ANALYSIS ON WILLINGNESS TO PAY FOR WILDLIFE RESOURCES CONSERVATION IN KANO ZOOLOGICAL GARDEN

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DECLARATION

I declare that the work in this thesis entitled an Analysis on willingness to pay for conservation of wildlife resources in Kano Zoological Garden, has been performed by me in the department of Environmental management under the supervision of Dr. Mustapha Zakariyya Karkarna. The information derived from the literature has been duly acknowledge in the text and in the list of reference provided. No part of this thesis was previously presented for another degree or diploma in this or any other institution.

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CERTIFICATION

This is to certify that this thesis titled "Analysis of Willingness to Pay for the Conservation of Wildlife Resources in Kano Zoological Garden" by RABIU ABDULLAHI (SPS/17/MEV/00042) was carried out under supervision.

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Dr. Mustapha Zakariya KarkarnaMni (Supervisor)	**Date**

APPROVAL

This thesis has been examined and approved for the award of Master of Science in Environmental Management.

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DEDICATION

This work is humbly dedicated to my respected and adorable parents, Alhaji Abdullahi Mahmud and Hajiya Suwaiba Abdullahi. To my late step mum and sisters, Late Hajiya Zainab Abdullahi, Late Hajiya Amina Abdullahi, Late Hajiya Hauwa Abdullahi, and Late Hajiya Habiba Abdullahi, may your gentle souls rest in perfect peace.

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Natural resources in general and biodiversity in particular provide numerous function that includes; hydrological such as hydrological cycle and soil formation, ecological, including; nitrogen fixation and carbon sequestration, social and economic such as the ecotourism opportunity, research and education benefits to the society. However the absence of market for these resources negatively affects the way and manner by which they being treated by the society which subsequently reduce the numerous benefits that derived from them. The economic valuation of these non-market goods help to find and attaché price or economic values to them. Therefore, as these environmental resources are usually not traded in the market, the non-market valuation techniques are applied to estimate their economic value among them is the contingent valuation method (CVM), which have been widely used to measure the economic value of natural resources. The main aim of this study is to estimate the mean willingness to pay amount for conservation of wildlife resources in Kano Zoological Garden using environmental economic tools. The study employed dichotomous choice contingent valuation method (DC-CVM) on 329 visitors to estimate the mean willingness to pay value of wildlife resources conservation in Kano Zoological Garden. Logit regression model was used in estimating the value of the resources, the result revealed that gender, age; education level, gross monthly income, bid amount, and marital status were found to be significant determinants of the willingness to pay by the visitors for an increase in the entrance fee into zoo. The result also shows that the visitors are willing to pay ₦505 for conservation as against the current entrance fee of ₦100. Result of this study would help to assist policy makers and the management of the zoo especially in terms of revenue generation.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The rapidly growing 'ecological footprint' of modern society has led to habitat destruction and fragmentation, species extinction and the general loss of biodiversity (Suckall, et al 2009). On a global scale for example, the rate at which biodiversity is being lost is many times higher than the natural extinction (Cardinale et al., 2012; Meduna, et al 2009). The continuous destruction of the natural environment by human activities, especially in the recent time, has necessitated the establishment of protected areas worldwide towards the end of the 19th century (Arabatzis & Grigoroudis, 2010).

The protected areas (PAs) establishment is believed to be an effective measure towards ensuring protection of the ecological environment and biodiversity (Wang & Jia, 2012). These areas are generally created with the primary aim of biodiversity conservation, the protection of the ecosystems, and the maintenance of ecological processes. They proved to have contributed significantly in the maintenance of the productive capacity of the related ecosystems, the preservation of genetic materials and biodiversity, the protection of man-made and cultural elements and also rural development as a whole (Colchester, 2004). Protected areas also helped in maintaining 'ecosystem services' like carbon sequestration, flood protection and recreational opportunity (Arabatzis & Grigoroudis, 2010). Many of these protected areas are expected to contribute immensely to poverty reduction and sustainable development (Rogerson, 2006). Hence biodiversity is termed the wealth of life which is found on the earth's plants, animals, microorganisms in their millions, and the complex system they formed (Meduna, Ogunjinmi& Onadeco, 2009).

However, many protected areas around the world are financially not self-sufficient(Robyn & Eagles, 2007). As a result, significant numbers of them were either not able to meet their conservation objectives or developmental goals(Robyn & Eagles, 2007). Africa for instance, is a home to many of the world's rich biodiversity areas, but most of the countries in Africa find it difficult to protect their biodiversity because of continuous land use pressure and inadequate conservation funds as protected area management is mostly dependent on public funding (Togridou, Hovardas& Pantis, 2006).There is an indications that continuous funding for environmental conservation by the central governments in many African countries may likely be reduced in the future(Togridou et al., 2006; White & Lovett, 1999)as many areas are experiencing a decrease in public funds or limited funds for the maintenance and management of these natural environments (Reynisdottir, Song& Agrusa, 2008).

This lack of funding could be attributed to the failure of governments in many countries to recognize both the market and non-market values of the protected areas. These include income from tourism as well as non-monetary services that can contribute to the improvement in quality of life. As governments do not recover these benefits, they are rarely inspired to allocate funds that are adequate for proper management of the areas(Baral, Stern& Bhattarai, 2008). This ugly trend have rendered the financial self sufficiency of these ecologically-rich protected areas very critical for their survival (Togridou et al., 2006), and most of the biodiversity in these protected areas will only survive if humans choose to protect it and are willing to allocate funds for its conservation (Lindemann-Matthies, et al 2010 & Stokes, 2006).

Recently, discussions within the conservation field focused mainly on the enhancement of the financial sustainability of protected areas. The financial sustainability as defined by (Emerton, Bishop, & Thomas, 2006, p.15) is the ability to secure long-term stable and sufficient financial

resources, also to allocate them in a well-timed manner and in an appropriate form, so as to cover the full costs of protected area management and to ensure that they are effectively and efficiently managed in line with conservation and other developmental objectives. However, securing of funds for the protection and enhancement of these natural environments have always been a source of concern for sustainable management of the protected areas especially where nature-based tourism is a key product (Reynisdottir et al., 2008). From environmental point of view, funding for biodiversity conservation is believed to be one of the important benefits derived from ecotourism. Ecotourism therefore is believed to be a major way of ensuring the self-financing of the protected areas (Togridou et al., 2006; McNeely, 1994).

The recreational service offered by the protected areas in the form of ecotourism is one of the important components that have contributed to the sustainable growth and development of these areas. Currently, there is increase in people's demand to spend their precious time for leisure, not just in recreational centers, but rather in ecologically-rich protected areas(Arabatzis & Grigoroudis, 2010). For instance, most visitors to Africa were mainly interested in ecotourism, which helped in developing and sustaining the economy of many countries like Kenya and Tanzania(Eugene, et al., 2009).

Some analysts believed that in Nigeria, ecotourism is a segment of the economy with higher potentials to contribute significantly not only to the country's foreign exchange earnings, but also in reducing the sources concentration of the foreign exchange (Bankole, 2002). However, despite the fact that ecotourism is believed to be the segment with the potentials to contribute higher to the revenue generation in Nigeria, it is perhaps the segment of the economy with the lowest consideration for investment (Eugene, et al., 2009).

An economically viable entrance fees to the protected areas can make them financially self-sufficient, by sending a good message about the value of land devoted to conservation. Higher entrance fees for foreign visitors for instance can help to boost revenue generation substantially there by making ecotourism the best land use option (Coria & Calfucura, 2012).A biodiversity-rich area with appealing landscape and charismatic fauna resources may charge higher entrance fee, implying a suitable instrument for funding conservation of rich ecosystems (Stronza & Gordillo, 2008). The charismatic wildlife species of interest to most visitors of a protected area are usually the rare and endangered species, therefore, they might be willing to pay higher amounts for conservation projects(Lindsey, et al., 2007). Even in some areas where such endangered fauna species were not common, some unique species can help to raise awareness about the need for biodiversity conservation (Coria & Calfucura, 2012). Thus, determining visitor's willingness to pay for biodiversity conservation would help in formulating policies that will improve the recreational benefits of the zoo, minimize visitors' congestion and improvement in biodiversity conservation.

1.2 Problem Statement

Nigeria is blessed with rich and unique array of ecosystem and a great variation in natural resources. These have evolved a delivery of fauna and flora supporting more than 1,340 species of animals, among which are 274 mammals, 860 birds and about 4,600 species of plant (Ijeomah, H.M., 2014). This ranks Nigeria as one of the richest countries of Africa in terms of Biodiversity (FMOE 2007).

However wildlife conservation and management have been facing many several and ecological problems in Nigeria, many authors have identified some of the factors affecting biodiversity conservation in Nigeria, including land clearing for Agricultural activities, overgrazing and

deforestation, indiscriminate or un-planned bush burning. The benefit of ecotourism are clearly seen by government in both developing and developed nations for variety of reason, such benefit include, protection of the environment, economic sustainability, cultural integrity, research and education.

Zoo tourism is a niche under wildlife tourism which can be described as tourism undertaken to view and or encounter non- domesticated animals in captive and semi captive environments, in Nigeria zoo tourism dates back to the establishment of the first zoological garden in 1945. While various tourism studies have been carried out in some of zoos and Kano Zoological garden in particular, no research with respect to willingness to pay (WTP) in Kano Zoo. This Study therefore sought to address this research meagerness by analyzing visitor's willingness to pay for conservation of wildlife resources in Kano Zoological garden.

1.3 Research Question

The research will be used to analyze people willingness to pay for conservation of wildlife resources, therefore the study seek to answer the following research question.

i. What is the people's attitude as well as perception toward conservation of wildlife resources at Kano Zoological garden?
ii. What are factors influencing respondent WTP for the conservation of wildlife resources?
iii. What is the mean amount respondents are willing to pay as entrance fee into Kano Zoological garden?

1.4 Aim and objectives

The aim of this research is to analyze willingness to pay for the conservation of wildlife resources (WTP) in the study area.

The specific objectives are:

i. To determine respondents attitude as well as perception towards wildlife resources at Kano Zoological garden
ii. To examine factors influencing respondent WTP for the conservation of wildlife resources
iii. To estimate the visitors mean WTP amount as entrance fee into Kano Zoological garden.

1.5 Scope of the Study

The scope of the research is to analyze willingness to pay for the conservation of wildlife resources in Kano Zoological garden. Therefore the study will be limited to visitors at the zoological gardens within the study area.

1.6 Significance of the study

This research work is of importance to management of Kano Zoological Garden, Kano State Government and the local community. This study would help policy makers and management of Kano Zoological Garden to take into account not only the associated cost of wildlife resources when making decision. This study tries to come up with policy suggestion that will make zoo one of the major sources of income to the state and avenue for employment of direct and indirect labour.

1.7 Study Area

Kano is the state capital of Kano State in North West, Nigeria. It is situated in the Sahellian geographic region, south of the Sahara. Kano is the commercial nerve centre of Northern Nigeria and is the second largest city in Nigeria. The Kano metropolis initially covered 137 square kilometers (53 square miles),and comprised six local government areas (LGAs) KanoMunicipal,

Fagge,Dala,Gwale,Tarauni and Nasarawa; However, it now covers two additional LGAs Ungogo and Kumbotso.Kano is 481 metres (1,578 feet) above sea level . The city lies to the north of the Jos Plateau, in the Sudanian Savanna region that stretches across the south of the Sahel. The city lies near where the Kano and Challawa rivers flowing from the southwest converge to form the Hadejia River, which eventually flows into Lake Chad to the east.

1.7.1 Climate

Kano features a tropical savanna climate. The city sees on average about 980 mm (38.6 in) of precipitation per year, the bulk of which falls from June through September. Kano is typically very hot throughout the year, though from December through February, the city is noticeably cooler. Nighttime temperatures are cool during the months of December, January and February, with average low temperatures of 11 to 15 °C (52 to 59 °F).

1.7.2 Population and Economic Activities

Kano metropolis has a population of 2,828,861 as of the 2006 Nigerian census; the latest official estimate (for 2016) is 3,931,300. The economic significance of Kano dates back to the pre-colonial Africa when Kano city served as the southernmost point of the famous trans-Sahara trade routes. Kano was well connected with many cities in North Africa and some cities in southern Europe.

1.8 Audu Bako Zoological Garden Kano

The Audu Bako zoological garden is the second of its kind in Africa after Ivory Coast, established by Late Alhaji Audu Bako, the then military governor of Kano State in 1971 and was opened to the public on the 13th of November 1972. Kano Zoological Garden popularly known as “Gidan Zoo” is located in Kano State, the commercial heart of Nigeria. It covers an area of 46 hectares with a collection of more than 60 species, comprising 200-300 specimens. Such as Lion,

Elephant, Monkeys, Antelope, Varieties of Birds etc. Audu Bako Zoological Garden is accredited by Pan African Association of Zoos and Aquaria. The Zoo was registered by Pan African Association of Zoos and Aquaria (PAAZAB) and International Zoo Educators (IZE) in 2007 and 2010 respectively.

