.816, CFI =0.915 and RMSEA=0.146 which indicate poor fit, thereafter further improvement or model refinement was required to attain a model fit.

The AMOS was run second time after which one item was deleted that is SO10. After the deletion of that item, the results of CFA using IBM Amos 20 indicated the model fit indexes as follows: CMIN/DF=1.387, P= 0.127, GFI=0.997, AGFI=0.987, CFI = 1.000 and RMSEA is 0.000. These indicate that it is an adequate model fit as suggested by Byrne (2013) also Schumacker and Lomax, (2004), Hooper *et al* (2008) argued that a model fits well when it attains CMIN/DF of 3 or less (indicate acceptable fit), CFI >0.90 indicates good fit), RMSEA <0.08 indicates acceptable fit, and GFI of at least 0.9 indicate acceptable fit. Due to these findings there was no need

for another confirming factor analysis because the model has met the criteria to make it fit.

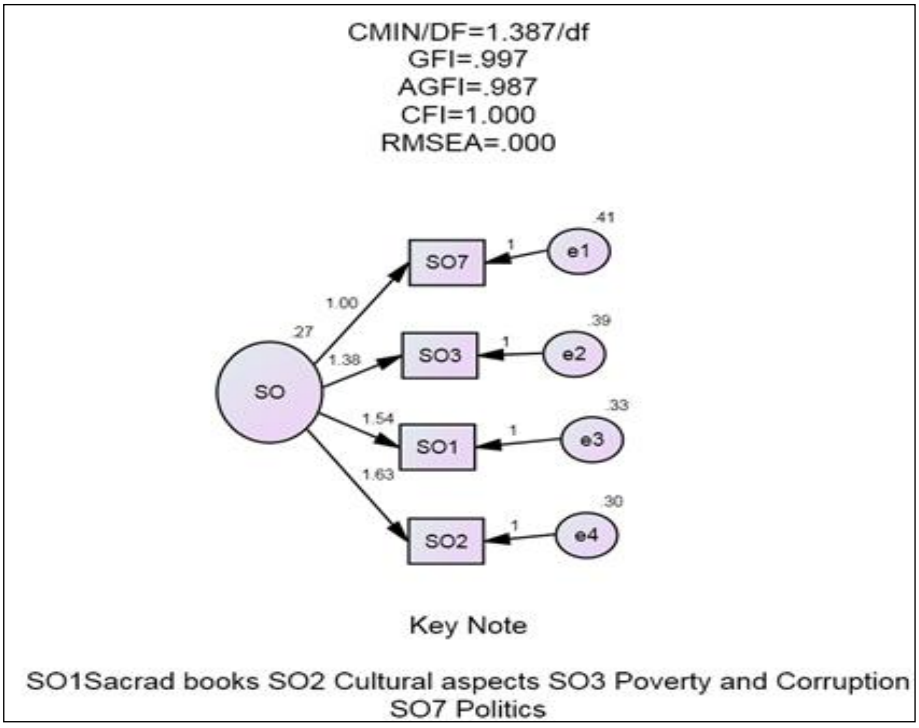

Figure 4.5: Social Environment

Source: Researcher, (2018)

4.4.2.6 Measurement Model for Facilitating Condition (FC)

At the beginning the facilitating condition variable was composed of the following items namely FC2, FC5, FC10, FC13 and FC14, for confirmatory factor analysis. Initially CFA was run using IBM Amos 20 with maximum likelihood estimate, the model fit index indicated the following indices: CMIN/df = 5.955, P = 0.00, GFI= 0.935, AGIF = 0.849, CFI = 0.936 and RMSEA= 0. 266. These findings showed poor fit of the model based on model fitness criteria recommended by Schumacker and Lomax (2004) and Hooper *et al* (2008) that a model fits well when it achieves a CMIN/DF of 3 or less indicating an acceptable fit, CFI >0.90 indicates good fit),

RMSEA <0.08 indicates acceptable fit, and GFI of at least 0.9 indicates acceptable fit. Barrett (2007) suggests that if the model is poor, it can be modified and the model retested either by adding or removing parameters to improve the fit. In addition, based on these arguments, one item was deleted in order to improve the intellectual stimulation measurement model which is FC2. After deletion of FC2 then CFA was run again and the findings indicated fitness of facilitating conditions measurement model as follows: CMIN/df ratio=1.007, P = 0.1007, GFI = 0.996, AGFI 0.981, CFI= 1.000 and RMSEA=0.005.

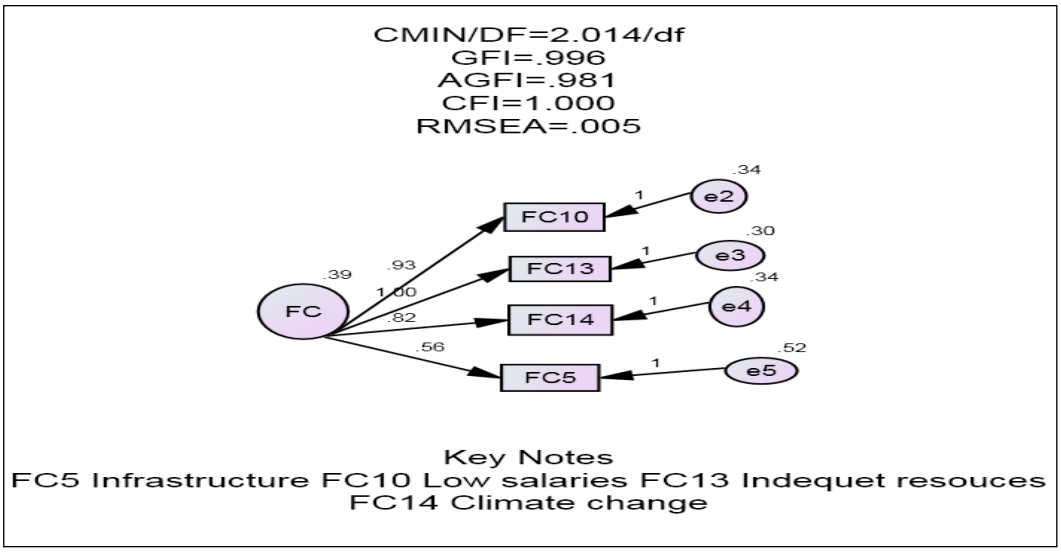

Figure 4.6: Facilitate Condition Measurement Model

Source: Researcher (2018)

4.4.2.7 Measurement Model for Intentional Poaching (PA)

At the beginning the intentional poaching variable was composed of the following items namely PA1, PA2, PA6, PA7, PA9 and PA10 for confirmatory factor analysis. Initially CFA was run using IBM Amos 20 with maximum likelihood estimate, the model fit index indicated the following indices: CMIN/df = 7.237, P = 0.00, GFI= 0.952, AGIF = 0.855, CFI =.867 and RMSEA=0. 153. These findings showed poor fit

of the model based on model fitness criteria recommended by Schumacker and Lomax (2004) and Hooper *et al.* (2008) that a model fits well when it achieves a CMIN/DF of 3 or less indicating an acceptable fit, CFI >0.90 indicates good fit), RMSEA <0.08 indicates acceptable fit, and GFI of at least 0.9 indicates acceptable fit. Barrett (2007) suggests that if the model is poor it can be modified and the model retested either by adding or removing parameters to improve the fit. In addition, based on this argument, two items were deleted in order to improve the intellectual stimulation measurement model which is PA1 and PA7. After deletion of both PA2 and PA7 then CFA was run again and the findings indicated fitness of inspirational motivation measurement model as follows; CMIN/df ratio=1.141, *P* = 0.320, GFI = 0.996, AGFI 0.979, CFI= 0.995 and RMSEA=0.023.

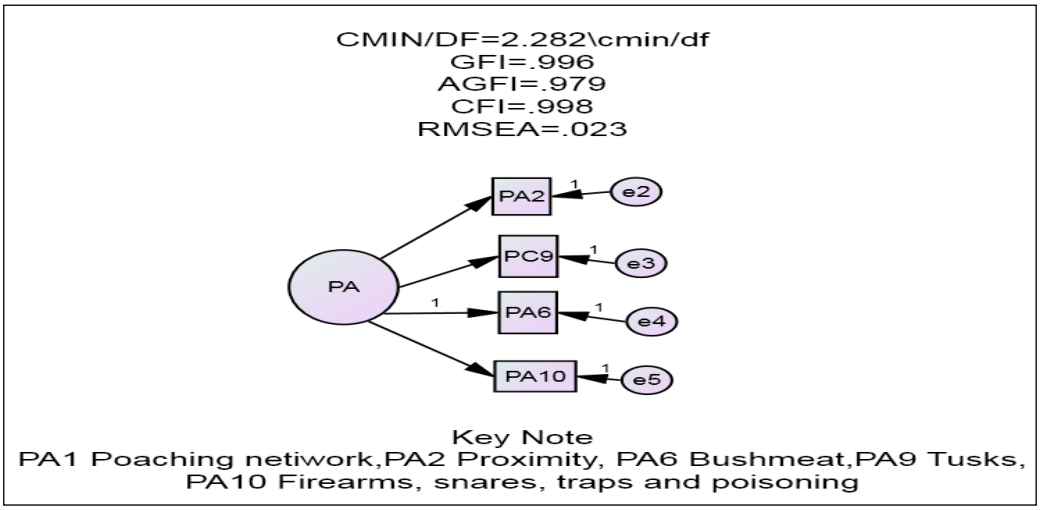

Figure 4.7: Intentional Poaching

Source: Researcher (2018)

For the duration of assessments of measurement model for each construct, some of the items were eliminated in order to come up with items that display good fit. Table 4.16 shows summary of the model fit during the initial and final run of CFA. Initially the

model found to be substandard but rerunning the model after removing those items once affected the fitness of the measurements, and finally the model becomes good. At this point, elimination was made at item level and items that were removed not only weakened the model but were also indicating weakening of statistical power.

Table 4.16: Summary of Measurement Model on CFA

Items	Initial Stage of CFA Indicating Unsatisfactory Measurement Model Fit					Final Stage of CFA Indicating Good Measurement Model Fit				
	CMID/Df	GFI	AGFI	CFI	RMSEA	CMID/Df	GFI	AGFI	CFI	RMSEA
AT	-	1.00	-	1.00	0.355	1.880	0.997	0.984	1.000	0.000
SO	8.712	0.908	0.816	0.915	0.146	2.060	0.992	0.961	0.993	0.063
FC	5.955	0.935	0.849	0.936	0. 266	1.007	0.996	0.981	1.000	0.005
PO	7.237	0.952	0.855	.867	0. 153	1.141	0.996	0.979	0.995	0.023

Source: Researcher (2018)

4.5 Measurement Baseline Model

In order to reach a baseline measurement model that fits both components, the four individual measurement models which were developed earlier were combined and CFA was run with maximum likelihood estimate in IBM Amos 20 to determine its fitness. After initial run, the results showed a bad model fit with CMIN/df 3.064 GFI=0.881, AGFI 0.835 CFI= 0.840, RMSEA=0.088. Based on Hooper *et al* (2008) recommendation which requires a model to achieve the following minimum requirements CFI >0.90 indicates good fit, RMSEA <0.08 indicates acceptable fit), and commonly used $\chi 2$ statistic ($\chi 2$/ df ratio of 3 or less in order to be considered fit. Even though some elements are showing minimum requirements for the model met, however, they are not strong enough to convince the researcher that they can be quite enough to produce useful results as per Figure 4.8.

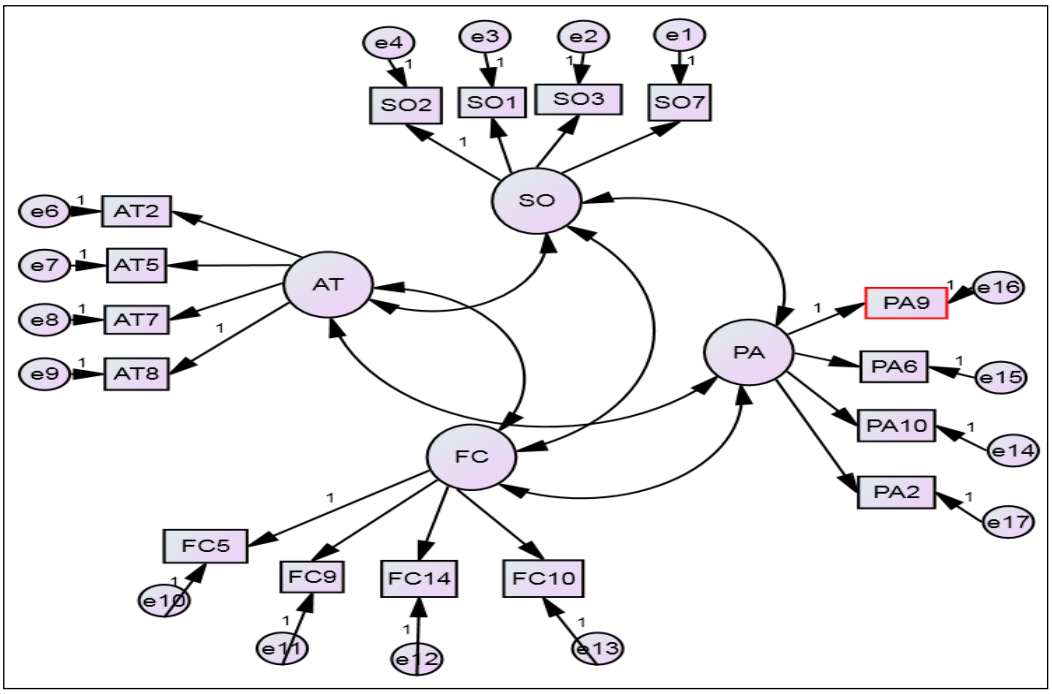

Figure 4.8: First Baseline Measurement Model

Source: Researcher (2018)

Therefore, in order to improve the model, some items that were affecting the significance of the model's fitness were removed as recommended by Hooper, *et al*., (2008). The items that demonstrated high covariance plus high regression weight in the modification indexes (M.I) and those items with standardized regression weights (S.R.W) values less than 0.5 and cross loadings items were removed. To ensure good fitness of the model three items were removed and these items that were removed include AT2, FC5 and PA2. At this point, elimination was made at items level and items that were removed not only were weakening the model but were also indicating weak statistical power.

After eliminating those items in the model, re-running the model indicated adequate fit results with CMIN/DF= 2.153, P= 0.000, GFI=0.929, AGFI=0.890, CFI=0.918 and RMSEA=0.070. On the other hand the observed variables with significant

probabilities have positive standardized regression weights greater than 0.50. Further standardized path coefficients between measured variables and factors in the models show that all path coefficients between measured (manifest) variables and latent (un-observed) variables in the model are significant ($p < 0.05$). These results show that most of the factor loadings explaining the measurement model are adequate and thus reflect a very good reliability of the research constructs. As recommended by Gaskin, (2014) that factors loading lower than 0.5 are not significant while Bentler and Yuan (2000) indicated that a negative regression weight on the other hand presents doubtful measurement models. In this study, the researcher has achieved the above good results; hence the model achieved a robust measurement model as illustrated in Figure 4.9. The retained items were used in the final analysis in the structural model.

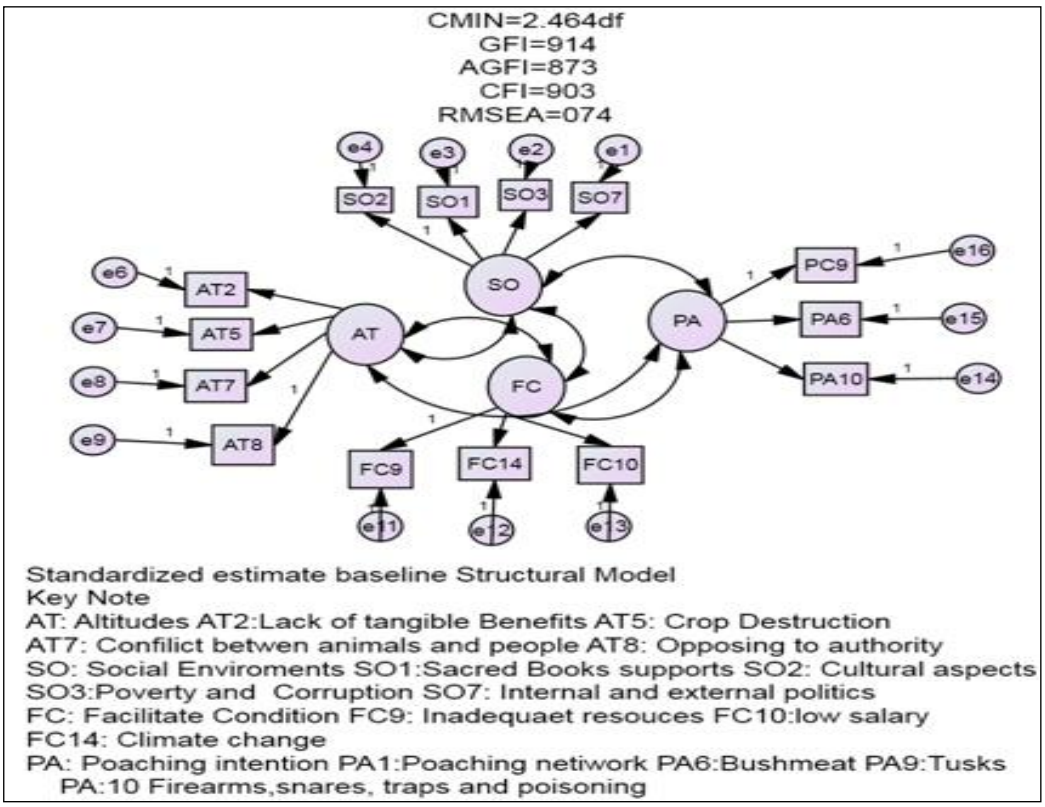

Figure 4.9: Combination of Measurement Baseline Model
Source: researcher (2018)

4.6 Model Regression Weight and SRW

According to the summary of the findings presented in Table 4.17, the standardized regression coefficient of at least 0.2 for all relation is achieved with the critical values(C.R) >1.96 using significance level of $p < 0.05$ showing that there is positive and strong significant relationship between the observed and unobserved variable of the model. The results thus confirm a strong positive relationship between observed variable and unobserved variable. Therefore, this finding confirms that a very strong framework was used for further analysis of relationship between variables.

