

## The Importance, Problems and Strategies of Old Oyo National Park at Sepeteri area of Oyo State, Nigeria

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### Abstract

The main aim of this research work is to review the importance, problems and strategies of National Parks in Old Oyo National Park, Oyo State. National park is regarded as the cornerstone of biodiversity conservation globally. Parks reflect a nation's desire to preserve for generations unborn. In a world of rapid environmental change, parks and protected areas are ideally represent islands of stability places where environmental changes are dictated by the rhythms of nature rather than by human demography and economic demands. Nigeria's biodiversity is one of the richest in Africa. The Federal Ministry of Environment Fourth National Biodiversity Report (2010) opined that Nigeria's geographic features endows her with one of the richest biodiversity in African continent. However, despite all these numerous benefits, man's inhumanity to animals remains strong and unabated, so much that if not controlled, the survival of man itself is greatly endangered. The source of data for this research work is primary source by administered 100 questionnaires to Staff and non-Staff (the people living around the community) of Old Oyo National Park in Nigeria. The responses of those Staff and people living around the community of Old Oyo National Park were run and analyzed using a Statistical software called Statistical Package for Social Sciences (SPSS). The adopted statistical distribution/methodology is Pearson's Chi-Square distribution- Test of independence of attributes and each research hypotheses were interpreted accordingly based on the probability value popularly known as P-value.

**Keywords:** National Park, Pearson's Chi-Square, Biodiversity Conservation, Descriptive Statistics, wildlife

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### I. Background of the study

National park is regarded as the cornerstone of biodiversity conservation globally. In a world of rapid environmental change, parks and protected areas are ideally represent islands of stability places where environmental changes are dictated by the rhythms of nature rather than by human demography and economic demands (Wright, 2016). Nigeria's biodiversity is one of the richest in Africa. The Federal Ministry of Environment Fourth National Biodiversity Report (2010) opined that Nigeria's geographic features endows her with one of the richest biodiversity in African continent. But despite this richness, conservation of Nigeria's biodiversity is currently at lowest ebb. Although, various policies and strategies aimed at sustaining biodiversity have been developed, particularly at national level, biodiversity decline continues unabated.

Africa is unique among continents in her richness and variety of wildlife (Adewoye, 2007). Before civilization in Africa, a natural but delicate balance had been attained in the animal kingdom between herbivores and carnivores. As time went on the balance was upset by man's increasing need for food and land for development. This led to wholesale slaughtering of animals thereby leading to the extinction of certain species. The extermination of these animals was fuelled by the invention of sophisticated weapons that are capable of killing thousands at a shot. The unique Dodo bird of Mauritius was exterminated in the early eighteenth century, the last Quagga; a zebra-like animal which once roamed the veldt of South Africa in thousands was killed on the 18th August 1883. The white Rhine was eliminated in central Africa in the same century. (Hulme, *et al.*, 2011). Many of the larger mammals and species of birds had also been decimated in areas where vegetation has been subjected to destruction as a result of excessive cultivation and expansion of urban settlements. These threats

become more paramount as a result of intensive technologies such as irrigation, inorganic fertilizer, chemical sprays among others, which are now used to stimulate food production. These human activities have resulted in a number of dangers to the wildlife in their natural habitats.

Since the turn of this century, there have been increasing efforts at encouraging conservation and preservation of wildlife as reflected in the number of organizations involved in the activities throughout the world. Majority of these are financed by private organizations. Wildlife conservation therefore includes all human efforts directed at preserving wild animals and their habitat to save them from extinction. This is sequel to the significant roles which animals have played in the life and development of man. According to Onyeausi, (2014) wildlife may generally be utilized in two principal ways: consumptive and non-consumptive. While, the former has to do with direct consumption of various species of wild animals as food in form of bush meat, the latter involves viewing the beauty of wild animals in their habitats. Because it does not involve killing of the animals, it is referred to as non-consumptive utilization. For instance, several species of animal have been used for purposes ranging from traction, sources of clothing, and adornment and furnishing materials, to predator control, religious practices, research and medicine. On sports and pleasures, man derives pleasure and entertainment from animals. In 2001, Nigerian National Parks generated N30.276 million through ecotourism activities. (Nigerian Tribune, 2012).