1.8.1 Visitors

People from different part of Nigeria and around the globe pay visit to this historic zoo either for recreational activities or for educational and research purposes. It is almost impossible to attend primary or secondary school in Kano without going for excursion to Kano Zoological Garden.

1.8.2 Zoo Facilities

- Education Centre: The Centre works towards educating and inspiring pupils and students from various institutions of learning about nature. They offer series of lectures on Wild Animal Conservation, there is also a mini library open on working days (Mondays – Fridays)
- Open Air Theatre: Open every 9:00am – 6:00pm
- Mini Conference Room: With only 20 people capacity.
- Children's Park: Open every day: 10:00am – 6pm. Tickets: N100
- Animal rides (Camel, Horses & Donkeys): Saturdays and Sundays: 10:00am – 12:00 noon and 4:00pm – 6:00pm
- Free parking space for Visitors

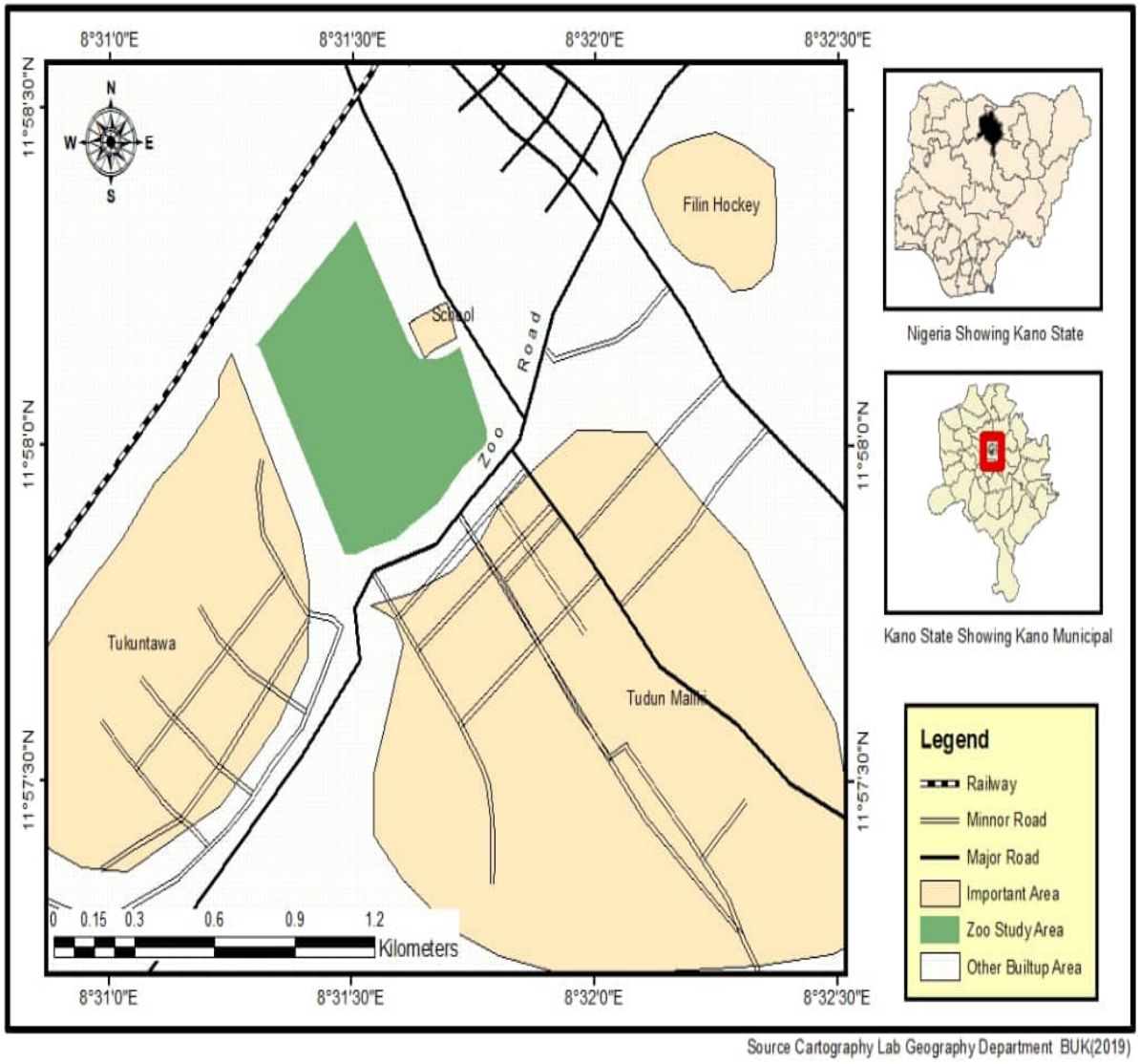


Figure 1.1 Map of Nigeria Showing the Study area

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, relevant literatures were reviewed concerning the subject matter, also includes conceptual clarification, as well as theoretical frame work.

2.2 Protected Areas and Wildlife conservation

Protected areas are considered as the cornerstone for ecosystem and biodiversity conservation (Htun *et al*., 2012). In recent time, the understanding of the significance of biodiversity conservation and the multiple ecosystem services it is providing to the society have necessitated the establishment of the protected area networks around the world with the aim of preserving the vital environmental resources in them (Barber *et al*., 2012).

Presently, the protected areas around the world cover approximately 12.9% of the earth's land surface, with about 120,000 designated locations as protected areas that have greatly been increasing in expanse over the past thirty years (Coad *et al*, 2010). The present-day society has continued to invest substantial time, effort and resources in prioritizing such areas for designation as protected areas (Gaston *et al*. 2008), as they are considered the backbone of biodiversity conservation, they are also known to deliver a wide range of social, economic and environmental benefits to the society (Butchart *et al*., 2010).

The protected areas are well known for their active role as sanctuaries for many species and ecological processes that cannot survive in an intensely pressurized environment, as well as for their capability in providing space for natural progression and ecological restoration (Dudley *et al*., 2010). They are not just acting as a refuge for biodiversity but their value also lies in the provision of wide range of socio-economic benefits and protection of cultural heritage. They

supply various ecosystem services such as genetic material, food, clean water, or local herbs (Chape *et al.* 2008). These protected areas can help to mitigate the impacts of climate change through carbon sequestration and storage, acting as a buffer against natural disasters and, helping in maintaining a microclimatic stability (Dudley *et al*., 2010).

In most cases, the protected areas remain the only natural or semi-natural areas where significant number of endangered species could be found and nowhere else in the world and it is believed that the global conservation efforts through the establishment of protected areas have slowed down species' decline (Butchart *et al*., 2010) .

2.3 Tourism overview

Tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited (World Tourism Organization, WTO, 2010). (Butchart *et al*., 2010).Put in another way, Tourism is a collection of activities, services and industries that delivers a travel experience, including transportation, accommodations, eating and drinking establishments, retail shops, entertainment businesses, activities facilities and other hospitality services provided for individuals or groups travelling away from home. Tourism is a major source of income and foreign exchange earner for countries with tourism potentials. Ecotourism, an aspect of environmental tourism makes minimal impact on the environment, empowers host communities, respects the culture of indigenous people and conserves biodiversity. It is one of the fastest growing aspects of tourism especially in developing countries (Magigi and Ramadhani, 2013), where the resources are present. Simply put, tourism has become the largest industry on the planet earth.

While people are embarking on recreational tours, the effect of their travels have brought about infrastructural development, physical development, employment opportunities, addition of values to local less - valued materials Visitations to natural areas have been rated highest in terms of recreation and environmental awareness as visitors are hardly disturbed by crowds. Besides interaction with nature especially plants and animals increases knowledge of the environment, and have been proved to exert healing effects on tourists (Ana and Ajewole, 2011). Sights of vegetation increase efficiency in people are bored of having the same experience every time. They prefer travelling to pristine areas to learn new things, have new experiences while viewing different species of animals in their habitat including rare, endangered, endemic and abundant unique land forms; waterfalls of different heights and velocity of flow; lakes of different colors and sizes; springs of different temperatures; birds of different calls and plumage colors (Ijeomah, 2017). Put in another way they want to interact with 'the naturality' of the nature and 'the rurality of the rurals (Ijeomah and Aiyeloja, 2010).

Since the increased capitalistic nature of the planet, earth, there has been increased commoditization of most resources that were formerly enjoyed freely, tourists are therefore made to pay in monetary terms for what they see, feel, touch and observe (Ijeomah and Herbert, 2012). Payments by tourists have brought about many investments in ecotourism as several stakeholders are very eager to derive benefits. Ecotourism has therefore become very popular and an instrument of poverty alleviation and national development when properly managed and monitored. The fact that only countries with tourism potentials can attract significant number of tourists and benefits has made nations, states and communities without unique attractive potentials to start creating artificial attractions such as observing animals in zoos. However, tourists prefer observing the components of nature and culture in the original form.

2.4 The Ecotourism Concept

The definition of ecotourism is not without criticism. There are many definitions and often conflicting definitions of what ecotourism is andthere is no single generally agreed definition of what ecotourism means. Some scientistshave extracted about 85 definitions of ecotourism from literatures based on the following variables; conservation, culture, benefits to the locals, education and in relation to the ecotourism destination, especially when it is taking place in natural areas (Chiutsi *et al*, 2011).

According to the definition by the International Nature Protection Union(INPU), ecotourism is an environmentally-sensible journey or visit to an unspoiled or undisturbed natural environments, supporting conservation by understanding the nature and cultural sources, having low visitation effect and providing socio-economic benefit to the public (Torquebiau & Taylor, 2009).

Ecotourism has also been defined as a nature-based environmentally friendly way to gather funds for conservation and local development, a source of education for local residents and visitors and also a means for promoting respect for different cultures and cultural values (Baral et al., 2012).

However, the generally accepted definition of ecotourism is the one given by Ceballos-Lascuran(1993) as cited by (Chiutsi *et al*., 2011) where he focuses on the significance of natural areas. He defined ecotourism as traveling to relatively uncontaminated or undisturbed natural environment for the purpose of admiring, studying and enjoying the scenery, wildlife or any local cultural exhibitions. The common denominator with respect to what ecotourism means is that, it is nature-based activity.

As the popularity of ecotourism grow, so also its definitions. It include ideas about the responsibility of ecotourism, management of the destination in an environmentally friendly as

well as sustainable manner (Torquebiau & Taylor, 2009). As the ecotourism theories advocated that natural resource conservation and the economic development are its compatible goals (Chiutsi *et al.*, 2011), it is therefore recognised as a sustainable option for achieving both conservation and development objectives (Baral *et al.*, 2012)**.**

Ecotourism has been adopted by many developing countries that are home to most of the world's rare and endangered species, with the hope of improving their economies in an environmentally sustainable manner (Coria & Calfucura, 2012). It has also been widely accepted and encouraged by international agencies including the world bank and the international union conservation of nature (IUCN), and many international NGOs, such as conservation international, the world wildlife fund (WWF), and the nature conservancy (TNC) (Baral *et al.*, 2012)**.**

Ecotourism has grown so fast to the extent that, it is widely considered as the fastest growing subsector of the industry over the past three decades (Donohoe & Needham, 2006). It is in view of the importance of this sub-sector that the United Nations declared the year 2002 as "The International Year of Ecotourism" and also the same year was considered as the maiden year of many scholarly and academic journals dedicated solely to ecotourism, particularly peer-reviewed Journal of Ecotourism (Yeo & Piper, 2011).

Although, as the present-day ecotourism sub-component has a brief history, it has occupied a centre stage in many international discourses and established itself as an emergent academic discipline (Baral *et al*., 2012). Also its role in sustainable resource utilization, environmental conservation, and socio-economic equity is given a solid representation in the literature. Thus, experts have acknowledged ecotourism as a potential means of enhancing the sustainability of the natural resources in many destinations, mainly due its global recognition for ensuring sustainable ecological practices (Baral *et al*., 2012; Yeo & Piper, 2011).

2.4.1Ecotourism in Africa

Africa is a continent with a considerable geographic, cultural, political, economic as well as social diversity(Dieke, 2003). The continent's landscape is dominated with many fascinating tourist's sites that are regarded and comparable to the best in the world (Olorunfemi & Raheem, 2008).In Africa, like other developed countries of the world, many governments have already realized the huge benefits associated with tourism and accepted not just its importance ineconomic development, but also it has been given a dominant role in the policy formulation and planning process(Dieke, 2003).