Table 4.17: Model Regression Weights and Standardized Regression Weights

Path estimate			Estimate	S.E.	C.R.	P	Label	SRW
PA	<---	SO	.303	.079	3.822	***		.352
PA	<---	AT	.328	.125	2.618	.009		.277
PA	<---	FC	.065	.098	.658	.511		.058
Poaching9	<---	PA	1.000					.686
Poaching6	<---	PA	1.280	.165	7.752	***		.662
Poaching10	<---	PA	1.178	.151	7.793	***		.672
Attitude7	<---	AT	1.245	.197	6.333	***		.711
Atttude5	<---	AT	.970	.164	5.921	***		.596
Atitude2	<---	AT	1.000					.462
Social2	<---	SO	1.000					.761
Social1	<---	SO	1.039	.091	11.360	***		.816
Social3	<---	SO	.859	.086	9.991	***		.673
Social7	<---	SO	.637	.090	7.110	***		.478
Facilitate9	<---	FC	1.381	.168	8.200	***		.751
Facilitate14	<---	FC	1.000					.576
Facilitate10	<---	FC	1.512	.185	8.170	***		.822
Attitude8	<---	AT	1.346	.211	6.383	***		.734

Source: Researcher (2018)

After establishing the model fit and all hypotheses of the relationship between observed and unobserved variables have been agreed, the following step was to jump

to a structural model in order to be able to test for the hypothesis of the study between the dependent and independent variables as postulated in the next section.

4.6.1 Basic Structural Model on the Influence on Wild Animal' Poaching

The basic structural model of the study hypothesized the relationship between the influences of factors influencing wild animals' poaching in Ruvuma Region. The results of the analysis using AMOS version 20 are diagrammed in Figure 4.8 and the results for the goodness of fit indices base on four indices namely CMIN/DF, CFI, AGFI and RMSEA are presented and elaborated below.

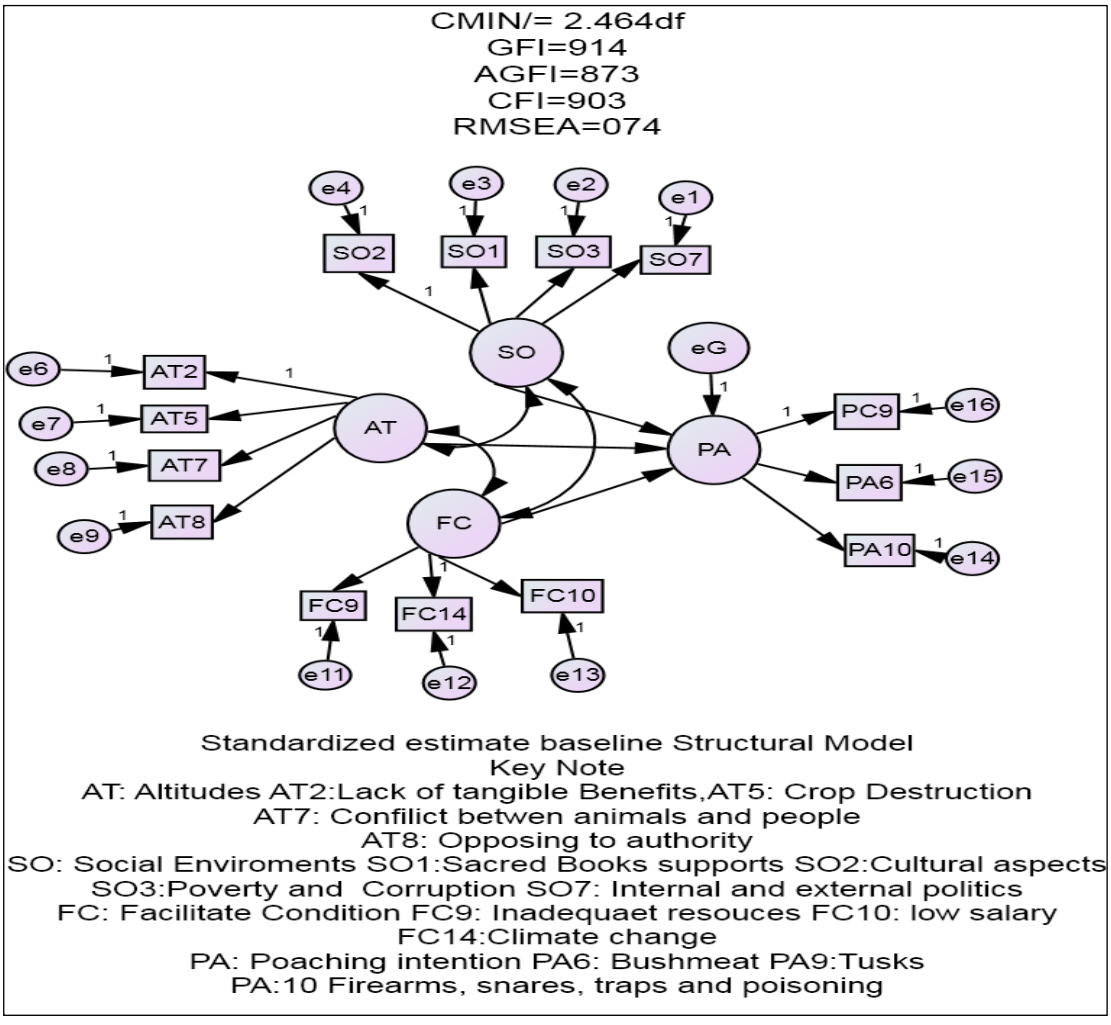

Figure 4.10: Final Measurements Model
Source: Researcher, (2018)

The outcome for model fit in figure 4.10 are elaborated as follows: The ratio of the χ 2, to the degree of freedom-CMIN/DF commonly referred to as normed *chi*-square value has yielded a value of 2.464, which has a range within the suggested cut off point values < 3 by (Schermelleh-Engel, *et al,* 2003). The CFI=0.903, GFI =0.914 and AGFI=0.879 obtained fall under the acceptable range whereas values close to 1 and generally values above 0.9 indicate a good fit as suggested by Schermelleh-Engel, *et al*.(2003). On the other side, Byrne, (2013) suggested that a RMSEA value of 0= shows perfect fit, < 0.05 suggests close fit, 0.05 to 0.08 tells fair fit, 0.08 to 0.1 a mediocre fit and > 0.1 is poor fit. Compared to this study findings the RMSEA values of 0.074 which was produced in the analysis indicated fair model fit in the data. After establishing a model fit which indicated a good fit, the path coefficient and hypothesis testing was evaluated as explained in the next part using this model.

4.6.2 The Basic Model Path Coefficients and Hypothesis Testing

The structural model was used to test the hypothesized relationships. The hypothesized relationships are examined against various coefficients and scores obtained from the analysis. In this research the hypotheses are tested based on the direction, strength and the level of significance of the path coefficients. A standardized paths coefficient, critical value (C.R) and significant level (p) were used in this study to test and evaluate the strength and the level of significance of the hypotheses. Testing hypotheses at each run was done for comparison purposes.

4.6.2.1 The Influence of Attitude on Wild Animals Poaching in Ruvuma Region

Not much is known on the influence of attitude on wild animals poaching in Ruvuma Region. If it is the case then to confirm the influence of attitude on wild animals

poaching in Ruvuma Region to get more understanding is in order; the following hypotheses were developed as stated below.

Null H1a: *Individual attitude does not have significant influence on intention toward wild animals poaching in Ruvuma Region Tanzania*

Alternative H1b: *Individual attitude has significant influence on intention toward wild animals poaching in Ruvuma Region Tanzania.*

For testing the stated hypotheses, descriptive statistical analysis was run first to profile the impacts of each measurement of attitude on wild animals poaching in Ruvuma Region. The measurements of attitude conflicts between wild animals and people (AT2), lack of tangible benefits (AT5), crops destruction (AT3) and conflict between wild animals and people (AT7) are as illustrated in Table 4.18 as follows:

Table 4.18: Extent of Respondents' Attitude

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	70	26.3	26.3	26.3
	Moderate	4	1.5	1.5	27.8
	High	192	72.2	72.2	100.0
	Total	**266**	**100.0**	**100.0**	

Source: researcher (2018)

These results indicate that most of respondents had negative attitude towards wild animals. The result shows that 72.2 of valid percent of the respondents reported that a wild animals' poaching was because of people's negative attitude towards wild animals. In addition, from Case A interview from game officer it was found that "the

predation upon livestock was the most common factor that encouraged negative attitude towards wild animals". In addition, in Case C interview from game reserves and control areas argued that in general, costs associated with conservation, such as crop damage and livestock predation by wild animals, have negative effects on local attitudes, while benefits from conservation may have positive effects". Wang *et al* (2006) commented that livestock losses, together with crop damage, are considered major causes of negative attitudes and hatred toward wild animals and conservation policy around protected areas.

Further analysis was done using SEM in order to determine positive and significant influence of attitude on wild animals poaching in Ruvuma Region as illustrated in Table 4.19.

Table 4.19: Regression Weights: *H1*

Path estimate			Estimate	S.E.	C.R.	P	Label	SRW	Remarks
PA	<---	AT	.328	.125	2.618	.009		.277	Supported
Attitude7	<---	AT	1.245	.197	6.333	***		.711	Supported
Attitude5	<---	AT	.970	.164	5.921	***		.596	Supported
Attitude2	<---	AT	1.000					.462	Supported
Attitude8	<---	AT	1.346	.211	6.383	***		.734	Supported

Source: Researcher (2018)

The path leading from AT to PA in Table 4.19 is used to examine the relationship between influence of attitude on wild animals poaching in Ruvuma region. A positive path coefficient (γ = -0.0297) using standardized estimate results in Table 4.19 above indicates that attitude characteristics is positively related to wild animals' poaching in Ruvuma Region. This concurs with Chin (1998) and Hooper (2008) who argued that a

standardized paths coefficient (γ) should be at least 0.2 in order to be considered significant and meaningful for discussion. The results in the current study confirm a strong relationship between individual attitude and wild animals poaching in Ruvuma Region and accepted the hypothesis.

Apart from standardized coefficient, further analysis was done using critical ratio and p-value to determine the influence of attitude and wild animals poaching in Ruvuma Region. Findings from this study revealed a positive critical value (C.R = 2.618 which is >1.96) and low significance level of *p=0.*009. The results concur with Hox and Bechger (2014) who argued that a relationship which has yielded a critical ration greater than 1.96 and p-value less than 0.05 is considered significant.

Due to these findings the alternative hypothesis (H1b) which states that individual attitude has significant influence on intention toward wild animals poaching in Ruvuma Region Tanzania is confirmed and accepted while the null hypothesis (H1a) individual attitude does not have significant influence on intention toward wild animals poaching in Ruvuma Region Tanzania is rejected. This result corroborates with other findings (Al-Zoubi, *et al*, 2011), which indicated a strong significant influence of intentional wild animals poaching. Oliveira and Martins (2010), for example, observed a negative and insignificant influence of inspirational motivation on organizational performance in public sector.

4.6.2.2 The Influence of Social Environment on Wild Animals Poaching in Ruvuma Region

To confirm the influence of social environment on wild animals poaching in Ruvuma Region in Tanzania, the study also hypothesized the following hypothesis:

Null H1a: *Social environment factors do not have significant influence on intention towards wild animals poaching Ruvuma Region in Tanzania.*

Alternative H2b: *Social factors have significant influence on intention towards wild animals poaching in Ruvuma Region Tanzania.*

For testing the stated hypothesis above, the descriptive statistical analysis was run to discover the percentage and the impacts of each measurement of social environment factors on view of influencing wild animals poaching in Ruvuma Region in Tanzania. The social environment factors involved were sacred books (SO1), cultural aspects (SO2), poverty and corruption (SO3) and internal and external politics (SO7) as illustrated in Table 4.20.

Table 4.20: Extent Social Environment of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	30	11.3	11.3	11.3
	Moderate	3	1.1	1.1	12.4
	High	233	87.6	87.6	100.0
	Total	**266**	**100.0**	**100.0**	

Source: researcher 2018

Evidence from the indicator variables indicate that 87.6 of valid percent support that poaching of wild animals was influenced by social environment. This implies that respondents had enough experience of their social environment factors influencing wild animals poaching. Evidence from Case C in interview shows that "political support for poachers to get donations and votes weakens law enforcement and encourages wild animals poaching is known that some poachers and their entire families and relatives, have adopted wild animals poaching".

Furthermore, the same explanations were found in case E Southern-Zone Anti-Poaching Unity that "low income or poverty is contributing toward poaching in his camp, for this area poaching of wild animals is one of the sources of income because poachers after killing wild animals are selling tusks from elephants and hippo." This was also identified by Corbin (2008) who found that, poachers may come from security forces, park staff and guards, the conservation community, professionals, politicians, militia groups, insurgents, terrorists, and poor farmers and herders in order to improve their economic status. Present-day poachers may turn to illegal hunting as a way to earn money needed for marriage bride wealth.

Table 4.21: Basic Model Un-Standardized and Standardized Regression Weights *H2*

Path estimate			Estimate	S.E.	C.R.	P	Label	SRW	
PA	<---	SO	.303	.079	3.822	***		.352	Supported
Social2	<---	SO	1.000					.761	Supported
Social1	<---	SO	1.039	.091	11.360	***		.816	Supported
Social3	<---	SO	.859	.086	9.991	***		.673	Supported
Social7	<---	SO	.637	.090	7.110	***		.478	Supported

Source: Researcher 2018

This hypothesis is examined using the path leading from SO to PA which form a relationship between social environment factors involved and intentional wild animals poaching in Ruvuma Region Tanzania as illustrated in Table 4.21. Results of the standardized path coefficients ($\gamma = 0.277$) in table 4.21 have yielded a strong standardized regression weights which shows a positive and significant relationship between social environment factors and intentional wild animals poaching in Ruvuma Region Tanzania. Chin (1998) has commented that a standardized paths coefficient (γ)

is supposed to be at least 0.2 in order to be accepted as significant and meaningful for discussion. In this study observation, the standardized paths coefficient of *** which is above 0.2 critical values (C.R = 3.822 which is >1.96) is an accepted value for significant discussion.

Based on the findings of this study the influence between social environment factors and intentional wild animals poaching in Ruvuma region in Tanzania was found to be significant. Therefore, the alternative hypothesis (H2b) social factors have significant influence on intention towards wild animals poaching in Ruvuma Region Tanzania is confirmed and accepted. While the null hypothesis (H2a) social environment factors do not have significant influence on intention towards wild animals' poaching in Ruvuma Region, Tanzania has no positive and significant influence on intentional wild animals' poaching in Ruvuma Region in Tanzania is rejected.

4.6.2.3 The Influence of Facilitating Condition on Wild Animals Poaching in Ruvuma Region in Tanzania

The third hypothesis postulated in this study based on positive and strong significant relationship between facilitating condition and wild animals poaching in Ruvuma region in Tanzania stated as follows:

Null H3a: *Facilitating conditions do not have significant influence on intention towards wild animals poaching in Ruvuma Region Tanzania.*

Alternative H3b: *Facilitating conditions have significant influence on intentions towards wild animals poaching in Ruvuma Region Tanzania.*

To test for facilitating condition hypothesis, descriptive statistical analysis was run first to measure the percentage of the impacts of each attribute which are within

facilitating condition indicator on intentional wild animals poaching in Ruvuma Region in Tanzania. These attributes of facilitating condition which influence intentional wild animals poaching in Ruvuma Region are infrastructure (FC5), low salaries (FC10) and climate change (FC14) as illustrated in Table 4.22.

Table 4.22: Extent Facilitate Condition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	66	24.8	24.8	24.8
	Moderate	67	25.2	25.2	50.0
	High	133	50.0	50.0	100.0
	Total	**266**	**100.0**	**100.0**	

Source: Researcher 2018

The results revealed that half of the respondents (50%) came to agree that facilitating conditions such as infrastructure (FC5), low salaries (FC10) and climate change (FC14) contributed to wild animals poaching in Ruvuma Region. Although FA has contribution to wild animals poaching yet its percentage is weak compared to the other factors such as AT and SO.

Regardless of its small percentage, but in Case D from WMAs which argued that though it is believed that all wild animals are government properties, "this statement is not true because some are protected with strong arms (those which are in game control areas, game reserves) while others which are in WMAs are protected by clubs, bows and arrows". Baldus *et al.* (2003) advocate that the wildlife sub-sector has, since then, recorded a steep drop in its budgets and therefore failing to meet its conservation obligations effectively, including those of law enforcement.

Further analysis was done using structural equation model in order to determine the significant influence of facilitating condition indicators on intentional wild animals poaching in Ruvuma Region of Tanzania as indicated in Table 4.23.

Table 4.23: Basic Model Un-standardized and Standardized Regression Weights *H3*

Path estimate			Estimate	S.E.	C.R.	P	Label	SRW	Remarks
PA	<---	FC	.065	.098	.658	.511		.058	Not Supported
Facilitate9	<---	FC	1.381	.168	8.200	***		.751	Supported
Facilitate14	<---	FC	1.000					.576	Supported
Facilitate5	<---	FC	1.512	.185	8.170	***		.822	Supported

Source: researcher (2018)

The path leading from FC to PC in Table 4.23 is used to examine the relationship between influences of facilitating condition on intentional wild animals poaching in Ruvuma Region in Tanzania. A positive standardized path coefficient ($\gamma = 0.058$) from a path FC leading to PA in Table 4.23 above indicates poor relationship. As argued by Chin (1998) that a standardized path should be at least 0.2 in order to be considered useful for discussion. Comparing these results with the hypotheses, the standardized path coefficient of 0.058 seems to indicate that the impact of facilitating condition on intentional wild animals poaching in Ruvuma Region in Tanzania is not supported.

Further analysis on the significant influence of facilitating condition on intentional wild animals poaching in Ruvuma Region in Tanzania was done using critical ratio

and significance level p value. The results in Table 4.23 have yielded a critical ratio of 0.658 and *p*-value of 0.511. As argued by Hox and Bechger (2014) that a relationship which has a yield critical ratio greater than 1.96 and *p*-value less than 0.05 is considered significant.