Wildlife's contributions also include stabilizing hydrological systems; protecting soil; ensuring climate stability; conservation of renewable resources; protecting genetic resources; preserving breeding stocks; population reservoirs and biological diversity; maintaining the natural balance of the environment; supporting tourism and recreation; creating employment opportunities and providing facilities for research and education (Adewoye, 2017). However, despite all these numerous benefits, man's inhumanity to animals remains strong and unabated, so much that if not controlled, the survival of man itself is greatly endangered. Though, some species are being killed by natural factors, the greatest danger to wildlife results from human activities.

Large scale poaching, nomadic livestock grazing, indiscriminate bush burning, illegal fishing and other human activities are capable of degrading and destroying the existing wildlife habitat. Realizing these threats, and their effects on the ecosystem generally, and the wildlife in particular, the federal government of Nigeria has set aside some areas designated as forest reserves, game reserves and game sanctuaries with the sole aim of preventing wildlife from total destruction. There are currently eight national parks and over fifteen certified game reserves located in different ecological zones of Nigeria. The national parks are gazetted at different times by the Nigeria National Park Decree.

## **1.2 Statement of the problem**

Knowledge about biodiversity conservation challenges is valuable in stimulating technological innovation and providing the framework for sustainable development. Thus, reliable institutions mandated to protect these natural endowments need to be strengthened and supported. The Protected Areas like National parks are meant to promote sustainable harvest, conservation education, ecotourism and benefit the host community. Therefore, this study sought to identify illegal activities carried out in the park by households in communities bordering the park, assess management problems and their implication on rangeland productivity and ecotourism activities.

## **1.3 Purpose of the study**

The main aim of this research work is to review the importance, problems and strategies of National Parks in Old Oyo National Park, Oyo State.

The specific objectives of the study are to:

1. examine the socio-economic characteristics of residents in the study area
2. identify the various wildlife for conservation at the Old Oyo National park
3. assess people awareness to wildlife conservation in the study area
4. appraise respondents conservation methods and strategies of wildlife in the study area
5. suggest possible measures towards wildlife conservation in the old Oyo national park in Nigeria.

## **1.4 Scope of the Study**

This review work only points at the specific importance, problems and strategies of National parks in Nigeria. Moreover, it also necessarily looks at the importance of the National park because it adds values to the area, serves as income generation to the nation, means of exhibition of the animals through excursion. For this reasons, the problems facing the National park should be solved.

## **1.5 Population of the Study**

The target population for this research were one hundred (100) respondents which includes the entire sixty (60) staff of Old Oyo National Park in Nigeria and forty (40) people living around the community.

### **1.6 Sample Size and Sample Techniques**

A sample size of 100 respondents were selected from the total population for the study. Purposive sampling techniques was adopted to select the respondents from the study population. This method makes use of typical cases among the population to be studied which the researcher considers to provide him with the needed data. The method was used because of the efficiency in maximizing the required time.

### **1.7 Justification of Method used for the Study**

This study elicited data from the respondents using structured questionnaire. The questionnaire used was divided into five different sections. The first section dealt with the demographic characteristics of respondents, while the second, third, fourth and fifth section elicited data on the importance, problems and strategies of Old Oyo National Parks in Nigeria. Descriptive research design was adopted which involves the use of scientific method, procedure to collect raw data and create data structure that describes the existing characteristics of a define target population.