The continent possesses exclusive ecotourism destinations most of which are the overland safaris such as: the national parks and game reserves, sea and river recreational fishing, archaeological sites, beach resorts and hotels, surfing and swimming, recreational beaches with coconut and palm groves lined along the coast and many diverse cultural heritage that makes it a unique destination (Dorcas,*et al*, 2012; Uduma-Olugu & Onukwube, 2012).The continent offers considerable, largely untapped potential not only for ecotourism, but also for cultural tourism, environmental tourism, and adventure tourism. However, the development of these and other tourism products that portrays Africa's unique tourism potentials need to be aggressively pursued due to the increase in number of visitors to the region (Olorunfemi & Raheem, 2008)**.** Africa records an increase in international tourists' arrival by about 6% in 2012, and this makes it the second fastest growing regionin the worldin 2012 after Asia and Pacific with 7% annual growth rate recorded for the year. For the first time ever in history, Africa achieved 52 million tourists arrival, with an increase in international tourism receipts which amounted to the tune of US$ 34 billion(UNTWO, 2013).

2.5 Tourism Development in Nigeria

Nigeria being a country that is coming up in tourism development, it stands to benefit a lot from developing the sector. Developing the tourism sector in a sustainable manner will help to ensure the socio-cultural, economic and environmental sustainability of the tourism destinations in the country (Uduma-Olugu & Onukwube, 2012). The sustainability is not limited to the self-sustenance of the tourist sites, but also on being sensitive to local people's needs and by recognizing the importance of all the stake-holders in a decision making process (Dimoska, 2008).

Nigeria is looking at tourism as its possible potential income-earning alternative, as it is generally believe that if the country gets the tourism sector right as asserted, it will serve as one of the major employer of labour after agriculture (Uduma-Olugu & Onukwube, 2012). Moreover, It is certain that for mono-cultural economies like Nigeria, there is the need to diversify the economy and focused on job creation and income generation, while on the other hand, foreign exchange outflows associated to tourism will be minimize and foreign exchange inflows from tourism will be maximize and subsequently striving for macroeconomic stability(Dorcas, *et al*, 2012)**.**

As tourism provides developing countries like Nigeria with vast opportunities and possibility for economic diversification (Dorcas,*et al*, 2012), unless economic policies aimed at promotingthe sector remain a focus in these countries, tourism will not be a potential player for economic growth (Hong Long, 2012)**.** Apart from the type of tourism, the extent to which any country realized its economic benefits from tourism, depends on the expectations of the tourists and the country's ability to provide adequate tourism facilities, the quantity and quality of available

resources and maintaining the quality of the environment, both natural and man-made(Hall, 2007).

Furthermore, it is generally acknowledged that tourism is as an effective instrument for socio-economic development due its linkages with the other sectors of the economy that allows it to create employment opportunities, generate income, stimulates local economic development, and enhances the quality of life (Hall, 2007). Nigeria has enormous tourism potentials, but the sector needs to be developed in a sustainable manner for these benefits to be accrued. Conversely, in developing the sector, stringent measures need to be taken in order to minimize the ecological footprints of tourism through the design, specification of materials and services (Dorcas *et a.l*, 2012), proper planning, integration of local cultures and values, and the environmental protection which will further help to minimize the socio-cultural, economic and environmental damages (Hong Long, 2012).

At present, there are not less than 101 tourist attractions in Nigeria, these are spread across the six geopolitical zones in the country and involving different types of tourism assets including rocks formations, hills, plateaus, springs and waterfalls, beaches and lakes, shrines, cultural festivals, museums, national parks, game reserves, zoos, and many others. The vegetation cover, weather and climate of Nigeria have rendered it an important tourism destination of varieties. These attractive weather and climate apart from the significant number of tourist attractions are the key elements to the demand for tourism in many destinations(Bankole, 2002).

2.6 Wildlife-Based Tourism in Nigeria

Wildlife-based tourism has become an important foreign exchange earner in various countries of the world, Reynolds and Braithwaite, (2001).Furthermore, the magnitude of wildlife-based tourism market is about 40 to 60 percent of international tourism, whereas20 to 40 percent of

these international tourists arewildlife-related tourists. Significantly, in 1994 a total of 106 to 211 million wildlife-based tourists were recorded worldwide.

As many protected areas in Africa were fully developed for wildlife-based ecotourism, their prime objective still remain the sustenance and maintenance of wildlife population, since most tourists visiting many of the African countries for ecotourism have wildlife such as the big game as their key motivators (Robert,*et al.*, 2000).Nigeria's recent shift of interest to tourism development as a means of augmenting revenue sources apart from that of oil, the country's protected areas (National parks and game reserve) alongside their key mandates of conserving the flora, fauna and biodiversity in various parts of the country's ecological zones, are also the task of promoting ecotourism for income generation to the country. And for this to be achieved there is the need to look for possible ways developing the ecotourism potentials of the country through enhancing the wildlife-based ecotourism resources in the country.

2.6.1 Zoo tourism in Nigeria

The idea and concept of zoo keeping started in ancient times (Ayodele *et al*., 1999) with the first animal collections for public amusement being set up in ancient Egypt and China (Fa *et al.*, 2011). The first zoos were originally just a collection of live wild animals on exhibition (menageries) for the amusement of the public (Omonona and Ayodele, 2011). They persisted until the establishment of the first formal in Vienna in 1752 World Association of Zoos and Aquarium (WAZA, 2006). Zoos at this time were still aimed to satisfy the public's curiosities. It was not until the late 18th Century that the worth of zoos as centers of scientific research was recognized (Carr and Cohen, 2011). The first scientific zoo and charity was created in 1826 in London; the Zoological Society of London (ZSL). The concern for the animals' welfare and interest in conservation of species, are recent developments, which started after the Second

World War (Knowles, 2003). The World Association of Zoos and Aquarium (WAZA) now provide a common standard of practice to guide zoos worldwide.

The roles of a modern zoo includes education, captive breeding, recreation, scientific research and economic reasons (Omonona and Ayodele, 2011; Baker, 2007; Patrick *et al.*, 2007; WAZA, 2006). A paramount objective for zoo keeping out of these roles is for recreation (Omonona and Ayodele, 2011) serving as places of relaxation and entertainment and provides opportunity for people to satisfy their natural curiosity of seeing different species of animals especially from different areas of the world. People of all ages enjoy visiting zoos because of the joy of seeing different species of animals at a specific place (Uloko and Iwar, 2011; Ayodele and Alarape, 1998; Croke, 1997). Some 1000 zoos and aquariums worldwide receive more than 600 million visitors every year (WAZA, 2005). Visiting zoo is a popular family-oriented leisure activity, usually involving a one-day visit (Ryan and Saward, 2004; Chris and Jan, 2004; Turley, 2001).

Zoo tourism is a niche under wildlife tourism which can be described as tourism undertaken to view and /or encounter non-domesticated animals in captive and semi-captive environment (CRC, 2001, 2008; Newsome et al., 2005). Zoo tourism in Nigeria dates back to the existence of the oldest zoological garden 'Jos Museum Zoo' in 1945 by for the purpose of research and tourism. Today, Nigeria has twenty two zoological gardens (Table 1) across the various geopolitical zones of the country: two are federal government owned, ten are state government owned, two are privately owned and eight are institutionally owned (seven and one by federal universities and state university respectively).

Table 2.1 Zoological Gardens in Nigeria

S/N	ZOO	OWNERSHIP	YEAR FOUNDED
1.	Jos Museum Zoo	Federal government of Nigeria	1945
2.	University of Ibadan Zoo	University of Ibadan	1948
3.	Ahmadu Bello University Zoo	Ahmadu Bello University, Zaria	1967
4.	Agodi Garden and Zoo, Ibadan	Oyo State Government	1967
5.	Obafemi Awolowo University Botanical Garden	Obafemi Awolowo University	1968
6.	Calabar Zoo	Cross River State Government	1970
7.	Sanda Kyarimi Park, Maiduguri	Borno State Government	1971
8.	Botanical Garden, Enugu	Enugu State Government	1971
9.	University of Nigeria, Nsukka Zoo	University of Nigeria, Nsukka	1972
10.	Zoo Park, Port Harcourt	Rivers State Government	1974
11.	Jos Wildlife Park	Plateau State Government	1975
12.	**Kano State Zoo**	**Kano State government**	**1972**
13.	University of Ilorin Zoo	University of Ilorin	1984
14.	Makurdi Zoo	Benue State Government	1976
15.	Ogba Zoo and Nature Park, Benin City	Edo State Government	1980
16.	Ikogosi mini zoo	Ekiti State Government	1988
17.	Abuja Children's Park and Zoo	Federal Government of Nigeria	2001
18.	Gombe State University Zoo	Gombe State University	2007
19.	Origin Zoo, Lagos State	Prince Abiola Kosoko	2008
20.	Federal University of Agriculture, Abeokuta Zoological Park	Federal University of Agriculture, Abeokuta	2012
21.	Prof Afolayan Wildlife Park, Akure	Federal University of Technology, Akure	2012
22.	Q - Brat Zoological Garden, Lagos State	Prince Sakiru Adesina Raji	2012

Source: Adapted Borokini, 2013

2.7 Payments for Ecosystem Services

PES can be defined in terms of payments to undertake actions that increase the levels of desired ecosystem services, and can therefore be broadly defined within market-based approaches. PES provides some key opportunities to link up those involved in 'supplying' ecosystem services more closely to those benefiting from the same ecosystem services and in doing so, potentially provide cost-effective ways of developing new streams of financing. This requires considerable innovation as, for many ecosystem services, both 'suppliers' and 'beneficiaries' may not currently be aware of their roles (Bello, 2015). The concept of being interested in addressing specific environmental issues is the main driver of payment s for ecosystem services (PES) deals.

2.7.1 Willingness to Pay for Wildlife Resources

Many environmental goods are not traded in the market, nor are they closely related to or tied with any marketed goods; there is therefore, no price for such goods. However, these values are measured in monetary terms through the concept of individuals Willingness to Pay (WTP) or Willingness to Accept (WTA) compensation for alterations in environmental services (Bello, 2015). Willingness to pay is measured directly by asking people to state their Willingness to Pay an amount for environmental services, nature protection, or indirectly assuming that the amount can be inferred by looking at economic cost afforded to enjoy environmental services or at the cost incurred to acquire service substitute (Bello, 2015). Analyzing Willingness to pay is a function of several socio economic factors such as income, taste and preference. Kolstad(2000) conducted a study on coastal water quality and found out that whatever the environmental goods, the willingness to pay is observed to rise with income of the respondents. To forgo the consumption of a commodity, a consumer will be willing to accept an amount that serves as compensatory variation or that puts him/her in the constant previous utility level (Mundy and Mclean, 1991). However, WTP cannot be expressed through the market, the most common

approach used to estimate Willingness to pay is the Contingent Valuation Method (Hanemann, 1999 and Bateman *et al*, 2002)

The method was first used by Davis (1963) in United States of America to estimate the benefits of outdoor recreation in a Marine backwoods area. Since then, the Contingent Valuation Method has been widely used to measure the value of environmental goods and the improvement of their status. Mohammed et al, (2012) estimated Willingness to Pay among communities in Hulu Langat for watershed conservation using a Dichotomous Choice Contingent Valuation Method. Face to face interview was conducted to obtain primary data for Logit model estimation. The model estimation indicated that bid amount, income, occupation and residential area were the significant determinants influencing the communities Willingness to Pay.

Loomis, et al (2000) measured the total economic value of restoring ecosystem services in an impaired river basin using contingent valuation. Five ecosystem services that were described to the respondents include wastewater, natural purification of water, erosion control, habitat for fish and wildlife and recreation. Households were asked whether they are willing to pay higher water bill for increasing ecosystem services. The result shows that households were willing to pay an average of $252 annually for the additional ecosystem services. To the households living along the river, this calculation yields a value of $19 million to $70 million depending on whether those refusing to be interviewed have zero value or not. Even the lower bound benefit estimated exceed the high estimate of water leasing costs $1.13 million necessary to produce the increase in ecosystem services.

Carson, Mitchell, Haneman, Lopp, Presser and Puud, (2003) applied Contingent Valuation Method to determine the damage done to non – use value in Exxon Valdez oil spillage near Prince Williams sound in Alaska in 1989. The spill was the largest oil spill from a tanker in

United States of American history. The result shows that household Willingness to Pay (WTP) to prevent another Exxon Valdez type of spill is $30. Loureiro, Loomis and Vazquez (2009) conducted an economic valuation of environmental damages due to the Prestige oil spill in Spain. The study was limited to the passive use and non – market use losses caused by the spill using the Contingent Valuation Method via a non – parametric approach, the Turnbull distribution and a parametric approach and Logit Model. The study found out that if each of the households pays on average 40.51 Euro of extra taxes, mean social Willingness to Pay will amount to 574,722,216 Euro to avoid a future oil spill similar in size to the Prestige spill. The study followed the approach used by Carson et al, (2003) and summed up the passive use and non – market use losses caused by the Prestige oil spill. The approach was to elicit from the respondents their Willingness to Pay for a program that will prevent similar spill in the future.