Comparing this study hypothesis, a critical ratio of 0.658 and p-value of 0.511 in Table 4.23 indicate insignificant factors influence on wild animals poaching in Ruvuma Region in Tanzania. However, individual items under facilitating condition influence poaching, therefore generally FC holds true on supporting poaching because it has positive influence and its items have strong positive and significant impact. When one looks at the correlation he/she finds that relationship exists between AT and FC; however, it is not strong compared to AT and SO. This means relationship between AT and FC are not having strong impact, while there are strong impacts on AT and SO and between FC and SO.

Table 4.24: Correlations: (Group Number 1 - Default Model)

			Estimate
SO	<-->		.341
AT	<-->	AT	.442
FC	<-->	FC	.451

Source: Researcher 2018

Based on previous explanations of the present study result, the outcome indicated that there were certain factors affecting the general influence of facilitating condition on wild animals poaching in Ruvuma Region. Hence, the alternative hypothesis (H3b) which states that facilitating conditions have significant influence on intentions towards wild animals poaching in Tanzania is rejected and the null hypothesis (H3a)

which states facilitating conditions do not have significant influence on intention towards wild animals poaching in Tanzania is confirmed and accepted.

After running the NVivo 10 and model formulation and validation using exploratory factor analysis, the results have indicated that wild animals poaching in Ruvuma Region is influenced by individual attitude and social environment. These are findings that are going to be discussed in the following chapter.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Introduction

This chapter discusses the findings of the study. The discussion focuses on the findings from both survey and case study. These are the information generated in the result while comparing and contrasting the current findings with what has been found out in previous related studies. The discussion offers an opportunity to reflect on the findings about the nature and factors influencing wild animals' poaching in Ruvuma Region Tanzania and examines points of departure from literature, the study objectives, hypotheses, conceptual and theoretical framework of the study.

5.2 The Influence of Individual Attitude on Wild Animal Poaching

The study sought to explore whether personal attitudes have significance influence on intentional wild animals' poaching in Ruvuma Region Tanzania. Attitude is the psychological tendency of an individual to evaluate an entity (person, place, behaviour or thing) with a degree of favour or disfavour (Albarracín *et al,* 2005). Therefore, the attitudes toward wild animals can differ depending on what land use practice that people ascribe to.

For example, Gadd (2005) found that people practicing agriculture tended to be less tolerant towards wild animals than people practicing pastoralist. Few studies which have related attitudes to other possible influences although some have linked conservation attitudes to socio-demographic variables (St. John *et al.* 2011). Meanwhile, Arjunan *et al (*2006) found that women had a more negative view towards

wild animals such as tiger and forest conservation than men are near Kalakad-Mundanthurai Tiger Reserve in India. Likewise, Holmes (2003) found that a positive attitude towards a protected area by local people in Tanzania was correlated with outreach activities, but many other expected links were absent and concluded that conservation scientists must have a comprehensive understanding of various social, economic and cultural factors if they wish to link attitudes to behaviours.

In this study, it was hypothesized that individual attitude has significant influence on intention toward wild animals' poaching in Tanzania. Individuals' attitude is found to be positively and significantly related to influence intentional wild animals' poaching in Tanzania. The structural model results of this study indicate that standardized paths coefficient (γ) of 0.277, critical ratio of 2.618 and a significant *p* value less than 0.009. Additionally, the descriptive analysis shows that 72.2 valid percent of respondents are supporting that individual attitude variable influences wild animals' poaching in Ruvuma region.

This result shows that individual attitude is positively and significantly related to factors influencing intentional wild animals' poaching in Ruvuma Region Tanzania. It is essential to note that personal attitude has great influence on the intentional wild animals' poaching in Ruvuma region. These findings support the findings from the case study. For example, in Case C from Game Reserves and Game controlled areas, it was revealed that in general, costs associated with conservation, such as crop damage and livestock predation by wild animals, have negative effects on local attitudes, while benefits from conservation may have positive effects. Furthermore, experience from field observational experience research trips in villages such as

Kajima and Rahaleo in Tunduru District; Kitanda, Nambecha, Mchomoro and Songambele in Namtumbo District indicate that communities have negative attitude toward wild animals and felt that the government gave high value to wild animals than human beings. They even commented that it is better for politicians to ask votes from wild animals than asking people to vote for them. Participant field observation experienced that compensation for crops damages are beginning from half hector and above whereas below that nobody cares.

This is in line with the argument made on TPB theory which states that attitude toward behaviour, subjective norms, and perceived behavioural control, together shape an individual's behavioural intentions and behaviours (Ajzen, 1991). Furthermore, Heinrich (2016) who conducted a research in Serengeti ecosystem pointed out that 40% of respondents expressed a negative attitude toward wild animals. They argued that, ‘problem animals should be killed in any way’.

This indicates that people tend to hate wild animals and become the main determinant of firm factor influence on intentional wild animals’ poaching. The reason for community to hate wild animals was also in Case A by region and district game offices who found that crop-raiding constitutes the main reason for community to hate wild animals in Ruvuma Region. The above-mentioned results are in line with the structured discussions with village leaders. The leaders emphasized that lack of cooperation between protected areas staff and local communities on issues such as resource use and land planning as one of the major challenges confronting the current status of the protected areas. The discussions also revealed that the relationship between the protected areas and local communities had worsened in the past fifty

years. Lack of cooperation between protected areas staff and local communities has been found in the present study. For instance, in Case C the Selous Game Officers revealed that some time “the villagers usually kill wild animals when found out of game reserve without informing us particularly old animals since we do not have by laws that protect old animals except those which are supposed to be poached”.

Lack of benefits also contributes to negative attitude towards wild animals among communities living nearby protected areas. Ormsby and Kaplin (2005) commented that, lack of tangible benefits is seen as a factor influencing wild animals’ poaching among the communities living near protected areas. Experience from field participant observation in Kimbanda, Kisengule and Kingole WMAs indicate that since their establishment they have never gotten investors for trophy hunting. This leads to lack of profits; as a result, the communities living around or in these protected areas develop negative attitude towards wild animals. This is similar to the findings of Kideghesho (2007) where it was found that the households bordering the Maswa Game Reserve showed more negative attitudes which also experienced in households living adjacent to Serengeti National Park.

Furthermore, this study finding highlighted the fact that negative attitude towards wild animals influences intentional poaching towards wild animals. It also revealed that all elements of the firm individual attitude are rewarding. The findings fall into the crop damage and livestock predation by wild animals, lack of tangible benefits, conflicts between animals and people and opposition to authority are explaining the significant influence of individual attitude. Additionally, the findings contribute towards understanding that both the crop damage, lack of tangible benefits, conflicts between

animals and people and opposing to authority are based on edicts of individual attitude are important in influencing wild animals poaching in Ruvuma Region. While most of the previous studies paid attention to conflict between wild animals claims separately, the present findings show that a better explanation of the influence of individual attitude on intentional wild animals' poaching rests on all elements obtained from model fit such as lack of tangible benefits, crops destruction, conflicts between animals and people and opposition to authority as explained in the next sub-section.

5.2.1 Lack of Tangible Benefits (AT2)

The study investigated whether or not the lack of tangible benefits influences intentional wild animals' poaching in Ruvuma Region, Tanzania. Tangible benefits are those measured in monetary terms that one can measure. Those benefits that communities living near protected areas are supposed to get as a result of their being present closer to those protected areas. This kind of hypothesis was established by previous studies which found that lack of tangible benefits is one of the challenging variables among the factors influencing wild animals' poaching. The potential benefits provided by protected areas (from employment, revenue sharing and regulated resource access) are perceived to be inequitably shared, with benefits tending to go to the local elite rather than the poorest people suffering the greatest costs (Mugisha &Jacobson 2004).

In this current study, the researcher aimed to find out the contribution of lack of tangible benefits on influencing intentional wild animals' poaching in Ruvuma Region Tanzania. The results in this study have yielded a standardized path coefficient (γ) of 0.462, critical ratio (C.R) of 5.585 and significant value (p) of *** which according to

Bain (2011) three asterisks indicate significance. This result demonstrates that lack of tangible benefits is positively and significantly related to intentional wild animals' poaching. It is of vital importance to note that lack of tangible benefits has a great influence on intentional wild animals poaching in Ruvuma Region in Tanzania. Lack of tangible benefits of individual attitudes has a great effect on intentional wild animals' poaching in Ruvuma Region Tanzania. Field participation observation in Ifinga Village near Selous Game Reserve Ilonga Camps indicates that even though there are hunting investors who do tourists hunting, they have benefited nothing as a result of having that investor.

In addition, participant field observation in Kimbanda, Kisungule and Chingole WMAs which do not yet have tourists hunting investors show that they seem so far to have not yet got tangible benefits like Mbarang'andu and Nalika that are at least getting tangible benefits such as getting health insurance, building materials such as cement and iron sheets. Some other parts of Tanzania have even benefit better, for example the Burunge WMA nets about $230,000 a year from two safari lodges, the Maramboi Tented Lodge and Lake Burunge Tented Lodge. The area was already benefiting, but fees have increased. More lodges are under construction as well.

The funding supports numerous community development projects including health services and the construction of three schools Igoe and Croucher (2007). In addition, residents have found work in these conservation- based businesses. The WMA also employs more than 40 village game scouts who have received formal vocational training. Game scouts coordinate anti-poaching and wildlife monitoring patrols, and contribute to the region's security **(**Nelson, 2004).

The policies also allow communities living near protected areas the accessibility of bush meat, but presently it is no longer allowed. It was also observed that lacks of tangible benefits are an attributing influence on wild animals' poaching in Ruvuma Region Tanzania. Furthermore, participant field observation also found that the tendency of changing WMAs leadership within a short time disturbs the arrangements laid by previous leadership to be materialised. In addition, observation found that nowadays, many villages are still located in remote areas, far from economic centres, and with very poor infrastructure. Their major economic activity is farming, which is often carried out on marginal soils and not very productive. The educational level in these regions compared to other areas of Tanzania is low, as is the chance of formal employment and a regular income.

These findings of this study concur with Ajzen (1991) theory of planned behaviour which indicates that lack of tangible benefit that is offered by individual attitudes is the main influential factor of intentional wild animals' poaching in Ruvuma Region Tanzania. The results from this study align with Harrison *et al*. (2015) who also found that perceived injustice based on lack of benefits from protected areas leads people to take matters into their own hands by killing raiders or predators indiscriminately, poaching bush meat, collecting firewood et cetera.

The results from this study are also in line with Harrison's (2013); Archabald and Naughton-Treves (2001) and Tumusiime and Vedeld (2012) who found a similar aspect from lack of tangible benefit that leads to community living near protected areas was also a problem in Uganda. The main ways in which benefits are shared are through tourism and sport hunting revenue, giving local people employment, and

access to protected resources. The revenue sharing system is hampered by corruption, meaning that as little as 50 per cent of the intended money reaches local communities.

Similarly, Kepo (2011) and Moreto (2013) found and reported significantly that lack on tangible benefit influences wild animals' poaching by commenting that, local people at some protected areas reported that revenue had never been shared with them at all, for example at Ajai Wildlife Reserve. Local people also perceive that most jobs with Uganda Wildlife Authority go to people from distant parts of the country or to those related to current employees.

On the other hand, Twinamatsiko *et al* (2014) in their study reported that people are angered by the revenue sharing of giving goats. Those who are benefitting by receiving goats are those who are not living near the Park. People near the Park (like us) are denied goats, so we are angry and go to the park and poach. Blomley *et al*. (2010) advocate that an equal revenue sharing improved attitudes towards Bwindi Impenetrable National Park, which may indirectly contribute to increased co-operation and a reduction in illegal activities such as wild animals poaching.

The Tanzania Wildlife Policy allows for a consideration that ensures the local community benefited from wildlife. These policies have arisen in response to local resistance to previous conservation policies which were exclusive, prohibitive and punitive (Kideghesho, 2016). According to URT (2009) the new policies seek to provide local communities with tangible benefits from wildlife resources as a way of motivating them to align their behaviours with the conservation goal through refraining from activities which are ecologically destructive, such as poaching and

habitat destruction. Nelson (2007) found that the Tanzania Wildlife Policy stresses the need to ensure that wildlife conservation competes effectively with other land uses, and in so doing transforming wildlife from a liability to an asset. This implies that once the land is leased to tourism hunting companies. The relative tourism hunting company that occupies the land that was once owned by local people is expected to return benefits to these communities (URT, 1998).

In the context of Tanzania, Baldus *et al* (2013) found that despite this seemingly positive shift, numerous case studies show that this transition of authority and the provision of benefits to local people has often not occurred in practice. On the other hand, Ashley (2002) indicates that it is imperative that local communities should feel involved with and receive tangible benefits from reserves in order to minimise local conflicts and intentional wild animals poaching that is influenced by lack of tangible benefits among local community living near protected areas. She noted that unless communities receive tangible economic benefits, conservation will continue to be seen as an elitist business. People must assume ownership over wildlife in order to have the incentive to conserve it. When WMAs were initially introduced in the early 1990s villagers were promised that state-controlled sport hunting would be phased out at the advantage of local control of hunting within the WMA, with villages receiving hunting quotas (URT, 2009).

Nielsen (2016) did a study in Serengeti Ecosystem using TPB the result of which indicated that two thirds (66%) of the 122 respondents claimed that protected areas staff or the government were the main beneficiaries. These findings imply that lack of tangible benefit may lead individuals into wild animals' poaching. Hence, in the

current study there is relationship between intentional wild animals' poaching and lack of tangible benefit for community living near protected areas.

In the case study many of claims that lack of tangible benefit influence wild animals' poaching is observed. For instance, in Case B the PAMS repetitive in Ruvuma Region has explained repetitively that those WMAs like Kimbanda, Kisungule and Chingole which do not have tourists' hunter's things are different; communities are not seeing tangible benefits since their establishment. He affirmed that from lack of the tangible benefit factor for them then the only benefit is to kill or to poach wild animals in order to get bush meat and to earn income".

The experience from field observation from those WMAs which have not received tourist investors indicate that the communities living nearby are claiming that it is better to protect and hide poachers than rangers because poachers are giving them more benefits than rangers. As also has been stated by one game officer from Selous Game Reserve in Kalulu Camp in Case C, "sometimes villagers come to us and ask why do we not kill wild animals for them so that we can reduce the anger they have as a result of the difficulties they encounter from wild animals" These findings from survey and case study imply that lack of tangible benefit in turn pushes a significant influence on intentional wild animals' poaching in Ruvuma Region Tanzania.

The findings are in line with the theoretical realm and similar findings are also shared by Wangari Maathai (2011) who argued that "you cannot protect the wildlife unless you empower local people, you inform them, and you help them understand that these resources are their own, make sure that they see and experience benefit from it, that

they must protect them". Meanwhile, despite the costs that people living near protected areas incur, as it was found by Shemwetta and Kideghesho (2008) which some of them include loss of access to legitimate and traditional rights, damage to crops and other properties, livestock depredation, and risk are posed to people's lives through disease transmission and attacks by wild animals. Yet according to Kideghesho (2008) it was found that the contribution of local people sharing the land with wildlife is often overlooked. He argues that local people pay for wildlife conservation through the wildlife induced costs and yet the benefits they receive are minimal. He further argues that the benefits of conservation are realised by other stakeholders who do not necessarily bear the costs.

From the findings it can be concluded by the fact that when the community living near protected areas experienced benefits from wild animals, they are more likely to be supportive to any mitigation measure of wild animals' poaching. However, if they do not see and find tangible benefits, then the only thing is to revenge by engaging on wild animals' poaching activities.

5.2.2 Crops Destruction (AT5)

Wild animals' poaching is sometimes due to wild animals being very destructive to crops planted by the communities near their residents. According to Rao *et al* (2002) crop-raiding can be a common flashpoint for human-wildlife conflict, with species such as bush pigs, chimpanzees, cane rats and even partridges inflicting significant impacts on people in terms of crops damage. Studies in Latin America have found that birds and monkeys alone can destroy up to 77% of a potential crop (Perez & Pacheco, 2006). On the other hand, some studies suggest that small animals such as primates

and rodents cause more damage than larger animals in the long-term (Naughton & Treves, 2005). Furthermore, some studies commented that potentially dangerous big herbivores such as African elephants cause particularly intense conflict, as they not only trample crops but occasionally kill or injure people too. This means that crops destruction from wild animals is an element which influences negative attitudes of communities living around protected areas. Based on this ground, in the current study it was hypothesized that crops destruction is positively and significantly related to intentional wild animals' poaching in Ruvuma Region in Tanzania.

In this study, crops destruction is found to be positively and significantly related to the intentional wild animals' poaching as it scored a positive standardized path coefficient (γ) of 0. 596 critical ratio of 5.921 and a significant *p*-value ***. It is imperative to note that these empirical findings are in line with Ajzen (1991) theory of planned behaviour which indicates that crops destruction given by individual attitudes is a contributing factor of intentional wild animals' poaching, the present study, in the context of Ruvuma Region Tanzania, is supportive. Field participant observation in Amani Village form part of Kisungule WMA in Namtumbo District experienced the destruction of rice and cassava fields by hippos, elephants and buffalos and made the owners anger towards wild animals.

These findings are supporting the findings from Dikman (2005) and Olsson (2014) who found, crops destruction to have positive and significant influence on intentional wild animals' poaching. This means that the findings support the argument by Twinamatsiko *et al*. (2014) who argued that the Uganda Wildlife Authority has a principle of not giving financial compensation for crop damage. He adds that anger

from crop raiding and the injustice of wild animals being allowed to encroach on local people's gardens when people are punished for entering the protected area leads people not only to kill raiding animals but also to conduct other illegal activities in the parks. This implies that the crops destruction is among the leading factors influencing wild animals' poaching.

Surprisingly crops destruction has been seen as an element within attitude influencing on wild animals' poaching even in the protected areas which earn profits from tourism hunting industries. For example, a study done by Olsson (2014) in Babati District in North Central Tanzania closer to Tarangire National Park indicates farmers with negative opinions about elephants because they had all (100%) of their cultivated land area affected by elephants. The least negatively affected farmer had around 80 percent of her fields affected by them. Other species mentioned were warthogs (eat all crops), zebras (eat maize and millet), giraffes (eat pigeon peas), wild pigs (eat all crops), porcupine (eat maize), buffalos and wildebeests.