It has been observed in recent times that the role the environment play to a nation's development process cannot be relegated to the background. Apart from being the physical surrounding for natural habitats, the environment provide the basis for human exploits for agricultural, industrial, commercial, technological and tourism development of a society (Evelyn and Tyav, 2009). For this and several other reasons, environmental issues now occupy a centre stage in academic discourse and other public fora both at the national and international levels. Recorded evidence has also shown that the environment represents a wide range of the external circumstances, conditions and the things that affect the existence and development of an individual, organism, and group and/or society

2.8 Economic Valuation of Wildlife resources

The society's failure to attach economic value on nature and natural resources has resulted in the impairment of ecosystems, and consequently a reduction in the services it is providing there by significantly contributing to biodiversity decline. The main causes of this degradation are in fact associated with the way and manner the society use resources and the failure of present economic system and policies to value the environment and its benefits (Surendran & Sekar, 2010; Nijkamp, *et al*., 2008).

The economic valuation within the context of environmental economics is defined as any attempt to assigning monetary values to environmental resources. Economic valuation of environmental resources is important since it allows the benefits associated with biodiversity to be directly compared with the economic value of alternative resource use options. Failure to do this may result in a loss of biodiversity and their associated ecosystem services. An in-depth knowledge of the values attributed to the biodiversity within the protected areas would help to ensure optimal resource allocation and opportunities for reducing conflict between user groups (Christie et al., 2008).

With biodiversity taking a centre stage of the human-driven changes, the continuous treatment of environmental resources as a mere "public goods" or "free goods" or its undervaluation would at the long-run have negative consequences. To prevent this undervaluing, economic valuation is really needed to capture the intricacy of values and uses that are associated with ecosystem services and biodiversity, enabling policy makers to understand the complex nature of the relationship between society and their environment and support the development of policies and programme (Christie et al., 2008).

The problems associated with the existence of public goods and the creations of externalities are originated from the need for the demand evaluation in order to make informed decisions on the resources allocation. Demand evaluation, or more precisely, the estimation of consumer benefits is required regardless of whether the demand is expressed through the market or not. Thus, there are two fundamentals steps to estimate consumer benefits. The first one is to establish what is meant by value (either use or non-use), the second step is to employ the techniques of ascertaining that value (Jones-Walters & Mulder, 2009; Nijkamp *et al*., 2008).

Although environmental benefits are usually unmeasured, the real value of most of the public goods can be regarded as being much higher due to the uniqueness of these resources, so if they are over-exploit, an irremediable trend may be created which could result in their destruction. This trend conveys a passive or non-use value in addition to the use value. Meaning, they have a value which surpasses their exchange and use value. Thus, some non-use values or benefits have been identified within the context of environmental goods, which when added to the use values, it will yield what is known as the total economic value 'TEV'(Christie et al., 2008).

2.9 Economic Valuation Techniques

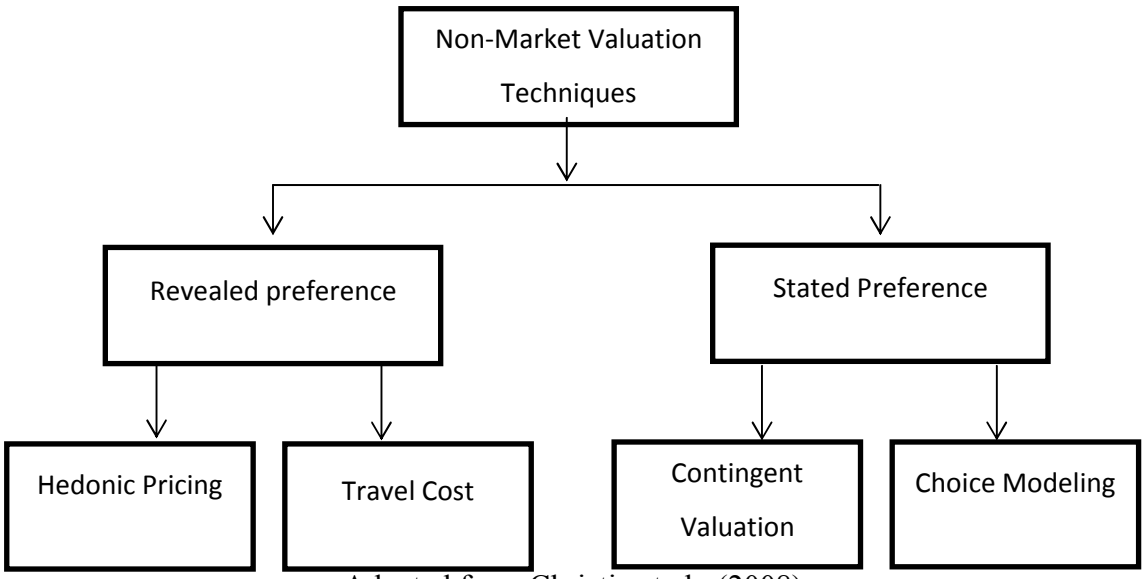
The major challenge in applying economic concept to the valuation of environmental goods is the assignment of monetary value to those resources that are not commonly traded in the market as other known traded goods. As the actual information about their prices is usually not available, some methods were developed on how such goods can be valued or measured(Hanley & Spash, 1993).

After decades of struggled by economists on how best public goods can be valued, several methods were design for estimating the economic values attached to these goods generally referred to as the non-market valuation techniques. These techniques attached values to the

natural resources that give an insight as well as vital information to the policy makers in developing sound environmental plans and policies (Dumitraş,*et al*., 2011).

Economic valuation of environmental resources can be broadly categorized into two: the revealed preference and stated preferences. Revealed preference techniques depend on the analysis of noticeable behavior while the stated preference techniques rely on individuals‘ stated response to survey relating to the hypothetical scenario presented in questionnaire (Turner et al., 1994).

Figure 2.1: Economic Valuation Techniques



Adapted from Christie et al., (2008).

2.9.1 Revealed Preference

The Revealed preference method of nonmarket valuation tries to estimate the value of goods and Services in relation to the actual revealed individual's behavior when making a choice within the market (Mohd Rusli, Alias, Khairil& Shuib, 2009). The commonly used approaches under the revealed preference method are the travel cost method and the hedonic pricing method.

2.9.1.1 Travel Cost Method

One of the prominent revealed preference methods is the travel cost method (TCM). It obtains data based on how people actually behave in the in real markets related to the environmental good in question. Unlike the assumed behavior in the case of hypothetical markets of the stated preference methods, In travel cost method, the environmental good being valued is usually recreational resources such as game reserve, public forests and the national parks. The behavior studied is the sum total of trips that people make to such destinations, as a function of cost of the trip; i.e travel expenses and the opportunity costs of time(*Kontoleon, et al,* 2007).

The travel cost method was originally developed by Clawson and Knetsch (1966), following the suggestion of its plausibility by Hostelling (1949). There are basically two types of travel cost models commonly available in the literature: The count models, where the valuation is based on the number of trips to a destination and the random utility travel cost models where the recreational trips to all potential destination is observed, thereby allowing valuation of the environmental attributes of the destination to be carry out. The cost of travelling to a recreational site is considered as a proxy for the price of the product. Thus, even in the case of visitors not paying to use the site, expenditure they have incurred either implicitly or explicitly in the travel could be used as a measure of their valuation of that site. Time can be considered as an implicit cost while transport fares as the explicit costs. And for recreational sites where majority of visitors walk, the only measure which can feasibly be used in this case is valuing the time they take to arrive (Thea Sinclair & Stabler, 1997).

The travel cost method is generally not suitable for use in valuing biodiversity in its entirety, but to estimate the recreational benefits associated with a particular aspect of the biodiversity. Therefore, its focus is on the recreational benefits derived as a result of travel to a biodiversity-

rich destination such as the protected areas. Thus, TCM cannot be used to estimate non-use values, and not suited for measuring changes in environmental quality (Pascual *et al*., 2010).

2.9.1.2 Hedonic Pricing Method

The Hedonic pricing (HP) is another revealed preference method where the value of an environmental good is revealed through the existence of the demand for a related marketed good. The Hedonic Property Pricing (HPP) for instance, is a particular application of HP where weak complementarily is presumed between the price of a given property and the quality or value of the surrounding environment such as; the landscape amenity, noise, air quality etc(Thea Sinclair & Stabler, 1997).

The hedonic pricing method makes use of information about the implicit demand for an environmental quality of marketed commodities. For example, the property in general or houses in particular consist of several attributes; some are environmental in nature, such as the having a view on a nice landscape or proximity to a forest. Therefore, a change in the value of biodiversity or any of the ecosystem services provided by the natural attribute will replicated a change in the value of the property. Thus, by estimating a demand function for a given property, the experts can further estimate the value of a change in the environmental benefits created by the non-marketed environmental good. (Pascual *et al*., 2010)

The first application of HP in environmental valuation was by Ridker & Henning, (1967)while examining the impact of air pollution on the values of residential property. Typically, the HP involve three main stages: first, is the estimation of hedonic price function; the second is the implicit (hidden) prices which are calculated for the environmental asset of interest that yield a marginal value; and the last stage is the estimation of the welfare measures of discrete changes that occur in the environmental quality. The HP method is generally suitable for valuation of the

impacts of site-specific goods such as appealing landscapes, or on the negative side, a noise from airports (Haab & McConnell, 2002).

The HP technique has limitations in terms valuing biodiversity. It is difficult to find a meaningful relationship between biodiversity and house prices. Most of the existing studies using HP generally have been based on the relationship between house prices and environmental quality or landscape amenity. Other possible applications of this technique are based on the potential relationships between the easy access of a property to biodiversity resources such as nearby river for fishing or forests for recreation or for fuel wood(Thea Sinclair & Stabler, 1997).

2.9.2 Stated Preference

Among the commonly known stated preference methods that normally requires individual's response to hypothetical questions are the contingent valuation method (CVM) and a choice modeling Method (CM). Kontoleon et al., (2007) suggested that the main difference between CVM and CM is that in CVM studies; usually a respondent is provided with only one option. This option is associated with some price-tag or bids which varies across the respondents. Then the respondents will be asked whether they would be willing to support this option by paying the price or they would maintain the status quo by not paying the extra price. Dumitraş et al., (2011)carried out a comparative analysis of the commonly used stated preference methods for recreational valuation: The Contingent Valuation Method and Choice Experiments Method.

2.9.2.1 The Choice Modeling

The choice modelling sometimes referred to as the choice experiments is a stated preference valuation technique that estimates economic values by providing a hypothetical market for the non-marketed environmental good such as the biodiversity.

This method was developed by Louviere & Hensher, (1982) in the transportation as well as marketing researches, but with recent application in many fields including environmental valuation.

The choice modelling is used in the measurement of both use and non-use value and has become popular due to the much information it is providing as well as its ability to produce values for each attribute of the resources measured. In the CM, rather than just giving a discrete choice of either Yes or No (as in the case of contingent valuation), the respondents are presented with a series of choices in which they will be asked to choose from the lists, their preferred policy option (usually three options are provided). One of the options normal involved maintaining the status quo or "Do nothing" option. (Adamowicz, *et al*. 1994; Bennett and Blamey, 2001).

Each option presented to the respondents is described in terms of set of attributes describing the good with level assigned to each of the attributes. The value of any option selected can be quantified statistically. The basis for analysis of respondents choices relies on the random utility maximising (RUM) theory (Hanemann, 1994).

However, the distinction between choice modelling and contingent valuation is that, in choice modelling, values preference are estimated for a range of levels of the attributes whereas in the case of CVM, only single policy option is presented to the respondents. Also, in choice modelling, the survey respondents are given a choice between various options, and each of it consists of many attributes with one of which is either a subsidy or a price. Respondents will then be asked to examine all the options by balancing between the various attributes (trading off) and the result from the trade-off will then be employed in the estimation of the values of the resource attributes (Bateman *et al*., 2002).

Kontoleon *et al.*, (2007), have suggested that the key difference between contingent valuation and choice modeling is that the CVM generally present just one option to respondents. Each

option is attached with some price-bid which varied across the respondents, and then they will be asked to choose on whether they would be willing to support the option given and pay the price attached or they would not support the option and rather maintain the status quo (by not voting for the price).

Either the choice modelling technique or CVM can be used in assessing the total economic value from a change in the quality of biodiversity or ecosystem services. Although the CVM is less complex in design and implementation, but the choice modelling approach is more intricate and is capable of providing detail information and estimate values for changes in each attribute of an environmental resource (Pascual *et al.*, 2010).

2.9.2.2 The Contingent Valuation Method (CVM)

The most widely used stated preference valuation technique for measuring recreational value in nature-based recreational sites is the contingent valuation method. The CVM was initially proposed by Ciriacy and Wantrup in 1947 who use it in estimating the side effects of soil erosion (Venkatachalam, 2004). The Contingent Valuation method is based on the concepts of willingness-to-pay and willingness-to-accept in an attempt to elicit information from respondents in order to determine the value of non-market goods.

Willingness to pay (WTP) refers to the respondents' willingness to agree to pay certain amount of money in order to receive an environmental good or to prevent it from adverse effect or degradation. Willingness to accept (WTA) on the other hand, refers to the respondents' willingness to accept or receive certain amount of money as compensation in order to forgo an environmental good or the occurrence of an adverse effect to it(Venkatachalam, 2004; Carson, Flores, & Meade, 2001).

Both the WTP and WTA can be derived using Hicksian's demand functions. The Hicksian and the conventional Marshallian demand functions illustrate the relationship between the prices of a good the quantity demanded. However, the basic difference between these two demand function is that the Hicksian assumes utility levels and other prices of the product to remain constant. Therefore, the effect of income from a price change is screen out by the Hicksian demand functions and leaving the substitution effect only (Hanley,*et al*., 2009; Loomis,*et al.*, 2000; Richer, 1995). However, survey of experimental tests have shown that by using a willingness-to-pay format instead of willingness-to-accept may significantly reduce the hypothetical bias associated with the WTA to an insignificant level (Pearce & Moran, 1994).

Ellingson and Seidl, (2007) states that CVM is among few valuation techniques available for measuring the economic value where market there is absence of market information, even though it is not a perfect substitute for getting revealed preferences information and it does not give all the necessary answers for environmental monitoring. Yet accurate as well as valid result is achieved using CVM. Validity and reliability are two important instruments for testing the accuracy of CVM result.

According to Carson et al., (2001), the validity of a CVM study is the correspondence between what is wished to be measured and what is actually measured and therefore, proposes two common approaches for testing the validity; the construct validity of CVM as well as the convergent validity. The construct validity refers to the degree at which the expected result fits into economic theory. It explained whether the outcome (sign and values of explanatory variable) are in agreement with economic theory or not. Hence, it is a necessary condition for testing theory. In practice, CVM respondents are expected to respond to the willingness-to-pay questions in a way that is in line with the economic theory (Lienhoop & MacMillan, 2007).

The convergent validity on the other hand refers to the constancy of willingness to pay values obtained using two different techniques for measuring the same environmental good. Testing CVM results along with the economic theory should be based on two conditions. Firstly, the percentage of the respondents who are willing to pay a particular price should decrease as the price increases. Secondly, as the demand for the good increases the percentage of respondents who are willing to pay a particular price should also increase (Carson *et al*., 2001). For the reliability of CVM, Mitchell and Carson, (1989) suggested that the easiest way to test the reliability is by looking at the value of R^2 weather is within the acceptable range (R2>0.15) when the dependent variable (WTP) is regressed against the independent variables (the explanatory variables).

The WTP estimate is influenced by many factors such as age and the respondents' level of income. Usually, income has a positive and significant effect on respondents' WTP, while age usually has negative effect. The WTP value is also influenced by the quality of information that respondents receive about the environmental good to be valued, thus, proper information about the element to be evaluated should be provided to respondents. The elicitation format used may also influence the result of WTP significantly (Jones-Walters & Mulder, 2009).

2.9.2.3 Advantages of CVM

One of the major strength of CVM is its ability to be applied to many valuation situations, as this method does not rely on actual markets or observed behavior (Pearce & Moran, 1994).CVM has certain advantages over other valuation techniques. Firstly, it is able to ascertain from respondents their WTP in the present condition, and for hypothetical changes in the quantity or quality of environmental amenities as present condition (Lee & Han, 2002). Secondly, CVM is the only method that can measure use and non-use (preservation) value, such as bequest and

existence value (Carson & Mitchell, 1993). Thirdly, unlike other valuation techniques such as the travel cost method, CVM is capable of measuring trips with multiple purposes, multi-destination attributes (Lee & Han, 2002). Fourthly, in principle, the elicited CVM responses of willingness to pay (WTP) and willingness to accept (WTA) equals the theoretically correct (Hicksia n) monetary measures of utility changes. Lastly, CVM come along with the advantage that changes in the environmental quality can be valued even if they do not actually occur (extant valuation), thus CVM can be an important advisory tool for policy decision.

2.9.2.4 Limitation of CVM

In spite of many advantages of the CVM, it is still associated with some limitations. Lee and Mjelde(2007) states that generally, limitation of CVM depends on its reliance on individuals' stated willingness to pay under hypothetical market scenarios. Thus, the hypothetical scenario in CVM may result in overestimation of WTP value by the respondents. Venkatachalam(2004)explained that many authors opined that the major criticism of CVM results centered mainly on two issues namely; the validity and reliability. Validity within the context of CVM refers to the 'accuracy', in other words, it is the degree to which the CVM measures the theoretical construct which gives the true economic value of individuals while the reliability refers to 'consistency' or 'reproducibility' of the CVM results (Freeman, 1993). CVM study is known to be associated with number of biases that may affect the validity and reliability of its outcome(Arrow *et al*., 1993) which includes; the strategic bias, interview bias, information bias, payment vehicle bias and the starting point bias. The hypothetical nature of the CVM scenario can make respondents; not to take the CVM questions serious as they are non-binding, give answers not inconsistence with economic theory and also they may strategically influence the survey process by altering their true WTP value.

A study to determining the appropriate entrance fee to a protected area for instance, Wang & Jia, (2012)have used CVM to determine the possibility of increasing the entrance fee into Dalai Lake Protected area in China. From the study, it was found that tourists are willing to pay high amount than the current entrance fee and they recommended 50 RMB ($ 7.4) as realistic entrance fee to the area. However, a study by Lee & Mjelde, (2007) uses CVM to value the ecotourism resources in the Korean De-militarized Zone (DMZ) the result of their study have shown that mean WTP estimate was $ 16.74 and the aggregate preservation value ranges between $ 264 to $602 million.There are many criticisms on the use of Contingent Valuation method to value environmental resources; this is mainly due to the divergence between willingness-to-pay (WTP) and the willingness-to-accept (WTA) measurements. However, it has been widely applied in many fields to value changes in environmental quality. Common of such areas include the biodiversity conservation.

Lee & Han, (2002) also applied the CVM in an attempt to estimate the use and preservation values of tourism resources of the Korean national parks. The result of their study have shown that Koreans were willing to pay more as entrance fees to prevent the degradation of Korean national parks if the government were to reduce the budget allocation of these parks.

Moreover, the information obtained from relevant studies has shown that the valuation of protected areas resources varied, depending on their attractiveness as well as their location. This means that, areas that are attractive to visitors and located nearby urban centers were valued at a higher price than those considered unattractive and located further away from the city centers'.

More so, there are several studies that have focused mainly on the valuation of resources in areas that have environmental amenities such as the national parks and urban forests. Furthermore, the use of CVM method has also been found in the investigation of air pollution from traffic. The

study by Duarte, (2008) for example, investigated the effect of an extension of the Barcelona airport in Spain on the level of noise being experienced by the residents of adjacent communities. The finding of his study have revealed that the respondents' willingness to pay is positively related with their income level, noise annoyance and their proximity to activist group that were opposing the airport expansion.

Some other studies have purposely examined the negative externalities associated with road traffic. In Switzerland, Soguel, (1996)has conducted a research by examining how much respondents are willing to pay for reduction of traffic noise by up to 50%. The result revealed that the major factors influencing WTP are gender, income level, noise sensitivity and the presence of children in a household.

A study was conducted using CVM for ecosystem restoration was conducted by Loomis *et al*., (2000),on a 45-mile distance along the Platte river in the state of Nebraska USA. They examined household's willingness to pay for the restoration of five different ecosystem services from an impaired river through an increase in water bill. From the result they obtained, the respondents were willing to pay an average amount of US$ 21 monthly or US$ 252 yearly for increase in ecosystem services.

The application of CVM for examining the benefit associated with conservation of marine park in was conducted by (*Y. Mohd et al.*, 2009) who examined the willingness to pay by the visitors to Redang island marine park in Malaysia. Their finding revealed that visitors are willing to pay an amount higher than the existing entrance fee of RM 5(Malaysian Ringit) to the marine park. The mean WTP for local visitors was found to be RM 7.8 and that of international visitors was RM 10.6. These studies and many other studies have shown the diversity of CVM application in

different areas and also the reliably of the method estimating the economic value of non-market goods.

In Nigeria and many developing countries, application of CVM in resources valuation is still at infant stage. Most of the studies conducted using CVM in Nigeria were on health related areas, with only few on environmental sanitation, agriculture, forest management, solid waste management as well as improve water services. However, there were limited studies especially in Nigeria and Kano metropolis in particular that identify visitor's willingness to pay for conservation services. Therefore to address the gap, the objective of this study is to elucidate information on visitor's willingness to pay for wildlife conservation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the data collection procedure in the study. It also explains the parameter in the methodology such as the research design, data collection, and population of the study, sampling techniques, sample size, and method of data analysis. This research was pursued through a field work. The Field work entails the use of the questionnaire to establish the opinion of the respondents on willingness to pay for conservation of wildlife resources within the area of study.

3.2 Research Design

The research was design in such a way to analyze willingness to pay for conservation of wildlife resources in Kano Zoological Garden. A structured questionnaire was designed to obtained primary data. Detailed of the study population, sample size, sampling method and method of analysis are given in other section of this chapter.

3.2.1 Sampling Techniques

Although sampling frame for the populations in tourism study is usually not available mainly due to lack of some detail information such as the list of all tourists at a time and due to the continuous movement of the targeted population (Jones, et al, 2011) . Thus, the common approach to such situation is to randomly select the respondents when they arrived (Jones et al., 2011; Togridou et al., 2006). Therefore, this study employed a systematic random sampling method for the visitors where the first sample was drawn randomly upon arrival and subsequently, samples were chosen after every third visitor arriving in the zoo.

3.2.2 Sample Size

Determining appropriate sample size in CVM study is one of the important steps in ensuring the accurateness of the CVM estimation. Calia and Strazzera, (2000), categorize sample size for CVM Study as;

- 100 or less as small size
- 250-450 as medium sample and
- 1000 and above as Large sample

However, the sample size was determined using Krejcie and Morgan, (1970) method of sampling determination from the total annual visitors' influx to the zoo in the year 2018, thus a total of 346 respondents were sampled from the total annual visitor's influx to zoo in the previous year (2018) which is approximately 3,700.

3.3 Data Collection

The data used in this study was carefully collected following a series of steps from identifying the data source, the design of the instrument, and finally, the questionnaire administration.

3.3.1 Data Source

The data used for the analysis in this research was mainly from primary source, supplemented with the secondary source as literatures to support some of the research findings. The primary data was collected using questionnaire while the secondary data were obtained from various sources which include journals, textbooks, and data from the management of Kano Zoological Garden.

3.3.2 Instrument of Data Collection

The instrument of the data collection was structured questionnaire which was administered to the visitors with the help of undergraduate students under internship program in the Zoo, Who were

trained about the content of the questionnaire. The structured questionnaire contains both dichotomous choice and multi-category format. It consist of four main section; the first section contains the socio-demographic characteristics of the respondent, which asked question about their age, gender, education level, marital status, occupation and the gross monthly income. This section consists of question about respondent's attitudes toward the sustainability of wildlife resources at Kano Zoological Garden.

The third section compromise of questions about respondents perception about wildlife resources in Kano Zoological Garden, design on a 5-point linkert scale; strongly agree, agree, neither agree nor disagree, disagree and also strongly disagree.

The fourth section presents the respondents with a Dichotomous-Choice Contingent Valuation Method (DC-CVM) format was employed to elicit the willingness of visitors to pay for an increase in entrance fee into Kano Zoological Garden.

3.3.2.1 Payment Vehicle

The selection of an appropriate payment vehicle in CVM study is necessary. Payment vehicle refers to the process or form of payment of WTP amount by the respondents. The commonly used payment vehicle in the case of use value includes; license fee, entrance fee, special fund conservation and sale tax. Entrance fee is more logical and realistic payment vehicle for visitors to recreational sites (Lee and Han, 2002). Thus, entrance fee was used in this study as the most appropriate payment vehicle for measuring use value.

3.4 Data Analysis

The data in this research were analyzed using descriptive statistic and logistic regression, with the aid of computer software (NLOGIT 4.0 and SPSS VERSION 20.0); the descriptive statistic was employed for the socio-demographic characteristics of the respondents, their attitude toward

wildlife resources, and their perception about wildlife resources in the zoo. For the contingent valuation method the logistic regression model was used to estimate the WTP as suggested by Hanemann (1994).