Meanwhile Kikoti *et al*. (2010) identifies that, areas with agricultural practices close to protected areas as nothing else as the most common source for conflicts like crop-raiding. Villages close to permanent water sources are especially prone to visits by elephants, buffalos and sebo antelopes. Although the animals usually come into the fields at night when crops are ripe, they can come at daytime as well, even on a daily basis. On the other hand, Briggs (2004) states that farmers growing maize near the reserve are most often affected by elephants.

The findings from case studies regarding crops destruction were seen to be compatible with the value chain of influence on wild animals' poaching in Ruvuma Region.

Tanzania. For instance, in Case D from WMAs, the respondent from Nalika WMA on his own words in reference to the crops vandalised by wild animals advocated that, wild animals "usually destroyed the onions, bananas, rice, cassava, maize and varieties of vegetables. The animals raiding farms cause the life of people to be very hard". In addition to that wild animals' crops destruction has resulted into destroying the hospitality social systems among communities living around protected areas.

He further commented that "previously when you go to borrow onion in the neighbourhood for preparing food you may be given up to five kilograms, but today you buy one onion for Tsh 200 and is not enough for preparing your food". The wild animals' migration like elephants and buffalos sometime loose direction; in such a situation, they usually have the tendency to stay wherever they want". On the other hand, in Case C from Game Reserves and Controlled Areas it has been revealed that "sometimes wild animals entered villages' residents and killed people or destroyed their crops. Naturally this encouraged conflicts between wild animals and people."

Table 5.1: Crops Destruction in Ruvuma Region in Tanzania from 2015- June 2018

NO	Tapes of Crops	Acres	Districts	
			Tunduru	**Namtumbo**
1	Sweet potatoes		23	98
2	Bananas		37	49
3	Rice		57	53
4	Beans		68	45
5	Cassava		42	86
6	Sugarcane		23	76
7	Onion		37	33
8	Tomatoes		49	77
9	Peas		124	67
10	Millet		28	29
11	Maize		148	367

Source: Southern Zone Anti-Poaching Unity (2018)

The discussion concludes that crops destruction caused by wild animals in Ruvuma Region is a critical and challenging issue. Therefore, it is among the factors influencing wild animals' poaching in Ruvuma Region.

5.2.3 Conflict between Animals and People (AT7)

Conflict between wild animals and people is not a new issue globally, Africa and Tanzania in particular. The issue is a serious problem in many parts of the world and within the country (WCS, 2009). On the other hand, the topic is receiving far more attention in the press and is becoming increasingly politicized locally (Hoare, 2007). Empirical studies have explained that conflicts between animals and people influence wild animals' poaching. The 2003 World Parks Congress defines Human-wildlife conflict as when the needs and behaviour of wildlife impact negatively on the goals of humans or when the goals of humans negatively impact the needs of wildlife. Vitousek *et al.* (1997) advocate that the expansion of human influence into even the remotest corners of the globe, and the ever-increasing pressure on remaining natural resources, has greatly intensified the issue of human-wildlife conflict in a wide variety of situations. Given the ground above, this study relates conflict between animals and people as an element influencing intentional wild animals' poaching.

In this study, conflict between animals and people is found to be positively and significantly related to the intentional wild animals' poaching as it scored a positive standardized path coefficient (γ) of 0.711,critical ratio of 6.333 and a significant *p*-value ***. The findings from this study aligned with the findings of Ajzen (1991) theory of planned behaviour which indicates that personal values that are given by individual attitudes are beneficial factors of intentional wild animals' poaching in

Ruvuma Region Tanzania. Participant field observation experienced the reason as to why some people decided to be poachers. One person decided to be a poacher because his elder brother was killed by an elephant while he was cultivating rice in his field and his wife's leg was cut by a crocodile soon after her husband was killed by an elephant. That man decided to be a poacher in order to take care of his sister in law and his brother's kids.

These findings support the findings by Ward (2012) and Dickman (2005) who found that conflict between animals and people have positive and significant influence on wild animals' poaching both in Amazon Parrots on Bonaire Island in Venezuela and Ruaha National Park in Tanzania. These findings are in line with the study by Kruuk (2002) who commented that this type of conflict has existed for many years and yet it is becoming an issue of mounting concern in the 21st century between humans and wildlife. The findings also have aligned with the findings of Hudson *et al.* (2002), who argued that in many conflict studies people's perception of threat appears to have no relation to the costs of loss; a disparity which undermines the effectiveness of conflict mitigation tools, and often leads to problems such as retaliation and poaching. This implies that conflict between animals and people have a significant influence in intentional wild animals' poaching.

On the other hand, empirical studies by Tilman *et al*, (2001) found that conflict between animals and people is a result from human disturbance. Environmental Index indicates that almost three-quarters of the Earth's habitable land surface have been disturbed by humans. For example, Sanderson *et al. (*2002) pointed out that around 40-50% of the earth's surface is estimated to have been transformed by humans, often

with marked ecological effects. For instance, 10-15% of the global land surface is now covered by either raw-crop agriculture or urban areas, while an additional 6-8% has undergone conversion to pasture villagers. The preceding situations are more likely to cause poaching as a result of human wildlife conflict. For example, 20-30 people are killed every year by tigers with one to three tigers being killed per year in response. Their explanation also concurs with the argument by Rambaut *et al.* (2004) who commented that human-wildlife conflict is a frontline conservation issue, affecting thousands of people across the world.

On the same line Dickman (2005) found that some studies on human-wildlife conflict focus on the visible impacts they have on people, that is, loss of crops and livestock, damage to property or physical injury. Meanwhile, leading factors on human-wildlife conflicts have also been highlighted empirically. For example, Sillero-Zubiri and Laurenson (2001) found that predation upon livestock was the most common issue cited as causing conflict between humans and carnivores. Jackson (2000) commented that surplus killing in particular, where predators kill multiple animals in one attack, can result in severe financial hardship to the stock-owners concerned and engenders particularly intense hostility towards carnivores. Thirgood *et al.* (2005) commented that such effects have led to the killing of a variety of predators, such as lynx, wolves, and red foxes. Predation upon game was found to be the second most common reason for human-carnivore conflict in the review by Sillero-Zubiri and Laurenson (2001).

Another factor is attacks on humans, the case of the Tsavo man-eating lions, which killed 28 people in 1898-1899, is well-known worldwide, but for many people man-eating lions and other carnivores still represent a real, daily threat rather than an

interesting historical tale (Baldus 2004). Disease transmission was also identified as a reason that influenced human-wild animals' conflict, Hudson *et al.* (2002) observed that farmers in the UK were concerned about badgers (*Meles meles*), which had been implicated as vectors of tuberculosis to cattle. African primates carrying SIV (Simian Immunodeficiency Virus) have been implicated as the original source of HIV (Human Immunodeficiency Virus), which has so far infected over 42 million people worldwide and has a fatality rate of nearly 100% (Rambaut *et al.* 2004; UNAIDS, 2002).

This observation from the above findings was also evident in the findings of the case study in Ruvuma Region. For example, in Case A from Game Officers, the Tunduru District Game Officer commented that human-wild animals' conflict clearly occurs in many cases in Ruvuma Region. He advocates that "incidents of man-eating lions have been recorded for decades". He further adds that "several protected areas of wild dogs are frequently observed in all parts of the Kimbanda, Kisungule, and Chingole WMAs which are largely consisting of wildlife corridor as well as wild animals' buffer zones".

He further commented that "the wild animal's migrations like elephants and buffalos sometimes loose direction as a result they usually have the tendency to stay wherever they want". Further support also is seen in Case C from Game Reserves and Controlled Areas in Kalulu Camp; the Game Officer said that "sometimes wild animals entered villagers' residents and killed people and domestic animals or destroyed their crops which automatically encourage conflicts between wild animals and people". He adds that "increasing human–wild animals' conflict has become a

challenge for policy-makers". The findings also have aligned with the conclusion made by Packer *et al, (*2005) who found that since 1990, lions have killed more than 560 people in Tanzania and injured at least another 308, with the annual rate of attacks increasing markedly over time. Overall, around 200 people are thought to be killed by wild animals in Tanzania annually, with man-eating lions posing a particular problem – they have been recorded as dragging people out of huts at night, attacking them in small towns and even swimming out to river islands in order to attack humans (Baldus 2004).

In solving human-wildlife conflict field observation discovered much attention is on the visible impacts they have on people that is loss of crops, livestock killed, damage to property or physical injury, disease transmission, while psychological wellbeing is relatively ignored in the life of people affected; and infected as a result, human-wildlife conflict is not well addressed.

Table 5.2: People Injured or Killed by Wild Animals in Ruvuma Region 2015-June 2018

No	District	Injured	Killed	Animals
1	Namtumbo	16	13	Elephant, Hyena and crocodile
2	Mbinga	3	8	Elephant and Hyena
3	Nyasa	7	5	Elephant, Hyena and crocodile
4	Tunduru	26	34	Elephant, Hyena and crocodile
Total		**52**	**60**	

Source: Southern zone anti -poaching Unity, (2018)

These findings imply that the conflict between animals and people continues to undermine the conservation of many wild animals and inhibits the sustainable development of rural communities; hence, it can be also an influence on intentional wild animals' poaching in Ruvuma Region.

5.2.4 Opposing Authority (AT8)

Empirical studies have explained that opposition to authority is an indicator variable influencing wild animals' poaching. According to Mace *et al. (*2005) poaching is illegal hunting, killing or capturing of wild animals contrary to national and international conservation and wildlife management laws and regulations. Furthermore an Eliason (2004) point out that illegal taking of wildlife is a serious problem in today's society. One thing which is clear from previous researches is that many instances of wildlife law violation never came to the attention of law enforcement authorities. It is clear that only small proportions of all violations and violators come to the attention of authorities. One may ask why do communities living near protected areas oppose the authorities.

Adams (2004) and Jacoby (2003) argue that the genesis of this radical habit originated from colonialism. One of the legacies of colonialism was that legal rights to hunt were removed from Africans in order to protect sport hunting and the safari industry for European colonisers. Participant field observation story telling from elders to young generation confirm that, within their hearts there still is the notions that righs to hunt were taken from them and were given to European colonisers.

According to Neumann (2004) this process of enclosure removed rights to subsistence hunting and further impoverished African communities. On the same note Duffy (2010) commented that this also partly explains why some communities in Sub-Saharan Africa continue to resist and ignore legislation protecting wildlife because they believe they have the right to access and use of wildlife as they have done for generations.

Hence, from the grounds above, this study relates opposition to authority to the firm factors influencing wild animals' poaching. In this study, opposing the authority is found to be positively and significantly related to the factors influencing wild animals poaching having scored a positive standardized paths coefficient (γ) of 0.734,critical ratio of 6.383 and a significant *p*-value ***. These findings from this study align with Ajzen (1991) theory of planned behaviour which indicates that opposing the authority that is given by personal attitudes is a beneficial factor of intentional wild animals poaching.

These findings are also supported by empirical studies. For example, Gore *et at,* (2013) found that motivations for poaching seem to include a complex mix of impulsive and rational factors, thrill killing, protection of self and property, rebellion, traditional right, disagreement with specific regulations, and gamesmanship. On the other hand, Muth and Bowe (1998) created a typology of 10 motives for poaching behaviours among them was poaching expressed as a type of rebellion and disagreement with specific regulations of hunting laws mentioned. The other motives include commercial gain, household consumption, recreational satisfactions, trophy poaching, thrill killing, protection of self and property, poaching as a traditional right of residents, and gamesmanship.

These findings are supported by the findings from case study. For instance, in Case B from PAMS's foundation NGO who commented that "this is because poachers become familiar with the anti- poaching efforts and adapt to the techniques used by enforcement personnel". This finding has aligned with Knapp (2009) who commented that the main drivers include weak legal frameworks that they are the poachers'

measure of the strength or weakness of the author. Additionally, he said that to earn such substantial rewards; however, illegal hunters face significant risks in their daily activities. Furthermore, he expressed that due to the possibility of detection by anti-poaching patrols, poachers carry out some, or all, of their activities at night when the possibility of injury by wildlife or travel increases because if poachers choose to operate in the day, their likelihood of detection and arrest may increase.

Similarly Case B adds that "knowing what the enforcement officers that is GW and VGS do, how they do it and when they would be at a given location, poachers could increase their poaching success". With this regard, Eliason (2003) comments that contrary to the popular notion that individuals who violate the law do so because they have sub-cultural values at odds with those held by members of conventional society, according to him, the condemnation of the condemners (in case the law enforcement officers are hypocrites and/or motivated by spite).

In the other hand, WWF NGOs argue that "high fines might have a deterrent effect when poachers make decisions about whether to poach or not, the level of poaching itself depends on the marginal net benefits from poaching, and hence on the marginal fines". Furthermore, Case E from Southern-Zone Anti-Poaching Unity commented that bad infrastructure automatically is used by poachers. On his own words he expressed that "these are benefiting poachers simply because they can trace us where we are and they go in another side to poach very easily". This comment is supported by field observation where by the researcher found low political capabilities, such as lack of voice or influence over public policies and degradation of human right, leading to resentment against authorities and has been shown to drive wildlife crime. For

example, the inequity of the revenue sharing process in all WMAs and game-controlled areas, from which poor people feel excluded, drives some to hunt bush meat in retaliation. Based on that discussion, this study emanated from prior study by explaining that the opposition against authority fits very well as among the leading factors that influence wild animals' poaching in Ruvuma Region.

5.3 The Influence of Social Environment on Wild Animals Poaching

Another objective of this study was to establish how social environment influences intentional wild animals' poaching. According to Hounsome *et al. (*2006), the decision to poach or not is made by an individual, but is shaped by the social, political, environments and economic contexts in which the individuals find themselves. They add that in poaching and transit of wildlife the demand for wildlife products is also a social problem requiring social science solutions. Kideghesho *et al* (2006); Knapp (2009) and Clark and Lotter (2014) found and reported that the social environment factor is the most dominant factor that influences wild animals' poaching. This attribute includes, sacred books supports, cultural aspects, poverty and corruption and internal and external politics.

In this study, social environment is found to be significantly related to the factors influencing wild animals poaching by scoring a standardized regression weights of 0.352, critical ratio of 3.822 and p =***. Moreover, the descriptive analysis shows that 87.6 valid percent of respondents are supporting that social environment variable influences wild animals' poaching in Ruvuma region. The findings support the argument made on TPB theory which states that attitude toward behaviour, subjective norms, and perceived behavioural control, together shape an individual's behavioural

intentions and behaviours (Ajzen, 1991). These study findings are in line with the findings of Ward (2012) who found that social environment was significantly and positively correlated with intention to poach. Yeater (2011) points out that corruption can be used to influence policymakers' decisions related to wildlife protection.

Government officials and forest patrols may be paid to turn a blind eye to illegal/ pseudo-hunting, in terms of bribes and extortion that may play a role in the process of issuing licenses for hunting. The findings of this study show that only four attributes that is, sacred books supports, cultural aspect, poverty and corruption and internal and external politics are influences of wild animals' poaching in Ruvuma Region Tanzania.

5.3.1 Sacred Books Supports SO1

Religions have different views of animals and their places in their lives. Some religions view wild animals as being equal to humans in having rights to live their lives free from suffering inflicted on them by humankind. Other religions have traditionally seen animals as being beneath humans and of lesser importance (Weber 2001). This depends on how other sacred texts have been interpreted. It is a fact that religion is such an important aspect of human life and a major source for determining morality. Empirical studies have explained that sacred books have been used to legitimize poaching of wild animals. For example the idea of human *viceregency* and *Khalifa,* (meaning trusteeship) on earth has drawn much criticism in ecological ethics (wild animals' poaching) principally, since the publication of an influential article by historian Lynn White some fifty years ago from Muslims, as well as Jews and Christians, have had to face the fundamental problems of such position (Lynn, 1967).

In this study, the researcher aimed at ascertaining the contribution of sacred books on intentional wild animals' poaching. The results in this study have yielded a standardized path coefficient (γ) of 0.761, critical ratio (C.R) of 6.372 and significant value (*p*) of ***. The results indicate that sacred books are positively and significantly related to intentional wild animals' poaching. These findings from the current study aligned with Ajzen (1991) theory of planned behaviour which shows that sacred books that are given by social environment factors are a beneficial factor to the individual in intentional wild animals' poaching. This result shows that it is important to address religions' moral and philosophic issues on relationship between wild animals and human beings.

These findings from this study align with Nielsson (2005) who comments that the belief that nature (wild animals) is primarily created to serve as a source of livelihood for humans and that humans are created to rule over the rest of nature is a significant theme across Abrahamic religious followers (Christianity, Judaism and Islam). On the other hand, Ziauddin (1985) commented that Allah created *Kihalfa* (human being) in a special way, and made him to enjoy a special high status in the hierarchy of all known creatures both on earth and in heaven. Hillel (2006) argued that in the interpretations of the Bible, throughout the history of Christianity, people have tended to focus on human issues to the neglect of the rest of creation. Given all these debates about wild animals, then it is evident that sacred books influence intentional wild animals' poaching.

An inconsistent finding from this study was observed which brought different understanding regarding legitimised sacred book and intentional wild animals

poaching. In particular, the book of Genesis in the Bible brings up the role of animals in human society. In Genesis 1:28 through 1:30 God gives Adam the responsibility of caring for all living things "dominion" or leadership over all living creatures of the earth. God also provides humans a means of sustenance, plants, which does not involve the harming or killing of animals in any way (Shehu, 2014). God also provides the same means of sustenance for the animals and goes explicitly out of the way in order to state that the plants will provide food for all living creatures. Thus, this entire passage suggests that humans were given a responsibility by God to watch over the animal kingdom without causing them harm. Some teachings of the church also directly address the treatment of animals. For example, The Roman Catholic Church Catechism in paragraphs 2415 up to 2418 acknowledges the idea of "Respect for the integrity of creation". In particular, it states that "*Animals* are God's creatures.