3.4.1 Descriptive Analysis

Descriptive statistic was employed in this study for the analysis of the socio-demographic profile of the respondents. This comprise of information about their gender, age, marital status, level of education, Gross monthly household income, occupation and place of origin. It is also employed in determining the respondent's attitudes towards the wildlife resources. Also, in determining the Visitors' perception (based on opinion), descriptive analysis was used. They were measured using twelve (10) items, each of them on a 5-point linkert scale; from strongly agree to strongly disagree. The result obtained, were presented in terms of frequencies and percentage.

3.4.2 The CVM – WTP Estimation and model specification

Conceptually, the WTP of the respondents can be obtained by estimating the demand function, as demand is usually based on the Random Utility Maximization (RUM) theory. For the purpose of conservation in Kano Zoological Garden, the visitors had the choice of accepting or rejecting the proposed fee offered in order for them to maximize their utility.

Since the Dichotomous Choice (DC) format of CVM has a binary choice that required a qualitative choice model, the commonly used methods for analyzing qualitative choice are the probit and logit model is more appropriate for survey data, whereas the probit model is best fit in experimental data (Bahandari and Heshmanti, 2010). Therefore logit model was preferred than the probit model in field, including the recreational study (Lee & Han, 2002). Thus, logit model was used in this study. Hanemann, (1994) proposed that the mean WTP can be calculated using the following equation;

Mean WTP = $\frac{\beta_0 + (\sum \beta_n X_n)}{-\beta_1}$

Where; β_0 =estimated constant, β_n = parameter of the coefficients, X_n =the mean value of explanatory variables, and β_1 =coefficient of the bid amount. Therefore, models specification for this study is as follows; For Visitors the mean WTP is obtained using the following formula;

$$\text{Mean WTP} = \frac{\beta(\text{Gender}) + \beta(\text{Age}) + \beta(\text{Marital status}) + \beta(\text{Education}) + \beta(\text{Income})}{-\beta\text{Bid}}$$

CHAPTER FOUR

RESULT AND DISCUSSION

4.1 Introduction

In this chapter, the results obtained from the data analysis are presented and discussed. The result presented here are based on the four sections of the data; the socio-demographic profile of the respondents, the respondents attitudes towards the ecotourism resources, their perception about wildlife resources at Kano Zoological Garden, all using descriptive analysis. The last section present the results from the Logistic regression model in determining the respondents' Willingness to Pay for Conservation of Wildlife Resources at Kano Zoological Garden.

4.2.1 Socio-Demographic Profile of the Visitors

Table 4.1 Socio-demographic Profile of the Visitors

Element (n=329)		Freq.	Percentage (%)
Gender			
	Male	229	69.6
	Female	100	30.4
Age			
	17-20	41	12.5
	21-25	129	39.2
	26-30	97	29.5
	31-35	37	11.2
	36 and above	25	7.6
Marital status			
	Married	131	39.8
	Single	198	60.2
Educational level			
	Primary	16	4.9
	Secondary	86	26.1
	Collage/Polytechnic	101	30.7
	University	126	38.3
Occupation			
	Government employed	67	20.4
	Privately employed	54	16.4
	Business	124	37.7
	Unemployed	77	23.4
	Retiree	2	.6
	Others	5	1.5
Origin			
	Local		
	State	121	36.8
	International	204	62.0
		4	1.2
Gross monthly household income			
	₦ 20,000 and Below	88	26.7
	₦ 21,000-40,000	111	33.7
	₦41,000-60,000	84	25.5
	₦ 61,000-80,000	23	7.0
	₦ 81,000 and above	23	7.0

The result of the socio-demographic characteristics of the visitors is presented in the table (4.1). Out of the total valid responses obtained from the visitors (329), male respondents

constitute 299(69.6%), while the remaining 100 (30.4%) were female. This can be attributed to the ethno-religious and socio-cultural attitudes of most Nigerians, were women mostly stays at home doing domestic job, and taking care of the children and rarely taking part in social activities.

For the respondent age, 41(12.5%) fall within the range of 17-20 years, but majority of them 129(39.2%) fall within the range of 21-30 years while 97(29.6%) were within the range of 26-30 years. These two categories formed the majority of visitors to Kano Zoological Garden. Those between the range of 36 years and above were only 25 (7.6%).

On marital status, those who responded as married were 131 (39.8%) and those on single status make the remaining 198 (60.2%) of the total responses obtained during the survey. For their level of Education, 16 (4.9%) attended only primary school. Those with secondary school qualification were 86(26.1%) and majority of the respondents 126 (38.3%) attended university, while 101 (30.7%) attended either college or polytechnic, which constitute the second largest category of the survey.

The responses on occupational status of the respondent shows that most of them 124 (37.7%) were engage in business, while those who are government employed were 67(20.4%). 54 (16.4%) were private employed while unemployed 77(23.4) and others whose occupation was not among those mentioned above were 5 (1.5%) and retiree 2 (0.6%).

The income level of the respondents indicate that most of them 111(33.7%) earn between ₦2100 and ₦4000, those whose earning ranges between ₦20000 and below were 88(26.7%), while those within the range of ₦41000 - ₦60000 were 84(25.5%). The category with the

highest income constitute 23(7.0%), with monthly earnings from ₦61000 - ₦80000 and 23(7.0%) with monthly earnings from ₦ 81000 and above respectively.

The responses on the origin of the respondents shows most of them 204(62.0%) are from within the state, while 121 (36.8%) are local visitors and only 4(1.2%) are international visitors.

4.2 Respondents attitudes towards wildlife resources conservation

Table 4.2 Respondent attitude toward wildlife resources in Kano Zoological Garden

Element (n=329)	Freq.	Percentage (%)
Have you ever visited the zoo before?		
Yes	215	65.3
No	114	34.7
How many times have you visited?		
Once	42	19.5
Twice or more	173	80.5
Why do you choose to visit Kano Zoological Garden?		
To see wildlife	233	70.0
Quietness	36	10.9
Closeness	30	9.1
Scenic beauty	2	0.6
Other reason	2	0.6
Visitor's intension to revisit the zoo again?		
Yes	299	90.9
No	30	9.1
Medium of getting information about the zoo		
Radio/TV	79	24.0
Family/ Friends	190	57.8
Internet	41	12.3
Newspaper/magazine	10	3.0
Other reason	9	2.7

The result of the respondent attitudes towards wildlife resources is presented in table 4.3 below. On whether the visitors have visited the zoo before, most of the visitors responded positively with majority of them 215(65.3%) has visited the zoo before while 114(34.7%) has never visited the zoo before.

With regard to the number of times the respondent visited the zoo, significant number of respondent 173 (44.5%) visited twice or more, 69 (21.7%) visited only once while 114(34.7%) are first timers.

The respondent were asked why do they choose to visit Kano Zoological Garden as against other gardens, majority of the respondents 233(70%) visit the zoo to see wildlife, 36(10.9%) choose quietness, while 30(9.1%) visit the zoo because of closeness while 28(8.5%) is because of its scenic beauty and 2(0.6%) give other reasons.

With regards to visitors intension to revisit the zoo most of the visitors responded positively 299(90.9%) are willing to revisit while 30 (91.1%) have no intension to revisit the zoo again.

On the medium through which the visitors get information about Kano Zoological Garden, 79(24.0%) get information via either radio or television, 190(57.8%) through family and friends and 41 (12.5%) get information via internet, 10(3.0%) get information from Newspaper or magazine while 9 (2.7%) stated other reasons.

4.3 Visitors perception about wildlife resources in Kano Zoological Garden

Table 4.3 Respondents' Perception about the wildlife in the Zoo

S/N	Items (n=329)	1 Freq. (%)	2 Freq. (%)	3 Freq. (%)	4 Freq. (%)	5 Freq. (%)
1	Kano Zoological Garden is very quiet and conducive	132 (40.1)	177 (53.8)	15 (4.6)	3 (0.9)	2 (0.6)
2	The zoo is not so crowded	8 (24.6)	201 (61.1)	40 (12.2)	7(2.1)	0 (0.0)
3	Vegetation cover provides the garden with scenic beauty	144 (43.8)	157 (47.7)	26(7.9)	1(0.3)	1 (0.3)
4	Conservation is an important aspect in the zoo	120 (36.5)	162 (49.2)	39 (11.9)	4(1.2)	4(1.2)
5	Wildlife viewing is an important aspect in the zoo	177 (53.8)	137 (41.6)	12 (3.6)	1 (0.3)	2 (0.6)
6	Ecotourism generate economic benefit to the local people	72 (21.9)	155 (47.1)	71 (21.6)	19 (5.8)	12(3.6)
7	Kano Zoological Gardenis worth visiting for leisure with family/friends	111(33.7)	200 (60.8)	18 (5.5)	0 (0.0)	0(0.0)
8	The environment is clean and free from litters	58 (17.6)	237 (72.0)	31(9.4)	3(0.9)	0(0.0)
9	There are adequate tourism facilities in Kano Zoological Garden	41 (12.5)	219 (66.6)	62 (18.8)	6(1.8)	1 (0.3)
10	The staff are very hospitable to visitors	152 (46.2)	156 (47.4)	17(5.2)	2 (0.6)	2 (0.6)

1= Strongly Agree, 2=Agree, 3=neither agree nor disagree, 4=Disagree, 5=Strongly Disagree.

The perception of the visitors was considered based on their opinion about wildlife resources in Kano Zoological Garden. Ten (10) statements were given all of which were measured on a 5-point linkert scale. The result of the descriptive statistic on respondent opinion about wildlife resources in Kano Zoological Garden is presented in table (4.3). The result indicates a more

positive responses to most of the statement given, implying visitors having a positive perception about Kano Zoological Garden.

4.4Visitors Opinion About wildlife resources

Table 4.4:Summary of visitor's willingness to pay for conservation

Bids Price ₦	Yes Freq	(%)	No Freq	(%)	Total Freq	(%)
100	238	72.3	91	27.7	329	100
200	233	70.8	96	29.1	329	100
300	146	44.5%	183	55.5	329	100

With respect to the opinion about quietness and conduciveness of the Kano Zoological Garden, 132(40.1%) of the total respondent strongly agree and 177(53.8%) agreeing with the statement while 15(4.6%) were undecided and only 3 (0.9%) disagree while 2(0.6%) strongly disagree. Most of them 201(61.1%) agree that the zoo is not so crowded, 81(24.6%) strongly agree while 40(12.2%) were undecided, and only 7 (2.1%) disagree with no single response on strongly disagree.

On the statement that vegetation provide the reserved with a scenic beauty, 144(43.8%) of the respondent strongly agree, 157(47.7%) agree with the statement respectively, 26(7.9%) were undecided and only 1 (0.3%) strongly disagree with the statement.

Significant number of respondent 120(36.5%) strongly agree that conservation is an important aspect in Kano Zoological Garden and 162 (49.26%) also agree, but 4(1.2%) strongly disagree and only 4 (1.2%) disagree with the statement, 39 (11.9%) remained neutral. Kano Zoological

Garden being one of the famous in Nigeria, wildlife viewing is considered an important attraction in the zoo. Majority of the respondents 177(53.8%) strongly agree with the statement, 137 (41.6%) also agree where as 12 (3.6%) were undecided while 2 (0.6%) strongly disagree and only 1 (0.3%) disagree with the statement.

On whether ecotourism generate economic benefits to the local people, 72 (21.9%) strongly agree, 155 (47.1%) agree and 71 (21.6%) were neutral, while 19 (5.8%) disagree and 12 (3.6%) strongly disagree that local people benefited economically from ecotourism in Kano Zoological Garden. For the statement that Kano Zoological Garden is worth visiting with friends and families, 111(33.7%) strongly agree, 200(60.8%) agree, while 18 (5.5%) remained neutral on the statement, with no single response on both strongly agree and disagree. The Kano Zoological Garden environment is clean and free from litters, 237 (72.0%) agree, 58 (17.6%) strongly agree, but those whose responded negatively to the statement were 3 (0.9%) who disagree with no single response on strongly disagree and 31 (9.4%) remained undecided.

On the adequacy of tourism facilities in Kano Zoological Garden majority of the respondent answered positively 219 (66.6%) agree and 41(12.5%) strongly agree while 62 (18.8%) were neutral and 6 (1.8%) disagree while only 1 (0.3%) strongly disagree. The last item of the respondent opinion about resources in Kano was the respondent opinion about hospitality of the staff and how they relate with visitors was inquired. The vast majority 156 (47.4%) agree and 152 (46.2%) strongly agree that the staff are hospitable to visitors but those who strongly disagree and disagree has the same number of response 2 (0.6%) each respectively, while undecided responses were 17(5.25).

4.5 Visitors Willingness to Pay

Table 4.5 Logistic Regression Model

Variable	Coefficient	Standard Error	b/St.Er.	Sig.
Constant	.55826263	.48698276	1.146	.2516
Gender	-.73262479	.30741970	-2.383	.0172**
Age	-1.41955682	.51251622	-2.770	.0056**
Marital Status	1.53322474	.34015067	4.507	.0000***
Education	1.04329260	.29383613	3.551	.0004***
Income	.02383369	.00733848	3.248	.0012***
Bid Price	-.00262652	.00110890	-2.369	.0179**
Number of observations	329			
Log likelihood function	-167.205			
McFadden Pseudo R-squared	.1759			
Percentage Correct Prediction	72.34			

Note: *** Significance at 1%, ** Significance at 5%.

Out of the total visitors interviewed during the survey period, 238(72.3%) are willing to pay by responding 'Yes' to the various bids (amount offered) while the remaining 91 (27.7%) responded 'No'. the summary result of the visitors willingness to pay for conservation is presented in table 4.4 below.

For the initial bid amount offered ₦200, the total respondents obtained for this amount was 329. Those who respondent by saying 'Yes' to this amountwere 233(70.8%) out of the total response of the bid. Those who respondent 'No' were 96 (29.1%) showing unwillingness to pay amount. The second bid amount ₦300 have total responses of 329 also, out of it 146 (44.4%) said 'Yes' to the bid amount while 183(55.5%) said 'No' for the bid amount. The result revealed

that the higher the bids amount, the lower the 'Yes' response which is in line with economic theory (Theory of demand).

Existence value was the major season predominantly given for willingness to pay by the visitors, with about 105 (44.1%) saying they are willing to pay for conservation of wildlife resources, and the second major reason was that of the bequest value where 71 (29.8%) saying they are willing to pay for the 'sustain of the resources for future generation. Other reason given include; 29(12.2%) of its sustainability, so that I can visit again "option value", 7 (2.9%) to limit the number of visitors from overcrowding the zoo 'visitors control', 26 (10.9%) saying is not expensive, I can afford if for my recreational pleasure(actual use).

However, from the 91 respondents who are not willing to pay any bid amount, 12 (13.2%) of them gave reason as not interested in resources conservation, 47 (51.6%) said it is the government responsibility to conserve the wildlife resources in the zoo. Lack of institutional trust also constitutes a reason for not willing to pay as 28 (30.8%) said I don't believe the money will be used for conservation; and the last reason given by 4(4.4%) is that they already pay enough through taxes.

4.5.1 Factors influencing respondents WTP

The binary regression model was employed in this study to examine the relationship between the willingness to pay as dependent variable and the socio-demographic variables such as age, income gender, and level of education, marital status as independent variables and some of the explanatory variables used in the questionnaire such as respondent attitude toward wildlife resources in the zoo.

4.5.2 Logit Regression Model

Based on the result of model 1as presented in table (4.5) six of the explanatory variable in the model were found to be significant. Each variable in the model has a coefficient and significant level (P-value). The coefficient conveys two important information the sign and weight. If the coefficient has a negative sign, it indicates inverse relationship between the variable and the WTP, while positive coefficient signifies a positive relationship. The weight on the other hand is the value of the coefficient that shows the strength or magnitude of the variable or factors in determining the WTP. Three of the six variables in the model (bid price, gender and age) have a negative coefficient while the other three variables with positive coefficient include level of income, educational level and the respondent's marital status.

Educational level being a significant variable coded as (1=Educated, 0= uneducated) this variable has a positive coefficient value with weight of 1.04. The positive coefficient indicates a more willingness to pay by those who are educated than those who are not. It is statistically significance at 1% confidence level. This outcome is anticipated as educated people are believed to have more knowledge and awareness of the importance of wildlife resources conservation than un-educated people. Wang and Jia, (2012) among others also reported influence of education on WTP.

House hold income is another important variable in the model, with a positive coefficient of 0.23 weights. It was found to be statistically significance at 1% confidence level. It revealed that as the income increase, willingness to pay also increase. It is anticipated that people with higher income have higher probability of willingness to pay than low income earners, which is in agreement with many CVM literatures where income played significant role in determining willingness to pay (Bhandari and Heshmanti, 2010; Wang and Jia, 2012).

Marital status is the last determinant of WTP in the model, the result show that, marital status has a positive coefficient but with high weight of 1.53 as compared to income level and educational status. It was found to be statistically significance at 1% confidence level. This result revealed that married ones are more willing to pay than single.

However, in the case of the bids amount, it carries a negative sign on its coefficient as expected. As explained a negative sign is an indication of inverse relationship between the variable and the WTP. Therefore, the bid amount has a negative coefficient with a weight value -0.002 also found to be statistically significance at 5% confidence level. It shows that as the bid amount increase, the willingness to pay reduces. Loomis et al (2016) explain that the higher the bid amount a respondent is asked to pay, the lower the possibility of his willingness to pay.

Another variable with negative coefficient in the model is the gender of the respondents coded as 1= male and 0=female, its coefficient value has a weight of -0.73, found to be significant at 5% confidence level. This result shows a higher elasticity of gender for willing to pay, indicating that female visitors are more willing to pay an increase in entrance fee than the male visitors.

Age is the next important variable on WTP in the model. The result shows that age has a negative coefficient both with highest weight of -1.41, it was found to be statistically significance at 5% confidence level. This result revealed that as age increase, the WTP decrease. This shows that younger people among the visitors have higher probability of willingness to pay than the older visitors. Effect of age on WTP was reported in many studies, Bhandari and Heshmanti, (2010), reported positive and significant relationship between age and WTP, Rejnisdottir et al., (2008) have found otherwise.

4.6 The estimated Mean WTP Value

Since this study employed the single bounded dichotomous choice of contingent valuation (DC-CVM) method, the possible outcome is also dichotomous in nature (two). It is either the respondent is willing to pay (by answering 'yes' coded as 1) to the bids offered or the respondent is not willing to pay (by answering 'No' coded as 0) to the bid amount offered. The mean WTP was calculated from the Logit regression result obtained using the mean WTP equation explains in chapter three. The unit currency used in all the monetary estimation is the Nigerian naira (₦).

4.6.1 Visitors Mean WTP

The result of the mean WTP amount estimated from the Logit model 1 was calculated using the formula as earlier discussed in chapter three. The mean WTP value for the visitors is estimated at ₦505.48. this indicate that visitors are willing to pay higher amount than the current amount as entrance fee to the zoo provided that the money will be used for conservation purposes.

$$WTP1 = (-.73262479*A1 + -1.41955682*A2 + 1.53322474*A3 + 1.04329260*A4 + .02383369*A9)/ -.00262652\$$$$

Mean WTP = 505.48 Naira

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

Chapter five provides conclusion about the key findings, draw some policy implications of the outcome and suggestion with recommendation for future.

5.2 Summary

In effort to determine and analyze WTP for conservation of wildlife resources in Kano Zoological Garden, the respondent mean willingness to pay for conservation was estimated using Dichotomous Choice Contingent Valuation Method (DC-CVM). Information about respondent's attitudes, visitor's perception and factors influencing WTP for conservation of wildlife resources was also determined. A total of 329 valid responses from the visitors was used for analysis in this study.

As shown from the result obtained, the mean WTP for visitors was estimated at ₦505, which shows that the visitors have placed a considerable value to the wildlife resources in Kano Zoological Garden higher than the current admission fee of ₦100 per visitor. This proposes an increase in entrance fee to visitor. Based on the record of visitors influx into Kano Zoological Garden for the period of one year (2018) about 1200 visitors were reported to have visited Kano Zoological Garden.

5.3 Conclusion

From the findings of this study, it can be concluded that the respondents shows a positive attitude toward wildlife resources conservation, in which their support would help in ensuring the preservation of resources in Kano Zoological Garden. As sustainability of ecotourism activities defends on the visitor's perception and satisfaction with resources and services provided, it is

interested that visitors have revealed a high level of satisfaction especially with the facilities as well as services provided for visitors in the zoo. It can be concluded that, these findings have help to achieve the objectives of the study, based on the analyses and interpretation of the result.

The logistic regression results obtained have shown interested result in the model. Model shows that from the explanatory variables used in the models, marital status is the most important determinant of WTP with marginal effect value of 1.53, showing the prosperity of willingness of married to pay than the singles visitors, education was also found to be significant with marginal effect value of 1.04 and for the house hold income has marginal effect value of 0.23 signifying every unit increase in income increase the probability of WTP. The bid price, gender and age has negative sign indicates an inverse relationship between these variables and the WTP. However, the marginal effect value of -1.41 on age frequency, indicate the strength of negative relationship between the age of the visitors and WTP. The gender has a marginal effect value of -0.73 and for the bid price has marginal effect value of -0.0026.

Since part of the study objectives is the determination of the visitors mean willingness WTP for conservation of wildlife resources in Kano Zoological Garden. The outcome of this study provides justification for the need to review the current entrance fee to the estimated mean amount that visitors are willing to pay (₦505) to maximize their current ecotourism experience as against the current fee ₦100. This can help to capture the consumer benefit, there by realizing increases in revenue that could be used for various conservation programs. This study indicated the need for improvement of protected area management through designing appropriate pricing, the amount of money of money that can be generated would help to curtail problem of fund in sufficiency in the event of low budgetary allocation from government, and such funds would be channel to various conservation projects for sustainable protected area management.

5.4 Policy Implication

From the policy perspective, the empirical study serve as an important input into the regulatory process to frame entrance fee that can help to deliver services at the amount that is worth the value of money for the visitors. The Kano state government and the management of Kano Zoological Garden can make an informed decision by reviewing the current admission fee into Kano Zoological Garden that would capture the real value that visitors placed on the resources in the zoo. The difference in amount willing to pay by the visitors as entrance fee and the current charge fee into is much higher, which is an indication that if the management of the zoo can review the current price stated amount willing to pay by the visitors, substantial revenue can be generated which would ensure the sustainability of the tourism market.

As appeared in many literatures, knowledge about biodiversity conservation has been identified as an important determinant of individual willingness to pay for conservation it can be suggested that awareness campaign about the benefit of conservation should be giving a priority by the management of the zoo through conservation campaign, public talks, advertisement and jingles in newspaper, radio and other medium of mass communication. This would help to redirect people's attitude and perception about wildlife resources in Kano Zoological Garden.

The revenue that could be generated through increase in entrance fee to visitors can serve as additional fund in addition to the limited allocation from the government for maintenance and conservation.

The result of this study may be in corporate in the economics analysis in the future for determining the viability for conservation wildlife in the zoo in the long run. For the socio-demographic characteristics of the respondents, the management of the zoo can design environmental policies by identifying the important class of visitors that can contribute more

financially as well as socially for the sustainability of the wildlife resources through the higher willingness to pay.

5.5 Recommendations

The zoological garden should be upgraded and well maintained to become safe for visitors as well as conservation homes for wildlife species.

Management of Kano zoological garden should sponsored an advisement program in media houses as Kano state is blessed with a lot of Radio and Television Station and they should be fully active in their social media, this is because most of the visitors had about the zoological garden through family and friends.

Concerned individuals and stakeholders in this area should be involved. Because urban dwellers will most likely to visit a zoo rather than a park.

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APPENDIX I

TABLE 1: ***Table for Determining Sample Size from a Given Population***

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	329
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.