He surrounds them with his providential care (Catechism of the Catholic Church, 2000). By their mere existence they bless him and give him glory. Thus, men owe them kindness." (2416) It also states that it is "contrary to human dignity to cause animals to suffer or die needlessly." (2418) Therefore, it is mankind's duty as children of God to prevent the suffering of animals through acts such as poaching and trafficking in order to preserve God's creation (Catechism of the Catholic Church, 2000).

In addition, Foltz (2006) who argued that as has been seen in the previous discussion, a majority of the respondents believed that dominion-over-nature can also be interpreted to mean responsibility to exercise stewardship of nature. Meanwhile, Ali (1989) argues that the Qur'an states in certain cases that the ecology is here to serve

man. Quoting from the Medieval Muslim scholar, Ibn Taymiyan who stated, 'in considering all these verses, it must be remembered that *Allah* in His wisdom created these creatures for no reason other than serving man, for in these verses he only explains the benefits of these creatures to man". This is challenging the previous notion that for *anthropocentric* or *Khalifetic* and spiritual reasons, nature needs to be exploited with moderation.

In a similar line of argument, studies that have discussed perspectives on sacred books in another way such as Rice (2006) who advocates that in God's *(Allah)* creation there are things that can be used (poaching) and others that cannot be used, so the destruction of such things constitutes a sin. Even those that can be used have the right time for their use. Anything short of this is considered as a sin in our tradition. This is to ensure that we make sustainable use of natural resources.

Suliman (2015) says that religion has always viewed animals as special parts of God's *Allah* creation. The Qur'an, the Hadith, and the history of Islamic civilization offer many examples of kindness, mercy, and compassion for animals. Agboro (2008) argues that the Africans conceive humans and their nature (wild animals) to be two inseparable entities that cannot be divorced from each other. Nwusu (2010) supports that African cosmology conceives of the existence of human beings as being tied up with their nature. He further comments that for many African communities one of the Chiefs' responsibilities is to supervise the use and enforcement of nature conservation (Nyamekye, 2013). Nwusu (2010) argues that the African used to live in harmony with his or her nature. Nwusu is emphatic in his claim that the arrival of Christianity and Islam in Africa led to an increase of the degradation of nature.

In this study, the researcher built on these previous works to explore the influence of sacred books on wild animals' poaching which has been also observed in case studies. For instance, in Case C from Game Reserves and Controlled Areas, one game officer from Liparamba Game Reserve opined that religion's sacred books are another factor influencing wild animals' poaching. She claimed that "people believe that wild animals are made for them so they can use them as they want for food as well as a source of income".

The researcher's experience saw also that sacred books was the common indicator at almost all entries of Ruvuma protected areas during his field observation. The question usually being asked by the majority of communities living closer to those protected areas is that "God or *Allah* has given human being wild animals as their food, why does the government strictly prohibit them to use"? The findings are in line with the theoretical realm.

Similar findings are also shared by Ammar (2004) who found that Muslim communities who see environmental crisis in particular wild animals' poaching as an outcome of human free will to manipulate nature in ways that are not predestined and see a connection between human behaviour and wild animals problems. On the other hand, consistent results were found by Shehu (2014). The latter advocated that in the network, dominion notion of interpretations of sacred books were built on three basic and interrelated premises, namely the belief that God primarily created nature in order to be used by humans, the belief that humans were created to exercise dominion over earth and the idea that human dominion-over-nature is meant to be a responsibility to look after ('take care') of nature. It can be observed in the quotations extracted from

the respondents that all the three themes are salient in the narratives of both Christian and Muslim participants.

Dyrness and Karkkainen (2008) assert that for God's creation what was stressed is to fill and subdue it and this biblical quotation has been used time to time and again to legitimize, abuse, misuse, and rape of (poaching of wild animals) what God created. Finally, Jerie (2010) argued that, in our interpretations of the Bible, throughout the history of Christianity, Christians have tended to focus on human issues to the neglect of the rest of creation particularly wild animals by being considered as our property that is why human beings use them in a cruel way like poaching. This implies that the sacred books still hold true in supporting their influence on intentional wild animals' poaching in Ruvuma region Tanzania.

5.3.2 Cultural Aspects (SO2)

Yet, another objective for this study was to uncover the influence of cultural aspects on intentional wild animals' poaching in Ruvuma Region Tanzania. To accomplish the analysis process, literature was reviewed and the past studies metrics used in evaluating the sought cultural aspects influencing intentional wild animals' poaching. The word 'culture' was introduced into anthropology as a technical term. Tylor (2005) saw culture as that complex whole, which includes beliefs, art, law, morals, customs and any other capabilities and habits acquired by human being as a member of a given society.

In addition, Storey (2001) conceptualised that the term 'culture' can be viewed as a general process of intellectual, spiritual and aesthetic development. He also adds that

it can be used to refer to a particular way of life, whether of a people, a period or a group. In analysing the influence of cultural aspects on poaching of wild animals, the research models identify and tie together the key attributes of cultural aspects influence.

In evaluating the required relationship, it was hypothesized that cultural aspects have positive and significant influence on cultural aspects in Ruvuma Region in Tanzania. The score indicates that standardized path coefficient (γ) is 0.761, critical ratio (C.R) of 6.372 and significant value (*p*) of ***. These findings demonstrate that cultural aspect has positive and significant influence on intentional wild animals' poaching in Ruvuma Region Tanzania. Furthermore, these findings from the current study aligned with Ajzen (1991) theory of planned behaviour which indicates that cultural aspects offered by social environmental are a detrimental factor of intentional wild animals poaching in Ruvuma Region.

Hox and Bechger (2014) argue that a relationship which has yielded a standardized regression weight of at least 0.2, critical ration greater than 1.96 and p-value less than 0.05 is considered to be significant. This means that the intentional poaching is influenced by cultural aspects practiced by the community living around protected areas.

The current findings are similar with the finding by Adeola (1992), in Nigeria who found that, the consumptive use of wild animals is often important in traditional practices, wildlife by-products are important for cultural festivals, are used widely in traditional medicine, and are used in rituals to invoke and appease gods and witches.

On the other hand, Pendleton (1998) says cultural factors have the potential to affect both poaching practices and societal responses to poaching. A poacher's relationship to a community and community norms impacts whether the act of poaching is seen as a crime and whether the community responds with tolerance, sanctions, or some combination thereof. Duffy (2010) found that in Maasai societies, spotted hyenas are often viewed with hostility disproportionate to their impact on stock, as they have many negative associations with gluttony, stupidity and witchcraft.

This study has observed opposition for example from Gadgil and Vartak (1974) that societal taboos regarding the use of certain species or areas may result in habitat and species preservation, and such attitudes vary markedly between different cultures. For instance, traditional North American communities often revered the grizzly bear, while European settlers, faced with the same animals, were determined to eliminate them (Kellert *et al.,* 1996). Awuah-Nyamekye (2012) states that among the people of Berekum Traditional Area, the *trɔmo* (the bongo antelope) is the animal most feared by poachers due to the dangerous *sasa* that it is believed to possess a claim made by the entire poacher population interviewed. She adds that the poacher claimed that an affected hunter could even mistake a human being for an animal and shoot at them.

In this study, in the case study a number of respondents support the idea that was obtained. For instance, in Case C in Kalulu Camp Game an officer explained a lot on how cultural context usage was being used to legitimize wild animals' poaching by arguing that "usually people believed that lion oil helps men's sexual power while, buffalos and elephant tails are used by traditional leaders as a leadership symbol". In

Case D from WMAs cultural aspect has also been identified as a leading indicator variable on wild animals poaching by saying:

> *Lions' oesophagus are used by leaders on the local belief that people will fear and obey them, while the person possessing it causes the subject to obey by bowing and staying calm all the time when they see him or her and follow whatever he or she orders them to do.*

On the other hand, in Case E from Southern Zone Anti-poaching Unit the Game Officer commented that "leopard's skins are used to make local Wandonde, Ngoni, Ndendeule and Yao chiefs' uniforms, while buffalos, elephants, lions, elands and wildebeest's tails are used as leadership symbol and for house decoration". He added that elephant trunks which are usually used for pulling down trees and digging holes for water, "poachers cut them at the tip for keeping them in their houses together with crocodile skins believing that they will not be seen by rangers during their poaching activities". This claim was supported by a respondent warden from another game reserve who stated that "elephant ivory's tips are used to make charms which hang on necks or wrists to protect poachers from being seen by rangers while poaching". He added that "other people put the said charms in their fields believing that they can cause their crops to grow healthy, hence yielding good harvests".

The findings are in line with empirical findings shared by Azakozu, (2009) who commented that such consumption can also be based on certain beliefs in the product's effect on one's power and strength. Beck (1992) noted that in protected areas nature is culturally constructed; thus, to ignore the cultural specificity of wildlife-related risks is to neglect a key component of the anti-poaching equation. In similar vein, Forsyth and Marckese (1993) on wildlife poaching in Louisiana and Greece Bell *et al.* (2007) demonstrated that when a poacher is part of a community

and is using poaching to express traditional land rights or adherence to the local culture, poaching may be tolerated and may even help sustain community identity and cohesion.

These comments are in line with the field observation whereby the researcher experienced that poor health and nutrition can drive people to hunt bush meat or poach wild animals for medicinal purpose as a solution, particularly when they cannot afford to buy food or modern healthcare services. Natural resources such as some wild animals and their products are used to create shelter in times of need. These findings show that cultural aspect is the indicator variable that influences intentional wild animals poaching in Ruvuma Region Tanzania.

5.3.3 Poverty and Corruption (SO3)

The study investigated whether or not poverty and corruption influence wild animals' poaching. A similar hypothesis was established by previous studies which found that poverty and corruption are an attribute of social environment influencing wild animals' poaching. Bonham (2014) described that poverty drives people to poach; in this case, poachers are victims of poverty, but they are also the actual killers of wild animals.

The only solution is to alleviate poverty which is the cause of poaching. This can be done by providing opportunities and incentives such as employment, through wildlife based- revenue streams**.** Challender and MacMillan (2014) commented that poverty is a complex condition, which makes these claims opaque. The question is on what form of poverty and poverty alleviation are referred to.

In the current study, the researcher aimed at ascertaining the contribution of poverty and corruption in influencing intentional wild animals poaching. The results in this study have yielded a standardized regression weight of 0.673, critical ratio of 9.991 and p =***. The results indicate that societal values are highly contributing and significantly relate to intentional wild animals' poaching in Ruvuma Region. These findings from this study align with Ajzen (1991) theory of planned behaviour which indicates that poverty and corruption offered by social environment are a detrimental factor influencing intentional wild animals poaching.

The findings from this study aligned with Cash *et al.* (2006) who commented that, it is imperative to note that poverty and corruption have a great effect on intentional wild animals' poaching. The results from this study are consistent with those of with Mackenzie *et al* (2011) who advocated that poverty is often perceived as the root cause of illegal wildlife hunting because poor people hunt illegally to satisfy their basic material needs. The study of Bwindi National Park in Uganda showed that those arrested for unauthorized activities in the national park were significantly poorer and more likely to live closer to the national park and farther from trading centres than others (Twainamatsiko *et al*, .2014).

While the findings from this study align with the findings from the empirical studies in that the attributes of poverty and corruption influence intentional wild animals' poaching in Ruvuma region Tanzania, many cases from case study validate them. For instance, in Case C, one game warden explained that "some corrupt game wardens assist poachers by discharging them from legal cases which encourages them to continue poaching". This comment is in line with this researcher's experience from

field observations, that unfaithful game wardens and VGSs sometime take bribe from tourist hunters to kill unauthorized wild animals. For example, in August 2018 one VGS in Kisungule WMA shot a buffalo and sold its meat.

On the other hand VGS can also take bribery to allow troops of domestic animals to enter into WMAs for grazing. Furthermore, the same observations were also seen in Case E from Southern-Zone Anti-Poaching Unit which one of its game officers claimed that "some corrupt leaders are behind these activities by being corrupted by these business people". He further stated, "unfortunately, some of the rangers are also engaged in corruption activities. They are acting as double dealers; sometime they give poachers' information particularly during patrols about where we are so that poachers can go the other direction to poach".

On 08th July 2018 the Minister for Natural Resources and Tourism Dr Khamis Kigwangala suspended 27 officers and game rangers under the Tanzania Wildlife Management Authority (TAWA) over corruption allegations and failure to supervise management of the Uwanda game reserve in Sumbawanga District, Rukwa Region. This was a result from the villagers' accusation that forest officials and game rangers had been taking bribes from livestock keepers so as to allow them graze in the forest (*The Guardian*, 09 July 2018).

According to the Guardian Correspondent, one of the villagers, Shija Imeli accused five game rangers of asking for a bribe of Tanzanian shilling six million in order to allow him to graze in the forest for five months. He further stated that livestock keepers were fined to pay between 6m/- and 7m/- Tanzania Shillings for allowing

their cattle in the reserve forest. "We gave 5.8m/- Tanzanian shillings to the game rangers, but our cattle were confiscated because we failed to pay the remaining Tanzania Shilling 200,000 "complained Imeli (*The Guardian*, 09 July 2018). Poverty is experienced in the methods used by poachers, for example in Case E one of the game wardens said that "poachers have created new knowledge of poaching that is of using local snares and poisoning within and around buffer zone for poaching wild animals". In addition, the field observations in Ruvuma by rivers the researcher found that bombs have been used to poach hippos. The fishers told the researcher that usually the bomb experts do not select whether the hippo is small or big, he just goes to the group of hippos and bombs them.

The findings above concur with the argument made by Hounsome *et al.* (2006) and Robbins *et al.* (2009) who stated that corruption and collusion by parks agencies, government officials, and private sector businesses allow ivory and rhino horns to be trafficked from source countries in Africa to end at user markets in Asia. This further impoverishes populations because the value of these commodities is captured by corrupt individuals rather than the country as a whole. He added that the main drivers of corruption include high poverty levels that are also identified in a diversity of factors driving poaching by local people including poverty.

On the other hand, Yeater (2011) advocates that corruption can be used to influence policymakers' decisions related to wildlife protection. Government officials and wildlife patrols may be paid to turn a blind eye to illegal/ pseudo-hunting, in return of bribes and extortion may play a role in the process of issuing licenses for hunting. There is also evidence of the involvement of national and provincial conservation

officials in the poaching of wild animals. For example, a parliamentary committee to probe the 'Operesheni Tokomeza Ujangili' Report chairperson Lembeli revealed that game rangers from NCAA and TANAPA, forest officials from TFS, and policemen took bribes and protected poachers as well as some rich people involved in illegal trade of government trophies during 'Operesheni Tokomeza Ujangili.' They helped poachers escape justice (Lembeli. 2014).

Jackson (2013) pointed out that poverty also facilitates the ability of profit-seeking criminal groups to recruit local hunters who know the terrain, and to corrupt poorly remunerated enforcement authorities. Experience from Tanzania indicates that impoverished people are more likely to commit crimes such as taking bribes to meet their daily needs as they cannot always obtain them through legitimate means. Poaching is one of the property crimes occurring in Tanzania, which is perceived as a way of combating food and income poverty among the majority of the poor and unemployed youth living in wildlife rich areas (Kideghesho (2016); Knapp (2009); Lotter & Clark, (2016).

Stoddard (2014) found that corruption is what drives the vicious circle linking poverty to organised crime and is the root cause of the current poaching crisis. Corruption is the catalyst that binds poverty to organised crime and activates their full destructive potential. Ingrained corruption in societies gives the cartels freedom of movement to exploit poor people and evade capture. A recent study on the links between poverty and wildlife crime in Uganda indicated that one of the most effective ways to reduce illegal wildlife hunting is poverty alleviation (Harrison *et al,* 2015).

The findings can be concluded by the fact that poverty and corruption are influencing wild animals' poaching in Ruvuma region Tanzania. This means with regard to poaching it is difficult to separate it from poverty and corruption.

5.3.4 Internal and External Politics (SO7)

The drive for this study was to investigate the influence of internal and external politics as a construct of intentional wild animals' poaching. UNEP (2013) advocates that the civil wars between 1983 and 2005 decimated local wildlife as armies fed themselves off bush meat, while the Sudanese were routinely implicated in large-scale poaching incidents through the 1990s, particularly in Chad. Groups reported as "Sudanese" often encompass a broad array of actors including Arab Darfur tribes, Chadian pastoralists, and Muslim militiamen from the northeast Central African Republican, all of whom have been tied to conflict in their respective countries, as well as poaching. Based on this ground, in this study it was hypothesized that internal and external politics is positively and significantly related to the intentional wild animals poaching.

In this study, internal and external politics is found to be positively and significantly related to the internal and external wild animals' poaching in Ruvuma Region as it scored a positive standardized paths coefficient (γ) of 0.478,critical ratio of 7.110 and a significant *p*-value <0.05. These findings are in line with the study by Duffy (2010) who advocates that since experiencing a political crisis in March 2009, Madagascar has experienced an upsurge in resource degrading behaviours, including increases in the illegal harvesting of endangered hardwoods such as rosewood, mining

for gemstones such as sapphires, and poaching and trafficking in wild animals such as the ploughshare tortoise for the pet trade. These findings from this study align with Ajzen (1991) theory of planned behaviour which indicates internal and external politics that is offered by social factors is a detrimental factor influencing individual behaviour in intentional actions such as wild animals poaching.

Similarly, Somaville (2014) found that the civil wars between 1983 and 2005 decimated local wildlife as armies fed themselves off bush meat, while the Sudanese were routinely implicated in large-scale poaching incidents through the 1990s, particularly in Chad. Similarly Holland (2012) and Taverner (2013) added that civil wars and insurgency have had a notable impact on elephant populations in Africa. For instance, following the operations of Sudan People's Liberation Army – SPLA, Southern Sudan recorded a loss of over 95% of its elephant population from over 130,000 in 1986 to 5000 in 2012.

In this study, the researcher built on the previous works and observations as shown from the above findings which were also revealed from the findings of the case study. For example, in Case C, one game officer from Selous Game Reserve in Likuyu Seka said that “the politicians are also encouraging wild animals’ poaching because they usually defend their voters. Sometime politicians interfere with conservations professionalism by prohibiting rangers from disturbing their voters”. He added that seeking political support from poachers to get donations and votes weakens law enforcement and encourages wild animals poaching.