Attitude

B1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	215	65.3	65.3	65.3
	2	114	34.7	34.7	100.0
	Total	329	100.0	100.0	

B2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	114	34.7	34.7	34.7
	1	69	21.0	21.0	55.6
	2	67	20.4	20.4	76.0
	3	41	12.5	12.5	88.4
	4	15	4.6	4.6	93.0
	5	14	4.3	4.3	97.3
	6	5	1.5	1.5	98.8
	7	3	.9	.9	99.7
	8	1	.3	.3	100.0
	Total	329	100.0	100.0	

B3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	28	8.5	8.5	8.5
	2	36	10.9	10.9	19.5
	3	233	70.8	70.8	90.3
	4	30	9.1	9.1	99.4
	5	2	.6	.6	100.0
	Total	329	100.0	100.0	

B4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	299	90.9	90.9	90.9
	2	29	8.8	8.8	99.7
	3	1	.3	.3	100.0
	Total	329	100.0	100.0	

B5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	79	24.0	24.0	24.0
	2	10	3.0	3.0	27.1
	3	190	57.8	57.8	84.8
	4	41	12.5	12.5	97.3
	5	9	2.7	2.7	100.0
	Total	329	100.0	100.0	

Perception Result

C1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	132	40.1	40.1	40.1
	Agree	177	53.8	53.8	93.9
	Undecided	15	4.6	4.6	98.5
	Disagree	3	.9	.9	99.4
	Strongly Disagree	2	.6	.6	100.0
	Total	329	100.0	100.0	

C2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	81	24.6	24.6	24.6
	Agree	201	61.1	61.1	85.7
	Undecided	40	12.2	12.2	97.9
	Disagree	7	2.1	2.1	100.0
	Total	329	100.0	100.0	

C3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	144	43.8	43.8	43.8
	Agree	157	47.7	47.7	91.5
	Undecided	26	7.9	7.9	99.4
	Disagree	1	.3	.3	99.7
	Strongly Disagree	1	.3	.3	100.0
	Total	329	100.0	100.0	

C4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	120	36.5	36.5	36.5
	Agree	162	49.2	49.2	85.7
	Undecided	39	11.9	11.9	97.6
	Disagree	4	1.2	1.2	98.8
	Strongly Disagree	4	1.2	1.2	100.0
	Total	329	100.0	100.0	

C5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	177	53.8	53.8	53.8
	Agree	137	41.6	41.6	95.4
	Undecided	12	3.6	3.6	99.1
	Disagree	1	.3	.3	99.4
	Strongly Disagree	2	.6	.6	100.0
	Total	329	100.0	100.0	

C6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	72	21.9	21.9	21.9
	Agree	155	47.1	47.1	69.0
	Undecided	71	21.6	21.6	90.6
	Disagree	19	5.8	5.8	96.4
	Strongly Disagree	12	3.6	3.6	100.0
	Total	329	100.0	100.0	

C7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	111	33.7	33.7	33.7
	Agree	200	60.8	60.8	94.5
	Undecided	18	5.5	5.5	100.0
	Total	329	100.0	100.0	

C8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	58	17.6	17.6	17.6
	Agree	237	72.0	72.0	89.7
	Undecided	31	9.4	9.4	99.1
	Disagree	3	.9	.9	100.0
	Total	329	100.0	100.0	

C9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	41	12.5	12.5	12.5
	Agree	219	66.6	66.6	79.0
	Undecided	62	18.8	18.8	97.9
	Disagree	6	1.8	1.8	99.7
	Strongly Disagree	1	.3	.3	100.0
	Total	329	100.0	100.0	

C10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	152	46.2	46.2	46.2
	Agree	156	47.4	47.4	93.6
	Undecided	17	5.2	5.2	98.8
	Disagree	2	.6	.6	99.4
	Strongly Disagree	2	.6	.6	100.0
	Total	329	100.0	100.0	

Determinant of WTP Result

```
--> LOGIT;Lhs=D3;Rhs=ONE,A1,A2,A3,A4,A7,BID$
Normal exit from iterations. Exit status=0.

+--------------------------------------------+
| Binary Logit Model for Binary Choice       |
| Maximum Likelihood Estimates               |
| Model estimated: Oct 12, 2019 at 02:42:41PM.|
| Dependent variable                  D3     |
| Weighting variable                 None    |
| Number of observations              329    |
| Iterations completed                  6    |
| Log likelihood function       -167.2052    |
| Number of parameters                  7    |
| Info. Criterion: AIC =          1.05900    |
|   Finite Sample: AIC =          1.06006    |
| Info. Criterion: BIC =          1.13977    |
| Info. Criterion:HQIC =          1.09122    |
| Restricted log likelihood     -202.8850    |
| McFadden Pseudo R-squared      .1758624    |
| Chi squared                   71.35968    |
| Degrees of freedom                    6    |
| Prob[ChiSqd > value] =         .0000000    |
| Hosmer-Lemeshow chi-squared =  10.01350    |
| P-value=  .26408 with deg.fr. =       8    |
+--------------------------------------------+
+--------+-------------+----------------+--------+--------+----------+
|Variable| Coefficient | Standard Error |b/St.Er.|P[|Z|>z]| Mean of X|
+--------+-------------+----------------+--------+--------+----------+
---------+Characteristics in numerator of Prob[Y = 1]
 Constant|     .55826263       .48698276     1.146   .2516
 A1      |    -.73262479       .30741970    -2.383   .0172    .69604863
 A2      |   -1.41955682       .51251622    -2.770   .0056    .09118541
 A3      |    1.53322474       .34015067     4.507   .0000    .39817629
 A4      |    1.04329260       .29383613     3.551   .0004    .38297872
 A7      |     .02383369       .00733848     3.248   .0012   40.1534954
 BID     |    -.00262652       .00110890    -2.369   .0179   309.422492

+---------------------------------------------------------------------+
| Information Statistics for Discrete Choice Model.                   |
|                          M=Model MC=Constants Only   M0=No Model    |
| Criterion F (log L)     -167.20518        -202.88502    -228.04542  |
| LR Statistic vs. MC       71.35968           .00000        .00000  |
| Degrees of Freedom         6.00000           .00000        .00000  |
| Prob. Value for LR          .00000           .00000        .00000  |
| Entropy for probs.       167.20518         202.88502     228.04542  |
| Normalized Entropy          .73321            .88967       1.00000  |
| Entropy Ratio Stat.      121.68048          50.32080        .00000  |
| Bayes Info Criterion       1.12215           1.33905       1.49200  |
| BIC(no model) - BIC         .36985            .15295        .00000  |
| Pseudo R-squared            .17586            .00000        .00000  |
| Pct. Correct Pred.        72.34043            .00000      50.00000  |
| Means:       y=0    y=1    y=2    y=3    y=4    y=5    y=6   y>=7  |
| Outcome     .3070  .6930  .0000  .0000  .0000  .0000  .0000  .0000  |
| Pred.Pr     .3070  .6930  .0000  .0000  .0000  .0000  .0000  .0000  |
| Notes: Entropy computed as Sum(i)Sum(j)Pfit(i,j)*logPfit(i,j).      |
|        Normalized entropy is computed against M0.                   |
|        Entropy ratio statistic is computed against M0.              |
|        BIC = 2*criterion - log(N)*degrees of freedom.               |
|        If the model has only constants or if it has no constants,   |
|        the statistics reported here are not useable.                |
+---------------------------------------------------------------------+
+--------------------------------------+
| Fit Measures for Binomial Choice Model |
```

Logit model for variable D3
Proportions P0= .306991 P1= .693009
N = 329 N0= 101 N1= 228
LogL= -167.205 LogL0= -202.885
Estrella = 1-(L/L0)^(-2L0/n) = .21223

Efron	McFadden	Ben./Lerman
.19229	.17586	.65897
Cramer	Veall/Zim.	Rsqrd_ML
.19851	.32276	.19499

Information Criteria	Akaike I.C.	Schwarz I.C.
	1.05900	1.13977

Predictions for Binary Choice Model. Predicted value is 1 when probability is greater than .500000, 0 otherwise.
Note, column or row total percentages may not sum to 100% because of rounding. Percentages are of full sample.

Actual Value	Predicted Value 0	Predicted Value 1	Total Actual
0	40 (12.2%)	61 (18.5%)	101 (30.7%)
1	30 (9.1%)	198 (60.2%)	228 (69.3%)
Total	70 (21.3%)	259 (78.7%)	329 (100.0%)

Analysis of Binary Choice Model Predictions Based on Threshold = .5000

Prediction Success	
Sensitivity = actual 1s correctly predicted	86.842%
Specificity = actual 0s correctly predicted	39.604%
Positive predictive value = predicted 1s that were actual 1s	76.448%
Negative predictive value = predicted 0s that were actual 0s	57.143%
Correct prediction = actual 1s and 0s correctly predicted	72.340%

Prediction Failure	
False pos. for true neg. = actual 0s predicted as 1s	60.396%
False neg. for true pos. = actual 1s predicted as 0s	13.158%
False pos. for predicted pos. = predicted 1s actual 0s	23.552%
False neg. for predicted neg. = predicted 0s actual 1s	42.857%
False predictions = actual 1s and 0s incorrectly predicted	27.660%

Mean WTP

```
--> CREATE ; VWTP1 = (-.73262479*A1 + -1.41955682*A2 + 1.53322474*A3 +
1.0432...
--> DSTAT;Rhs=VWTP1$
Descriptive Statistics
All results based on nonmissing observations.
================================================================================
Variable     Mean       Std.Dev.     Minimum      Maximum        Cases Missing
================================================================================
--------------------------------------------------------------------------------
All observations in current sample
--------------------------------------------------------------------------------
VWTP1    | -505.488      473.467     -2160.61      705.976          329
```

Mean WTP = 505.48 Naira

APPENDIX II

QUESTIONNAIRE

BAYERO UNIVERSITY KANO
FACAULTY OF EARTH AND ENVIRONMENT SCIENCE
DEPARTMENT OF ENVIRONMET MANGEMENT

Survey Instrument

Dear respondent,

This questionnaire is purposely designed to help the researcher elicit information from the visitor on their willingness to pay for wildlife resources conservation and the protection of the vast resources in Kano Zoological Gardenlogical Garden. However, this survey will only be used for academic purpose and all your responses will be treated with confidentiality.

I appreciate your kindness by taking your time to answer the questions.

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SECTION A: Bio-Data

A1- Gender: a. Male [ ] b. Female [ ]

A2- Age: a. 17-20 [ ] b. 21-25 [ ] c. 26-30 [ ] d. 31-35 [ ] e. 36 and above [ ]

A3- Marital Status: a. Married [ ] b. Single [ ]

A4- Educational Level: a. Primary [ ] b. Secondary [ ] c. College/Poly [ ] d. University [ ] e. Never attended school [ ]

A5- Occupation: a. Government Employed [ ] b. Private Employed [ ] c. Business [ ] d. Unemployed [ ] e. Retiree [ ] f. Others [ ]

A6- Place of Origin: a. Local [ ] b. State [ ] c. International [ ]

A7- Gross monthly household income.(₦)…….….

SECTION B: Respondent's attitudes towards wild life

B1- Have you ever visited Kano Zoological Garden before? A. Yes [ ] b. No [ ]

B2- If yes, how many times has you visited before? ……

B3- Why do you choose to visit Kano Zoological Garden as against other garden in Kano? A. Scenic Beauty [ ] b. Quietness [ ] c. To see wildlife [ ] d. Others (specify) ……

B4- Based on your experience; do you have the intention to revisit Kano Zoological Garden again? A. Yes [ ] b. No [ ]

B5- Through which medium did you get Information about Kano Zoological Garden? A. Tv/Radio [ ] b. Newspaper/Magazine [ ] c. Family/Friends [ ] d. Internet [ ] e. Others (specify) ……

SECTION C: Respondent's Perception

Please tick [ ] in the box that reflect your appropriate choice based on the following Liker Scale.

Strongly Agree = 1, Agree = 2, Neither Agree Nor Disagree = 3, Disagree = 4, Strongly Disagree = 5.

	OPINION	1	2	3	4	5
C1	Kano Zoological Garden is very quiet and conducive environment					
C2	The Zoological garden is not so crowded					
C3	Vegetation cover provides the garden with a scenetic beauty					
C4	Conservation is an important aspect in the zoo					
C5	Wildlife viewing is an important aspect in the zoo					
C6	Ecotourism generate economic benefit to the local people					
C7	Kano Zoological Gardenlogical garden is worth visiting for leisure with family/friends					
C8	The environment is clean and free from litters					
C9	There are adequate tourism facilities in Kano Zoological Gardenlogical garden					
C10	The staff are very hospitable to visitors					

SECTION D: Willingness to pay for Conservation

Kano Zoological Garden is one of the largest zoo established in Nigeria, in the immaculately clean and tidy zoological garden, there collection or a collection of 60 different species and 200 specimen of Animals at presents, that provides visitors with an opportunity to appreciate and enjoy nature at it's best.

However, for all these wildlife resources to be sustainable there is need for their proper management and preservation, one of the ways to achieve this is by raising fund for the conservation of these resources so as to ensure their sustainability. If the management of Kano Zoological Garden appeal to the visitors to be involved in the preservation of this wildlife resources by increasing the entrance fee in to the garden, the additional fund would exclusively be used for conservation purpose. At present, the entrance fee is charged at 100 for adult and 50 for child.

D1- Based on the above scenario and considering your income, would you be willing to pay if there is an increase in the entrance fee for conservation of wildlife in the garden?
a. Yes [ ] b. No [ ]

D2- If the current price is increase to (₦200) would you be willing to pay? a. Yes [ ] b. No [ ]

D3- What if the fee is increase to (₦300), would you be willing to pay ? a. Yes [ ] b. No [ ]

D4- Please state the maximum amount you will be willing to pay ₦…….

D5- Please state your reason for willing to pay an increase in entrance fee to zoo
a. For conservation of wildlife [ ] b. To sustain it for future generation [ ]
c. For sustainability [ ] d. To limit the number of visitors [ ]
e. Is not expensive I can afford [ ] f. Others (specify) [ ]

D6- If NO in D1 above, please indicate your reason for not willing to pay any increase?

a. i am not interested in resources conservation [ ]

b. is government responsibility to conserve the resources [ ]

c. I don't believe the money will be use for conservation [ ]

d. other (specify please) ……