As a result it is known that some poachers, their entire families and relatives have adopted wild animals’ poaching”. The findings also have aligned with the conclusion

made by Petursson *et al.* (2013) advocate that politicians have long influenced wildlife crime in Uganda. During his reign, Idi Amin announced that he would give back to the people the forest the "British had stolen from them", causing deforestation and settlement in Mount Elgon National Park. He added that recently, politicians trying to gain votes have told local people that protected areas are rightfully theirs, leading to encroachment at Mount Elgon, Queen Elizabeth and Murchison Falls National Parks and widespread clearing of forest reserves for agriculture.

These findings are supported by field experience from the researcher who observed that efforts to curb wildlife crime are also hindered by political interference. This happens when political interests seem to override professionalism. Some politicians frustrate these efforts to curb wild animals' crime on grounds of defending their voters. According to the Lembeli Tokomeza Ujangili report 2014, some of the government officials and Members of the Parliament were involved in poaching activities and illegal trade in government trophies. These government officials and MPs are part of a powerful poaching network and sabotaged, in one way or another, the operation. Some MPs and government officials protected poachers whom they are related to or have close ties with. The operation was thus sabotaged from within the government and there was therefore no real commitment by some government officials to fight poaching (Citizen Newspaper, December 20, 2013).

In addition, politicians have often stood for people who live and earn their livelihoods illegally inside the protected areas and have been putting pressure on the government to degazette some or parts of the protected areas. This has been experienced in Kimbanda and Kisungule WMAs in Namtumbo District. In a similar manner, the

Litumbandiosi proposed game reserve in Nyasa and Gesamasova proposed game reserve in Madaba Council where politicians put pressure to communities living near protected areas not to accept the idea of promoting those parts to be in game controlled areas.

On the other hand, the researcher's field observations discovered that besides different operations that have been implemented for taking away firearms from communities living near protected areas, firearms are still a problem in Ruvuma Region. These firearms are used to poach wild animals in Ruvuma Region. The field observation experienced that majority weapons come from the neighbouring country, Mozambique. This field observation gets support from Case B whereby, the representative from PAMS claimed that "most of the firearms used for poaching in Ruvuma are from Mozambique, because there are a lot of uncontrolled firearms in Mozambique because of the long- time civil war there".

He added that:

> *Some Mozambican residents migrated to some villages in Tanzania for reasons of running from civil war in their nation but once they are in Tanzania, they engage in poaching activities or facilitate poaching activities between the two countries of Tanzania and Mozambique*

This above discussion helps to conclude firmly that, internal and external politics is also among the leading attributes on factors influencing wild animals poaching in Ruvuma region in Tanzania.

5.4 The Influence of Facilitating Condition on Wild Animal Poaching

The study examined the influence of facilitating condition on wild animal poaching in Ruvuma Region in Tanzania. The processes involved inspecting whether facilitating

condition has positive and significant influence on wild animal poaching. Exploratory and confirmatory factor analysis was used to establish the model fit items which strongly related with inspirational motivation construct. The fit items used to measure the influence of facilitating condition on wild animal poaching in Ruvuma Region in Tanzania are inadequate resource, low salary and climate change.

Based on that background, it was hypothesized that facilitating conditions have significant influence on intentions towards wild animals poaching in Tanzania. The empirical result in chapter four of this study does not support the above hypothesis by yielding standardized coefficient estimate (γ) of 0.058, critical ratio (C.R) of 0.658 and significant *p*-value of 0.511. Furthermore, the descriptive analysis shows that 50.0 valid percent of respondents are supporting that facilitating condition variable influences wild animals' poaching in Ruvuma region.

These findings present a negative and insignificant contribution of facilitating conditions on wild animals poaching in Ruvuma Region in Tanzania. Chin (1998) suggested that a standardized paths coefficient (γ) should be at least 0.2 in order to be considered significant and meaningful for discussion. This shows that the attributes which measured the facilitating conditions variable are not providing enough explanatory power for explaining the significant influence on wild animals poaching in Ruvuma Region in Tanzania. Furthermore, the results from descriptive analysis also indicated that 50% of the respondents supported the hypotheses that facilitate conditions influence wild animals poaching in Ruvuma Region in Tanzania. The result from case studies such as case A from Tunduru District that they do not have strong guns and evidence from Case B shows that "lack of ecological manipulation"

as facilitating wild animals poaching in Ruvuma Region. On the other hand, evidence from the researcher's observations discovered that within WMAs like Kimbanda, Kisungule and Chingole, do not have facilities such as vehicles and guns for protecting wild animals and themselves.

The finding from this study both disapproves and approves the empirical results which have been conducted in other contexts. For example, the findings in this study are similar to Daigle (2001) who conducted a study in predicting illegal hunting "Intentions (poaching) and behaviour: An Application of the Theory of Planned Behaviour" whose findings indicated that facilitating conditions did not account for additional variance in illegal hunting (poaching) behaviour, suggesting that illegal hunting-related activities are largely not influenced by facilitating condition. This result points out that facilitating condition is not an influence on wild animals poaching. Additionally, the lack of resources and low motivation indicators which were found in facilitating conditions are also mentioned in the Theory of Planned Behaviour (TPB). Ajzen (1991) also found the said condition as well lowers people's actual behavioural control, consequently limiting the probability of behavioural change, regardless of the intentions. The results revealed that facilitating condition has insignificant relationship with factors influencing wild animals poaching.

Apart from the mentioned results above, these findings do not support the arguments made by Heinrich (2016) that facilitating condition significantly influences wild animals poaching. The preceding assertion is in his study investigating the relationship between attitudes, intention and illegal grazing behaviour in the Serengeti ecosystem using the theory of planned behaviour. The result revealed that the attitude

towards and the perceived behavioural control over illegal grazing and attitude towards illegal resource extraction in the protected areas emerged as the strongest predictors of intention to wild animals poaching.

Therefore, the results of this study indicate that facilitating condition is less meaningfully related to the wild animals poaching in Ruvuma region in Tanzania. Even though, the facilitating condition shows negative and incognisant relationship meaningful but its attributes such as inadequate resource, low salary and climate change indicated positive and significant relationship with the intentional poaching meaning it is positive but insignificant. This study argues that facilitating condition will be more meaningful when other factors which were not included in the current study are combined.

Hence, the crucial point obtained from this study is that facilitating condition was found insignificant in influencing poaching in Ruvuma Region in Tanzania. May be there are other ways that could help to explain this construct which were not included in this study. Meanwhile, its attributes like inadequate resource, low salary and climate change alone cannot justify the predicting power of facilitating condition of its influence on wild animals poaching in Ruvuma Region in Tanzania.

Therefore, when other attributes are included and combined with inadequate resource, low salary and climate change that can justify well enough the significant value of facilitating condition; this suggests that facilitating condition still holds true to some extent in supporting wild animals poaching in Ruvuma Region in Tanzania. Based on the above point of discussion, the present study concludes by advocating that for the

government to improve the existing poaching mitigation measures there is a need to consider social science research findings related to factors influencing wild animals poaching. The social sciences study findings can help policy makers understand the politics, psychology, economics, and framing of conservation challenges. Since these study findings indicated that social factors influence wild animals poaching, it is advisable that policy makers together with communities living near protected areas find short term and long-term solutions to overcome social factors influencing wild animals poaching in Ruvuma Region and in Tanzania at large.

5.5 A Review of the Study Hypotheses

The current study provides conclusion by considering the major assumptions of this study. Previously, we hypothesized that *individual attitude significantly influenced intention wild animals poaching in Ruvuma Region Tanzania.* The individual attitude was measured using lack of tangible benefits, crops destruction, conflicts between animals and people and opposition to authority as identified in the structure model in Figure 4.7.

The study outcomes support this relationship as it was found to be positive and significant. This implies that the communities living near protected areas intentionally directly or indirectly poach wild animals because of lack of tangible benefits, crops destruction, conflicts between animals and people and in opposition to authority. Therefore, individual attitude and its attribute had significant contribution to intentional wild animals poaching. This study also hypothesized that *significant relationship between social factors influence intention wild animals poaching in Ruvuma Region Tanzania.* Social factors were measured using sacred books supports,

cultural aspects, poverty and corruption and internal and external politics. The study findings indicated positive and significant influence, which implies that there are effects of social factors that are correlational to intentional wild animals poaching. Therefore, social factors and all its attributes have significant and positive support towards intentional wild animals poaching in Ruvuma region in Tanzania.

Lastly, the present study hypothesized a *significant of facilitating conditions influence on intentions towards* w*ild animals' poaching in Ruvuma Region Tanzania.* The facilitating conditions were measured by using inadequate resources, low salaries and climate change. The study, however, found no significant relationship between the mentioned variables being facilitating conditions considered.

Surprisingly the three attributes which were used to measure the attribute were all found to be positive and significant in influencing wild animals' poaching in Ruvuma Region Tanzania. Findings of the study confirmed that each component of individual atittude, social enviromentsand had positive and significant on intentional wild animals' poaching in Ruvuma Region Tanzania.

On the other hand facilitating conditions found insignifice on intentional wild animals poaching in Ruvua Region Tanzania. However, the three attributes which were used to measure the attribute were all found to be positive and significant in influencing wild animals' poaching in Ruvuma Region Tanzania. These findings from previous study relate with the current study because both studies confirm the significant role of each components of the constructs of factors influence wild animals' poaching.

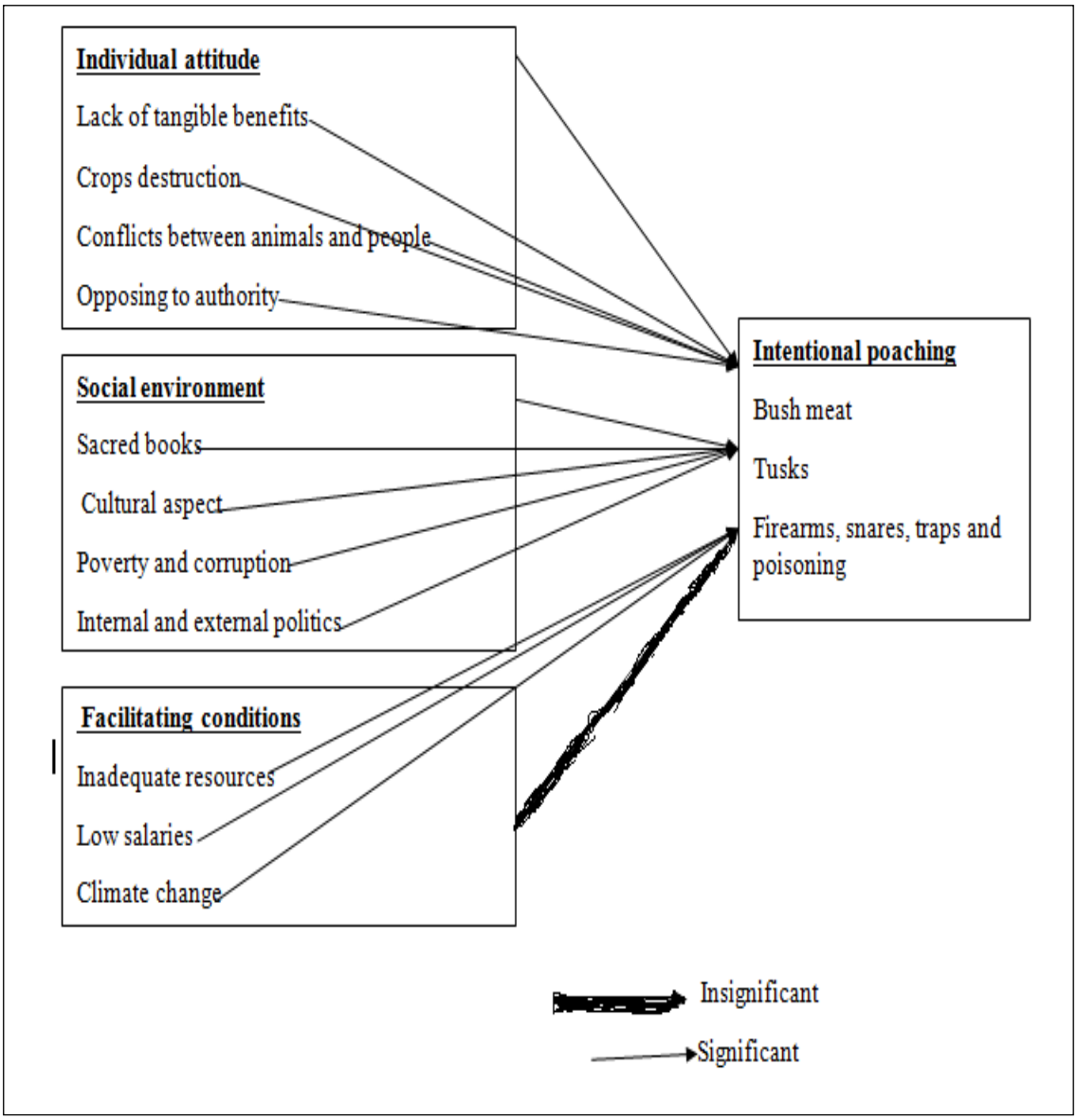

Figure 5.1: Hypothetical Model of the Study

Source: Researcher (2018)

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATION

6.1 Introduction

This study aimed at investigating factors influencing wild animals' poaching in Ruvuma Region Tanzania. In order to achieve this aim, the study addressed the following three specific objectives: (i) To find out the significant influence of individual attitude on intention towards wild animals poaching in Ruvuma Region Tanzania (ii) To investigate the significant influence of social environment on intention towards wild animals poaching in Ruvuma Region Tanzania. (iii) To analyse the significance influent of facilitating conditions on intention towards wild animals' poaching in Ruvuma Region Tanzania. The research addressed these objectives by using mixed research methods through empirical study of 283 respondents from game wardens and VGSs in Ruvuma Region and supplemented by five case studies as described in section 4.3.2. This chapter presents the key conclusions, implications on the main issues, limitation of the study and recommendation for future study. The study addresses theoretical and practical implications of the results as well as the contribution of current study to theory and policies for wild animals' poaching mitigation measures in Tanzania. The recommendations of this study will also propose areas for further research relevant to factors influencing wild animals' poaching in Ruvuma Region.

6.2 Major Findings and Conclusions

This part addresses the main findings and conclusions of the study which are organized based on specific research objectives of this study as described in 6.2.1to 6.2.3 as follows below here:

6.2.1 Influence of Individual Attitudes on Intentional Wild Animals Poaching in Ruvuma region Tanzania

In addressing the first specific objective, it was hypothesized that individual attitude has significant influence on intention towards wild animals' poaching in Tanzania. Standardized estimate and critical ratio in structural equation modelling was applied to evaluate the strength of significant influence of individual attitudes on wild animals poaching in Ruvuma region. A positive path coefficient ($\gamma = 0.277$) using standardized estimate indicated that individual attitude is positively related to intentional wild animals' poaching in Ruvuma Region.

Further, results on the hypothesis above have obtained a significant critical ratio greater than 1.96 which agrees with Hox and Bechger (2014) who suggest that any relationship resulting to a critical ration greater than 1.96 is considered significant. On the other hand, lack of tangible benefits, crops destruction, conflicts between animals and people and opposition to authority were used to measure individual attitude. They were all found with standardized estimate greater than 0.2 and critical ratio greater than 1.96. This implies that intentional wild animals' poaching in Ruvuma Region is influenced by individual attitude which are motivated by lack of tangible benefits, crops destruction, conflicts between wild animals and people and opposing to authority. Chapter four presents almost all the case studies as well as field observation; intentional wild animals' poaching is largely influenced by negative perceptions towards wild animals. This helps us to conclude that communities living near protected areas in Ruvuma Region are intentionally poaching wild animals because of negative attitude they have towards wild animals.

6.2.2 Influence of Social Environmental on Intentional Wild Animals Poaching in Tanzania

The study also examined the significant influence of social factors on intention towards wild animals poaching. With this research objective, it was hypothesized that social factors have positive influence on intentional wild animals' poaching in Ruvuma Region.

Survey data were analysed using SEM to evaluate the relationship of social environment and intentional wild animals' poaching in Tanzania based on standardized path coefficients (γ) and critical ratio (CR). In estimating the required relationship, the results yielded a standardized path coefficient (γ) of 0.352, critical ration (CR) of 3.822 and significant value (*p*) of ***. The results indicate that social environment has positive and significant influence for the intentional wild animals' poaching in Ruvuma Region.

Further analysis was done on attributes of social environment by using sacred books supports, cultural aspects, poverty and corruption and internal and external politics. The result indicated that each attribute has a critical ratio greater than 1.96, *p* value less than 0.05 and standardized regression weight greater than 0.2. This means that all attributes of social environment have positive significant influence on intentional wild animals' poaching in Ruvuma Region.

To conclude, because the four attributes which were identified in this study were found to be significant, it implies that individuals do participate in intentional wild animals' poaching in Ruvuma Region that can be explained on the basis of the social environment.

6.2.3 Influence of Individual Attitudes on Intentional Wild Animals Poaching in Ruvuma Region Tanzania

The study on the other hand examined the significant influence of facilitating conditions on intentions wild animals poaching in Ruvuma Region. With this research objective, it was hypothesized that facilitating conditions have significant influence on intentions towards wild animals' poaching in Tanzania.

To estimate the relationship between the facilitating conditions and influence on intentions towards wild animals' poaching in Ruvuma Region, the standardized estimate and critical ration in structural equation modelling was used. Results show that standardized path coefficient (γ) = -0.058, critical ratio = -0.658 and *p*-value = 0.511 which indicate positive but insignificant influence. Moreover, the three measures of facilitating conditions such as inadequate resources, low salaries and climate change were all found to be positive and significant related with intentional wild animals' poaching in Ruvuma Region in Tanzania.

The influence of facilitating conditions on intentional wild animals' poaching in Ruvuma Region is less. However, all three attributes of facilitating conditions are positively and significantly influencing wild animals poaching in Ruvuma Region. Therefore, for facilitating conditions to be significant other attributes should be involved and combined with the three attributes namely inadequate resources, low salaries and climate change.

To conclude, because the three attributes identified in this study are significant, it implies that facilitating conditions still embrace facts in influencing intentional wild

animals poaching in Ruvuma Region in Tanzania. These would provide good ways to find mitigation measures on wild animals poaching in Ruvuma Region.

6.3 Study Implications

Throughout this study the researcher has systematically and thematically presented the research findings and analysed them through various discussions. This section presents the theoretical, methodological, policy, anti-poaching institutions and intentional force for wild animals' poaching. Theoretical implications highlight the contributions of the study to the literature on factors influencing intentional wild animals' poaching. Methodological implications address contributions of the study in advancing the methodology of prior studies on factors influencing intentional wild animals' poaching. Managerial implications relate to the initiatives taken to mitigate wild animals' poaching where policy implications include recommendations for addressing policy issues relating to the factors influencing wild animals' poaching in Ruvuma Region Tanzania.

6.3.1 Theoretical Implications

This study theoretically developed and empirically evaluated the research's framework which incorporated factors from TPB, for assessing factors influencing wild animals' poaching in Ruvuma Region Tanzania. Theory related variables were studied separately in the literature review as empirically found in Ward (2000) and Daigle *et at*, (2010). The scholars used attitude and social environments to identify factors that influence wild animals' poaching in United States of America. In Malaysia Hamid and Isa (2015) adopted TPB theory to study poaching and sustainable tourism. Meanwhile Henrich (2016) adopted TPB to investigate the

relationship between attitude, intentional and illegal grazing behaviour in the Serengeti ecosystem. Olsson (2014) used TPB on studying human-elephant conflicts in Babati Tanzania. Furthermore, all the mentioned studies adopted TPB and used mediator variables. The current study advanced TPB by modifying TPB theory by eliminating mediator variables. Hence, the results of the current study suggest that intentional wild animals' poaching is associated with attitudes, subjective norms and perceived behavioural controls. These integrated views help to gain a clear portrait of the factors influencing intentional wild animals' poaching in individual attitude, social environment and facilitating attributes.

Though the TPB has become useful, the theory lacks indicator variables which may lead to unpredictable findings when behaviour intention is studied as a mediating variable in cross section testing. On the other side, indicator variables in TPB theory are immeasurable unless related indicator variables are empirically found and tested. This means that the TPB theory has a silent belief. On behaviour intention, it is improper to test individual behaviour through a mediating variable; instead, it can be tested directly for proper predictable findings as demonstrated with a similar Case in this study.

Parker and Castleman (2009) suggest for a combination of theories on studies for effective and adequate prediction of ascent and new factors, but a researcher can opt to use one theory. The results of the present study have applied the TPB theory in conceptualizing the study framework to explore factors influencing intentional wild animals' poaching objectives. All other indicator variables that can be thought of may either fall under personal attitudes, social environment or facilitating conditions. With

this perspective, future researchers can use this research model which has already been evidenced to provide a useful framework for studying factors influencing wild animals' poaching elsewhere.

While reviewing literatures on wild animals' poaching, most previous studies focused on factors influencing wild animals' poaching as simple relationship of one independent variable versus one dependent variable (Olsson, 2014). Others have simply tested the causing factor versus the dimension of the dependent variable (Ward, 2000; Daigle *et al.*, 2010). These simple relationships tested by previous scholars have had a significant contribution to the academic literature. In this study the researcher has integrated the TPB theory by measuring the dependent variable intention wild animals' poaching with indicator variables. Such variables are tangible benefits, crops destruction, conflict between animals and people, opposition to authority, sacred books, cultural aspects, poverty and corruption, internal and external politics, inadequate resources, low salaries and climate change (Ward, 2000; Holmes, 2007; Daigle *et al*, 2010; Olsson, 2014).

The major contribution of such approach has been to build on previous research in the study area in order to improve the poaching mitigation measures in Ruvuma Regional context. Characterizing and exploring factors that influence wild animals' poaching on these dimensions had the advantage of providing a richer picture of the current situation of wild animals poaching. Second, it enabled determining impacts of wild animals' poaching for each attribute offered by factors variable to wildlife services. This extends previous studies and theories on wild animals' poaching, which consider only one or two variables in TBP theory or simply one dimension such as attitude. It is

envisaged that the framework devised in this study for characterizing and exploring influences on wild animals poaching in TPB theory had wider application. It could, for example, be applied in replication social studies in other natural resource sectors and/or geographical locations, as well as in studies of factors influencing wild animals' poaching in larger organisations.

Furthermore, it provides the basis for characterizing and exploring the factors influencing wildlife poaching. Moreover, both dimensions of simple and complicated relationship can form basis for testing individual intention on wild animals poaching in future studies. The model can be used for further testing of the proposed factors on other populations to further the relevance of factors influencing wild animals' poaching in another context.

6.3.3 Implication to Policy Makers

The study finds and concludes that personal attitudes, social environments and facilitating conditions have significant influence on intentional wild animals' poaching in Ruvuma Region Tanzania. The tested model separates attributes of each objective variable that could influence individual intention to poach wild animals. In each objective variable, the significance of different indicator factors reviewed from empirical studies was tested. Such indicators are lack of tangible benefits, crops destruction, conflict between animals and people, opposing to authority, sacred books, cultural aspects, poverty and corruption internal and external politics, inadequate resources, low salaries and climate change were found to significantly influence the intentional wild animals' poaching in Ruvuma Region Tanzania.

The above findings call for reviews of policies that could create conducive environment for addressing wild animals' poaching by including social science research findings. The wild animals' poaching mitigation operations should encourage social science observance to factors influencing intentional wild animals' poaching leading to greater understanding of benefits offered by social science study's findings for protection of public interest.

While various country laws, policies and strategies have put a lot of emphasis on addressing social matters on mitigating wild animals' poaching, this study suggests that there should be formulation of a national policy that would address social needs of people neighbouring the protected areas. Furthermore, the existing policy needs to be revised by creating institutional policies, which involve all stakeholders in addressing wild animals' poaching. Similarly, the findings of this study should be given priority as they suggest a better way of protecting wild animals from poaching. One way is to encourage the creation of zoo for old wild animals for protection.

Moreover, the study demonstrated that despite the policies having stated clearly that communities living near protected areas should have bush meat as their quotas, however, this is no longer practiced. The authorities need to revive this policy first by informing the communities living near protected areas why they are not being given such kind of quotas for a long time. There is a need to reinforce the practice of this policy because it has positive impacts in anti-poaching strategies.

Additionally, policy intervention should improve security intelligence and should be supported financially. This could help to detect immediate plans for poachers and

counter attack before fulfilling their poaching objectives. Such intervention should support them with adequate up-to-date security intelligence skills and modern equipment to fulfil their daily duties.

This study found and posits that the influence of individual intentional on wild animals' poaching is evident. The findings require governments in developing countries to intervene chiefly by formulating and improving wild animals' poaching mitigation policies and procedures which would ensure game rangers offer effective, efficient and conservation services to the public. Policy procedures should stipulate on how trophies hunting revenues are collected, public funds are spent, and donor funds are used in an appropriate manner.

In this study, it was found and posited that the one technique and strategy being used by anti-poaching unit is to provide 40 percent tusks value and 20 percent firearms value to informers who give useful information which helps to find either tusks or firearms. This technique, however, has benefited much some unfaithful game wardens that have been hiding the truth to informers about what percentage they are supposed to get because it seems they do not know, yet, all the game wardens know it and put effort to make sure that informers are remaining ignorant. The policies need to be revised so that those types of bonuses are given to informers directly when they give information.

This can be achieved by making it very well known to informers and avoid game wardens to be the mediators of receiving that percent on behalf of informers and

thereafter giving in to informers. This study has also found that after a successful operation of taking away firearms from the poachers, poaching in Ruvuma Region Tanzania is now more commonly being conducted using snares, fires, dogs and poisoning, the result being indiscriminate killing of wild animals in relative silence.

The policy may address the issues including the identification of kind of poison used and its origin. The government may develop a policy that is tailored specifically for predator wild animals. Wild animals' policies firmly hold that all wild animals are government properties. This study discovered that there are double standards regarding the treatment between game wardens working in regional and districts and those under TAWA. Those under TAWA are favoured in terms of working facilities that are well prepared and well paid compared to those under regional and districts that do not have even uniforms and working facilities, while are doing the same work. Such inadequacies call for policies that create conducive operating environment for all game wardens regardless of where they do their work. In view of the implications narrated above, the study concludes that policies and interventions are vital factors which impact the mitigation of wild animals' poaching in Ruvuma Region Tanzania and possibly in other developing countries.

6.3.4 Practical Implications

The findings from this study could be used by individual public organizations to compare their current operation status relative to their past operation and other contexts. Top wild animals' officers of anti-poaching organizations could use the framework of this study to assess the factors by which wild animals' poaching mitigation measures could be achieved by improving the existing ones. The findings

could also serve as point of reference for other public wildlife's conservation organizations in other sectors and contexts that may adopt the framework.

An empirical result from this study has evidenced the significant influence of personal attitudes on intentional wild animals' poaching. This means that, top wild animals' officers in public wild animal's conservation services should employ right type of wild animals' game wardens. The study has also found that individual attitude and social environmental factors significantly influence intention on wild animals' poaching. Both top wild animals game officers and game wardens should make every effort to propagate wild animals' mitigation measures by refraining from submission to detrimental influencing factors.

This study also found that majority of Ruvuma people are religious adherents. They use their sacred books in legitimizing wild animals' poaching. These calls for religious expertise and wild animals' officials to find the right ways of interpretations and teachings on sacred books that have been wrongly interpreted to influence wild animals' poaching for a long time. Thereafter, those right interpretations and teachings need to be taught to all Ruvuma religious adherents as a part of wild animal's mitigation measures.

This study found that lack of tangible benefits, crops destruction, conflict between animals and people, opposing to authority, are indicator variables under personal attitudes; sacred books, cultural aspects, poverty and corruption internal and external politics are indicator variables under social environment factors, inadequate resources, low salaries and climate change are indicators variables under facilitating conditions.

The indicator variables in this study help those in charge with wild animals such as government's anti-poaching organs and wild animals anti-poaching NGOs to improve existing mitigation measures.

6.3.5 Methodological Implications for Researchers

This study has applied the methodological context of previous studies; therefore, it provides a guideline for researchers interested in exploring factors influencing wild animals' poaching. The way the methodology was designed in terms of research philosophy, data collection instruments, validity and reliability, selection of variables and sampling procedures should help to inform researchers on the methodological facet of obtaining data from anti-poaching institutions in a local study area.

This study has contributed to the field of methodological literature through the use of pragmatism paradigm as the main research philosophy for developing an understanding of the influencing factors on wild animals' poaching in Ruvuma Region Tanzania. The aim of using pragmatism philosophical approaches was to get rid of the limitations experienced by previous studies from incarcerating wider contextualization and explanation of the significant variables. The mixture of research paradigms has resulted into the understanding of the contextual issue and provided explanatory authority model. It has also helped to provide practical evidence of the suitability and applicability of mixed method from qualitative phase to quantitative phase in Ruvuma Region Tanzania for future similar studies.

This study was designed to use mixed research paradigms whereby case study and survey strategies were used and thus resulted into a better understanding of the phenomena, which has contributed in generalizing the findings to both population and

theories respectively. Both case study and survey method have been used extensively within the field of information systems and their usefulness has been proven over time. This work insists on the use of mixed methods of case study and survey in providing precious understanding for a research work. This use of mixed methods enhances having better research designs of previous studies in the context of wild animals' poaching in Ruvuma Region Tanzania.

The use of mixed research paradigms has helped the researcher to escape generalization of findings that could have resulted by using one research philosophy. For example, it is believed that when a researcher uses only interpretivist philosophy he/she encounters the problem in generalised findings to the population. For those opting to use positivism philosophy approach in conducting their survey research strategies miss out the in-depth understanding of poaching phenomenal instead they favour the generalization of the findings to the population.

Additionally, this study focused on the fact that population has contributed in providing a better understanding of the factors associated with stimulating adoption of wild animals' poaching in context of anti-poaching population in conservation context. Compared to other studies on wild animals' anti-poaching population in other countries, this study provides a better link of factors, which cut across each unique population in Tanzania wild animal's anti-poaching sector. In addition, as it has been argued by other scholars that each unique population tends to have unique factors influencing their adoption decision. This study has advanced methodological implications in terms of unique populations of wild animals' poaching in Ruvuma Region Tanzania anti-poaching sector.

Previous researchers used non-probability sampling methods which limit generalization of findings to other population and while others have used probability sampling technique which limits the extent of capturing of data from key informants. Respondents to this study have contributed in advancing the methodology by combining sampling methods of both non - probability and probability sampling in sequentially. This allows the research to get in-depth understanding of the factors influencing wild animals' poaching from key informative respondents and at the same time has adopted a simple random sampling which provides comprehensive generalization of the findings to other populations.

This study has advanced the internal consistent tests which most of the previous studies were relying on Cronbach's Alpha not withstanding that this lacks the power of evaluating the internal consistency of the whole model and is affected by number of items used which affects the result. Hence, it is not clear if it provides a true picture of internal consistency of data collection instruments. In this study, the researcher has contributed in advancing the internal consistency assessment by adopting composite reliability test. The test accounts for internal consistency of the whole model and is not affected by the number of items used. Therefore, the findings from this study have contributed in supporting strong internal consistency evidence compared to the prior studies which were assessed by using Cronbach's Alpha.

It has been noted that other studies were not testing for constructs validity and many others were testing the construct validity by the exploratory factor analysis. These studies were limited because they did not assess the measurement error which affects the covariance in predicting convergence and divergence validity. This study has

contributed in extending the discussion of construct validity at confirmatory factor analysis level which has helped to account for convergence and divergence validity test. The findings from this study do not suffer from cross loading and poor model fits.

On the other hand, scholars used techniques such as multiple regression and logistic regression which limit the use of multiple dependent variables. As in this case of factor influence on wild animals' poaching, influence is measured by multiple items such as lack of tangible benefit, cultural items, poverty and corruption, low salaries et cetera. Hence, this study has contributed to advancing the data analysis technique which could account for multiple dependent variables on a complex model.

6.4 Recommendation for Further Research

A research on factor influencing wild animals' poaching is a very wide topic. Many studies need to be conducted concerning poaching activities in Ruvuma Region Tanzania. Hence, the research recommends the following areas for further studies: The ecological factors encouraging wild animals to move out of protected areas to or near human settlement. There is need to do research on TPB to find out reasons why facilitating condition does not support intentional wild animals' poaching in Ruvuma Region. Future studies need to find out whether it is true that half of the world's wild dogs are largely obtained in Ruvuma WMAs which are part of the Selous-Niassa Wildlife Corridor. Future studies also need to research on psychological wellbeing of people who are affected and infected by human-animals' conflicts which has relatively been ignored so far. Future researches need to address other wildlife poaching activities such as forest products, fishing and minerals, which is also a problem in Ruvuma Region Tanzania.

This study adopted SEM, which limits the use of dependent variables with interval scale. As argued by Myoung (2009) when a dependent variable is categorical, the ordinary least squares (OLS) method can no longer produce the best linear unbiased estimator; hence, the nonlinearity of categorical dependent variable models makes it difficult to fit the models and interpret their results. This means that the study was limited only to dependent variable with interval scale. With this regard future study is proposed to accommodate the use of binary independent variables in predicting a set of predictors' variables using methods such as logistic regression.

This study was carried out in Tanzania, one of the developing world countries. It is not clear whether the findings and the model validated from this study can also be useful in other countries due to context difference. This study proposes multiple studies to be done in more than one developed and underdeveloped countries in order to confirm and establish more evidence. This could help to explain the wild animals' poaching phenomena in developing countries and compare with some unique characteristics found in each country under investigation.

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APPENDICES

Appendix I: Participant observation Checklists

Category	Includes	Researcher noted
Appearance	Clothing, gender, physical appearance of wildlife expertise in Ruvuma region	Game Officers, in Liparamba, Selou game reserves Anti-poaching unity and Game Controlled Areas (well dressed with their title on their shoulder, majority were men), WMAS chairs persons and NGOs Chairs persons.
Verbal behaviour and Interactions.	Interviews with Game Officers each for 35 minutes, using English language; the initiates Interaction was the researcher who asked explanations concerning wild animals' poaching it was very friendly; Their voice was softy.	There were diversity of ethnicity outside Ruvuma region and majority were Christian followed by Muslims. The dynamics of interaction was good.
Physical behaviour and Gestures.	Game Officers are largely supervisors' daily wild animals' conservations. Through their interactions with their joiners, they arrange their daily activities.	They were very good in terms of using their hands to insist something, shows their fillings concerning how wild animals' poaching is threatening their daily activities.
Physical Futures on Research areas.	Buildings, Camps sites, Facilities.	Within Game Reserves, Game Controlled Areas and Anti-poaching NGOs. Their equipped in terms with facilities heavy arms, cars but with ought Antenna helping communication with those in patrol and in office. Good offices. While in WMAs and Districts, do not having facilities neither heavy arms but they have good offices.

Interaction Between Wildlife officers.	The interaction is based on Officers and juniors.	The paramilitaries system of operations. Things are done by orders.
People who stand out.	Interaction between wildlife expertise and communities living near protected areas.	Wildlife officers see communities like not cooperate with them, on the other side communities are blaming that wildlife expertise valued wild animals than human being. Social interaction is missing particularly in Litumbandyosi and Gesamasowa proposed Game Reserves.
Field Patrols	✔ Researcher and Anti-Poaching unity. ✔ With VGS.	Ten days with rangers patrol, Rangers were well equipped, well dressed militarily, strong arms, good food and well paid. We found snares, wild animals' carcass Ten day, with DGO car, left us and returns. VGSs with one Game warden from DGO office with short gun and rifle, not well dressed, very committed to patrol and capture 4 poachers with hippo meat, snares half land cruiser.
Vetting Headquarter.	Selous Game Reserve ✔ Likuyu Seka Camp ✔ Kalulu Camp Liparamba Game Reserve.	Working Facilities, good patrols cars, guiding by strong arms SMG Stores for storing tusks captured and strong armaries for storing arms. Reserve Game wardens who are standby for operation.
Trips on both Ruvuma and Ruhuji Rivers and Communities living near protected areas.	Visiting shoes of Rivers Ruvuma and Ruhuji. Attending political campaigns, Funeral, *vijiweni* discussion and traditional pubs.	River Ruvuma crossing within Kimbanda, Mbarang'ndu, Kisungule and Chingole WMAs. Number of unauthorised customs very busy during night time people moving from Mozambique and Tanzania and vice vesor using Mitumbwi and Madema caring luggage no one know what are

		inside. Fishers with their assistance known as makachera, difficulty to know whether these are kachela or they have other activities. During night time stories concerning fishing, forests products and wild animals poaching are normal. While Ruhuji is water crossing Gessamasowa proposed Game Reserve. Fishers and their kachelas are busy for fishing and selling their fish. Blaming Kilombero hunting safaris investor for prohibiting them fishing in his area, torturing those who found fishing in his area by include removing their nails. Both rivers are contain big and small ponds where are the home of hippos, and crocodiles. Fishing is also activities going on there and poachers are hiding within fishers. There were much discussion concerning wildlife conservation and the need to quit wildlife corridors because of lack of benefits. Crops distraction and field vandalized by hippos, elephants and buffalo. Some people organs are removed by attacked of wild animals; some loosed their dear ones killed by wild animals.

Appendix II: Interview checklists guide question

This interview aims at collecting opinion and perception on how individual attitude, social environment and facilitating conditional influence wild animals poaching in Ruvuma region Tanzania. The interview guide directed for RGO, GOs, DGOs, NGOs and WMAs Chair Persons.

Individual attitudes
1. Can you mention kind of wild animals do you have in your area?
2. Do you know kind of wild animals highly attracting poachers in your area?
3. Can you give reasons behind poaching of these animals?
4. Do there any relationship between game warden and people surrounding your area in relationship with ant-poaching activities?
5. Do there any benefits do people surrounding game reserve and park get?
Social environment
1. Does Sacred Books teachings encouraging wild animals poaching?
2. Does traditional medicine encouraging wild animals poaching?
3. Does population encourage wild animals poaching?
4. Does identity formation encouraging wild animals poaching?
5. Does notion wild animals are pests encouraging wild animals poaching?
6. Does economics encouraging wild animals poaching?
7. Does of poverty and Corruption encouraging wild animals poaching?
8. How can pasture seeking encourage wild animals poaching?
9. How land encroachments encourage wild animals poaching?
10. How the notional of inheritance from fore fathers encourage wild animals poaching?
Facilitating conditions
1. Does inadequate resources influencing wild animals poaching?
2. Does poor infrastructure influence wild animals poaching?
3. Does a low salary encourage wild animals poaching?
4. Can low motivation encouraging wild animals poaching?
5. How climate change encouraging poaching?
Intentional poaching
1. Does availability of network of poachers in our areas contributes wild animals poaching?
2. How proximity encouraging wild animals poaching?
3. How needs of bush meat market encouraging wild animals poaching?
4. How availability of skilled traps and snares, poisoning makers and firearms

encourage wild animals poaching?
5. How need for tusks encouraging wild animals poaching?

Appendix III: Respondent Survey Questionnaire

A dear respondent, my name is Jerome Metody Nilahi, a PhD Candidate at Open University in Tanzania. I am conducting a survey as part of my PhD degree study on An Exploration of Factors Influencing Wild Animals Poaching Tanzania: A Case of Ruvuma Region**.** The study findings will generate new knowledge in this area and serve as data source to be used in policy and decision in Tanzania. I will appreciate if you could complete this questionnaire on time.

Any information obtained in connection with this study will remain confidential. No one will be identified in any written reports and only group data will be presented. If you have any questions about the questionnaire or the research in general, feel free to contact the researcher via the following email addresses and cell phone: nilahij@yahoo.com, 0763115141.

Thank you very much for your cooperation to completing this questionnaire.
Yours

Jerome Metody Nilahi

PART I: GENERAL BACKGROUND INFORMATION

Please choose an appropriate answer by putting a tick in the space provided.

1.) What is your gender? 1. Male □ 2. Female □	2)What is your age 1.Between 18 -27 years old □ 2.Between 28-37 years old □ 3.between/ 38-47 years old □ 4.Above 47 years old □
4) Which of the following categories best describes your level of education 1.primary school □ 2.secondary education □ 3.Diploma □ 4.undergraduate □ 5.Post graduate □	What is your occupation GW □ VGS □

PART II FACTORS INFLUENCING WILD ANIMALS POACHING

Please indicate the extent of your agreement or disagreement by circling the appropriate number that accurately represents your condition

The response scale is as follows: 1. Strongly Disagree 2. Disagree
3. Neutral 4. Agree 5. Strongly Agree

INDIVIDUAL ATTITUDES					
1.Many people hate wild animals that's why they poach them	1	2	3	4	5
2.Wild animals are being poached because they usually destroy our crops	1	2	3	4	5
3.Wild animals are being poached because usually they kill our relatives and neighbours (conflicts between wild animals and people)	1	2	3	4	5
4.Wild animal are poached because of leisure	1	2	3	4	5
5. Enmity between rangers and community encourage wild animals poaching	1	2	3	4	5
6.Law and policy encourage wild animals poaching	1	2	3	4	5
7.Wild animals are poached because their meat are free from disease	1	2	3	4	5
8.Wild animals are poached because we don't see much benefit from them	1	2	3	4	5
SOCIAL ENVIRONMENT					
1.Wild animals are poached because even the Sacred Books supports that they were created for us	1	2	3	4	5
2.Wild animals are being poached because some of their parts can be used as traditional medicine	1	2	3	4	5
3. population encourage wild animals poaching	1	2	3	4	5
4.Wild animals are poached because of identity formation	1	2	3	4	5
5.Wild animals are poached because some are pests that harm our land and health	1	2	3	4	5
6.Wild animals are poached because big business persons encourage the activities	1	2	3	4	5
7. Wild animals are poached because of poverty and Corruption.	1	2	3	4	5
8. Pasture seeking encourage wild animals poaching	1	2	3	4	5
9.Land encroachment encourage wild animals poaching	1	2	3	4	5
10. Wild animals are poached because of inheritance from fore fathers					

FACILITATING CONDITIONS					
1. Inadequate resources encouraging wild animals poaching	1	2	3	4	5
2. Poor infrastructure wild animals poaching	1	2	3	4	5
3.Low salaries encourages wild animals poaching	1	2	3	4	5
4. Low motivation encouraging wild animals poaching	1	2	3	4	5
5. Climate change encouraging poaching	1	2	3	4	5
INTENTIONAL POACHING					
1.Availability of network of poachers in our areas contributes wild animals poaching	1	2	3	4	5
2. Proximity encouraging wild animals' poaching	1	2	3	4	5
3.Needs of bush meat market encouraging wild animals poaching	1	2	3	4	5
4.Availability of skilled traps and snares, poisoning makers and firearms encourage wild animals poaching	1	2	3	4	5
5.Need for tusks encouraging wild animals poaching	1	2	3	4	5

Thank you for your time! I greatly appreciate your participation in this survey!

Appendix IV: **Sample Size**

$$\text{SIZE} = \frac{X^2 NP\,(1\text{-}P)}{d^2\,(N\text{-}1) + X^2 P\,(1\text{-}P)}$$

X^2 = table value of Chi-Square @ *d.f.* = 1 for desired confidence level
.10 = 2.71 .05 = 3.84 .01 = 6.64 .001 = 10.83
N = population size
P = population proportion (assumed to be .50)
d = degree of accuracy (expressed as a proportion)

DETERMINATION OF SAMPLE SIZE FROM THE IDENTIFIED POPULATION

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.
Source: Krejcie and Morgan (1970)

Appendix V: Range of Cronbach's coefficient

Reliability	**Range**
Unreliable	$\alpha \leq 0.30$
Barely reliable	$0.30 < \alpha \leq 0.40$
Slight reliable	$0.40 < \alpha \leq 0.50$
Reliable (most common range)	$0.50 < \alpha \leq 0.70$
Very reliable	$0.70 < \alpha \leq 0.90$
String reliable	$\alpha > 0.90$

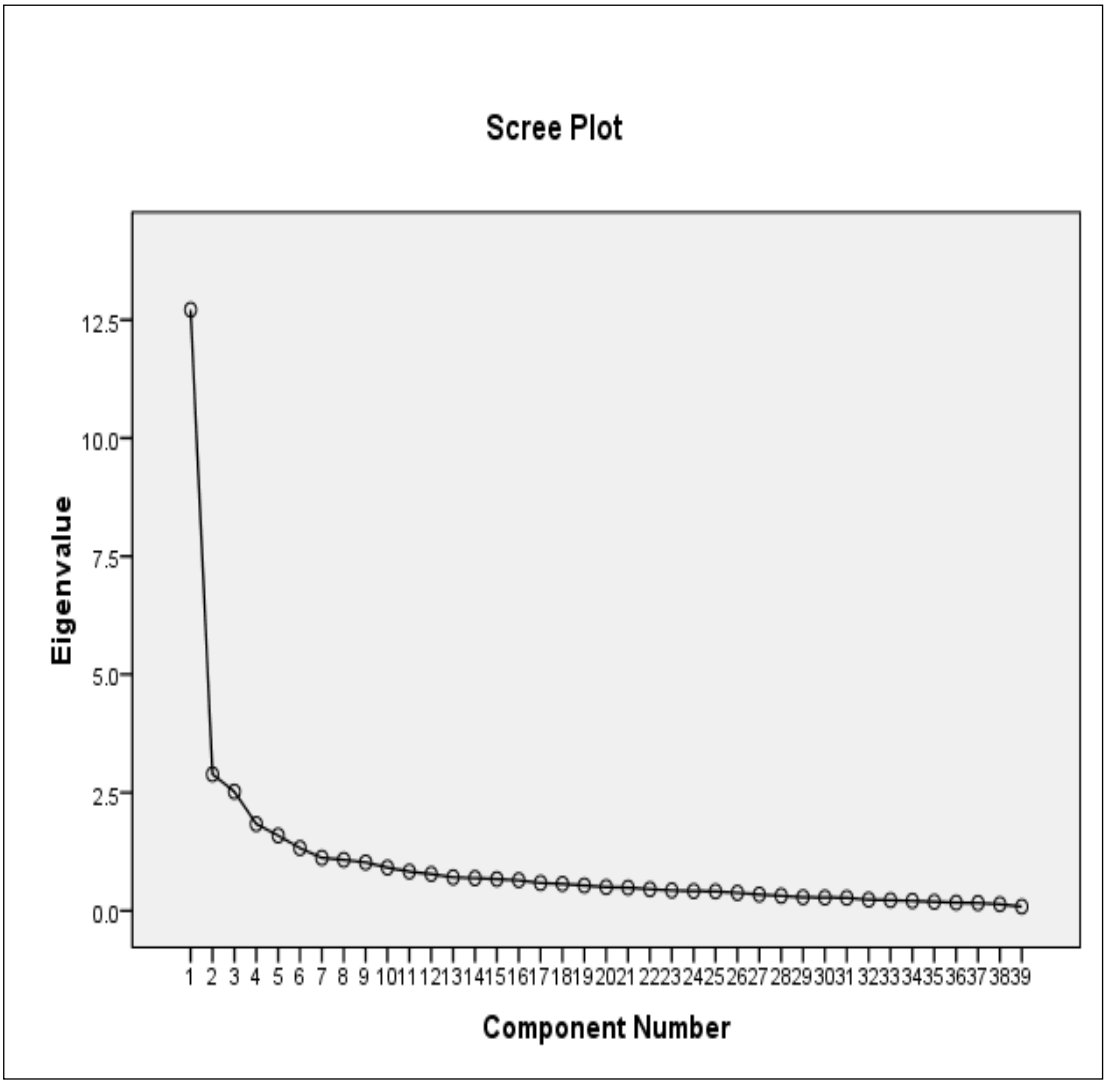
Appendix VI: Summary of Variance

Appendix IV: Summary Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.901	31.790	31.790	8.901	31.790	31.790	5.710	20.392	20.392
2	2.556	9.128	40.917	2.556	9.128	40.917	3.789	13.533	33.925
3	1.978	7.066	47.983	1.978	7.066	47.983	2.901	10.362	44.287
4	1.736	6.201	54.184	1.736	6.201	54.184	2.771	9.897	54.184
5	1.323	4.723	58.907						
6	1.181	4.216	63.123						
7	.920	3.285	66.408						
8	.829	2.962	69.370						
9	.799	2.854	72.224						
10	.741	2.647	74.871						
11	.703	2.512	77.384						
12	.636	2.271	79.655						
13	.614	2.193	81.848						
14	.538	1.923	83.771						
15	.526	1.877	85.648						
16	.502	1.793	87.441						
17	.452	1.616	89.057						
18	.407	1.454	90.511						
19	.376	1.344	91.854						
20	.337	1.203	93.057						
21	.332	1.185	94.243						
22	.310	1.105	95.348						
23	.282	1.008	96.356						
24	.253	.904	97.260						
25	.241	.862	98.122						
26	.216	.771	98.893						
27	.170	.609	99.502						
28	.140	.498	100.000						

Extraction Method: Principal Component Analysis.

Appendix VII: Scree Plot



Appendix VIII A: Example of Research Clearance Letters

THE OPEN UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH, PUBLICATIONS, AND POSTGRADUATE STUDIES

Kawawa Road, Kinondoni Municipality,
P.O. Box 23409
Dar es Salaam, Tanzania
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Tel: 255-22-2666752/2668445
Ext.2101
Fax: 255-22-2668759,
E-mail:drps@out.ac.tz

Date: November 8th,2017.

Regional Adminstrative Secretary
Ruvuma Region
P.O.Box 74
Ruvuma
Tanzania.

RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No. 55 in the official Gazette. The act was however replaced by the Open University of Tanzania charter of 2005, which became operational on 1st January 2007. In line with the later,the Open University mission is to generate and apply knowledge through research. To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance,on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology,to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you Mr. Jerome Metody Nilahi PG201506457 pursuing Doctor of Philosophy (PhD).We hereby grant this clearance to conduct a research titled ***"An Exploration of Factors Influencing Wild Animals Poaching in Tanzania: A Case of Ruvuma Region"***.He will collect his data at Game Reserves,Game Control Areas, Wildlife Management Areas and Southern Zone Anti-Poaching Unit in Ruvuma Region from November 17th, 2017 to December 2018.

Incase you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O. Box 23409, Dar es Salaam. Tel: 022-2-2668820.We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

Prof Hossea Rwegoshora
For: VICE CHANCELLOR
THE OPEN UNIVERSITY OF TANZANIA

Appendix VII B. Clearance Later from Ruvuma Region

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

MKOA WA RUVUMA
Simu Namba: 025-2602256/2602236
Fax No. 2602144
ras.ruvuma@pmoralg.go.tz
Tovuti: www.ruvuma.go.tz

Ofisi ya Mkuu wa Mkoa,
S.L. P. 74,
SONGEA.

Kumb.Na. EA.283/344/01/21

16/11/2017

Makatibu Tawala wa Wilaya,
SONGEA, MBINGA, NYASA,
NAMTUMBO NA TUNDURU.

YAH: KIBALI CHA UTAFITI KWA MWANACHUO BW. JEROME METOOY NILAHI CHUO KIKUU HURIA CHA TANZANIA

Tafadhali naomba mhusike na somo la hapo juu.

Katibu Tawala wa Mkoa ametoa kibali kwa mwanachuo mtajwa hapo juu kufanya utafiti utakaomwezesha kukamilisha masomo yake ya Uzamivu (PHD) katika Mkoa wa Ruvuma. Utafiti huu unahusu mada isemayo " **An Exploration of Factors Influencing Wild Animals Poaching in Tanzania: A case Study of Ruvuma Region**" Muda wa utafiti huu ni kuanzia tarehe 17 Novemba, 2017 hadi Desemba, 2018.

Mnaombwa kutoa ushirikiano ili mtafiti huyu afanikiwe kukamilisha kazi hii katika maeneo yote atakayopita kwenye Wilaya zenu. Nakala ya barua toka Chuo Kikuu Huria Tanzania (OUT) imeambatanishwa.

Nawasilisha.

Kassimba, R.A.
Kny: KATIBU TAWALA WA MKOA
RUVUMA

Nakala: Katibu Tawala wa Mkoa,
RUVUMA.

Kamanda wa Polisi Mkoa,
RUVUMA.

Appendix VIII C. Clearance Later from TAWA

JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MALIASILI NA UTALII
MAMLAKA YA USIMAMIZI WA WANYAMAPORI TANZANIA

Barabara ya Dar es salaam,
Jengo la TAFORI,
Eneo la Kingolwira,
S. L. P 2658,
MOROGORO.
Simu: 023 - 2934204-11
Barua pepe: dg@tawa.go.tz

Kumb. Na. DA: 184/347/01/223 **Tarehe 11/12/2017**

Jerome Metody Nilahi

YAH: MAOMBI YA KIBALI CHA KUFANYA UTAFITI

Tafadhali husika na kichwa cha habari hapo juu,

Mamlaka inakiri kupokea barua pepe yako ya tarehe 02/12/2017 inayohusu maombi ya kibali cha kufanya utafiti unaohusu *"An exploration of factors influencing Wild Animals Poaching in Tanzania":* A case study of Ruvuma Region.

Nichukue fursa hii kukujulisha kuwa, kibali kimetolewa kufanya utafiti huo kuanzia tarehe 12/12/2017 hadi tarehe 11/12/2018 katika maeneo uliyoomba ambayo ni Mapori ya Akiba Selous na Liparamba, Jumuiya za jamii Mwambesi, Muhuwesi, Mbarang'andu, Chigoli, Kimamba, Kisungule, Nalika na Litumbandyosi.

Aidha, unakumbushwa uwapo Hifadhini kufuata taratibu zote za uhifadhi kwa mujibu wa sheria ya wanyamapori namba 5, ya mwaka 2009 na Kanuni zake zinavyoelekeza.

Nashukuru kwa ushirikiano wako.

Suzan Chenya

Kny: **MKURUGENZI MKUU**

Nakala:

Meneja: Pori la Akiba Selous na
Liparamba

Mwenyekiti Jumuiya za: Mwambesi

Muhuwesi

Mbarang'andu Mpokeeni na mpeni

Chigoli

Kimamba

Kisungule

Nalika na

Litumbandyosi.