### **1.8 Justification of the Study**

Human activities have increased the extinction rate by at least 100 times more than the natural rate. The increase in depletion and extinction of the world's biodiversity has led to a greater interest from the global community to protect the environment and safeguard natural habitats and thousands of species (Burgess, 2012). The establishment of protected areas is construed to be the most feasible strategy of maintaining biodiversity (Chapel *et al.*, 2008). National park is regarded as the cornerstone of biodiversity conservation globally. According to Wright (2016), parks reflect a nation's desire to preserve for generations unborn it's floral, faunal, and landscape diversity as elements of its national and cultural heritage.

### **1.9 Research Questions**

- (1) Is there any Community Conservation Practices in Old Oyo National Park in Nigeria?
- (2) Is there any Challenges faced by Local Communities in conserving at Old Oyo National Park in Nigeria?
- (3) Is there any significant problems affecting Biodiversity conservation of the Old Oyo National Park in Nigeria?
- (4) Is there any best conservation management practices in Old Oyo National Park in Nigeria?

### **1.10 Research Hypotheses**

#### **(A) Research Hypotheses on the Community Conservation Practices in Old Oyo National Park in Nigeria**

$H_{01}$ : There is no significant relationship between the working experience and community conservation (grazing) practice in Old Oyo National Park.

$H_{02}$ : There is no significant relationship between the education qualification and community conservation (fishing) practice in Old Oyo National Park.

$H_{03}$ : There is no significant relationship between the working experience and community conservation (**deforestation**) practice in Old Oyo National Park.

$H_{04}$ : There is no significant relationship between the working experience and community conservation (**bush burning**) practice in Old Oyo National Park.

$H_{05}$ : There is no significant relationship between the working experience and community conservation (**honey harvesting**) practice in Old Oyo National Park.

$H_{06}$ : There is no significant relationship between the working experience and hunting practice in Old Oyo National Park.

#### **(B) Research Hypotheses on the Problems affecting Biodiversity Conservation of the Old Oyo National Park in Nigeria**

$H_{07}$ : Non maintenance of equipment is not a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria.

$H_{08}$ : Insecurity is not a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria.

#### **(C) Test of the Hypotheses on the Best Conservation Management Practices at Old Oyo National Park in Nigeria**

$H_{09}$ : Flood mitigation does not help in limiting destruction of crops in the Old Oyo National Park in Nigeria.

$H_{010}$ : Illegal grazing does not influence vegetation cover within the Old Oyo National Park in Nigeria.

$H_{011}$ : Soil erosion does not help in monitoring the flow of water within the Old Oyo National Park in Nigeria.

$H_{012}$ : Biodiversity does not help in controlling growth and irradiation of invasive species within the Old Oyo National Park in Nigeria.

## II. Literature Reviews

### 2.1 Conservation of Wildlife Resource

Literature is replete with studies on the conservation of wildlife resources all over the continent of Africa. Many of these include works by International and National agencies as well as studies by individuals, non-governmental organizations and religious bodies. The International Union for the Conservation of Nature (IUCN), Conservation International (IU), World Wide Fund for Nature (WWF), and Wildlife Conservation Society (WCS) all lobby for more protected areas and are provided with more than one billion US dollars per year through public support. (Matt, 2012). National Parks and Game Reserves as globally popular approaches to protecting biodiversity and supply of ecosystem services (MEA, 2005) World Park Congress in a study also called for improving the knowledge and understanding of the impacts of protected areas on the livelihoods of the rural poor (WPC, 2003).

In Central Africa, Government Institutions, Conservation NGOs, bilateral and international agencies have embraced the goal of protecting as much forest area as possible (Weber, *et al.*, 2001). The number of protected areas has grown at an accelerated pace during the last decades, increasing from about 600 established during 1900-50 to no less than 10,000 in 1955 roughly (5% of the earth's surface). In 1997, the number rose to 30,000 and to 102,500 in 2003 (Oliver-smith, 2005). Presently, over 19.6km<sup>2</sup> -11.5% of the land surface of the earth are protected (WDPA, 2009). The majority are located in developing countries.

In Nigeria, the national conservation strategy was adopted as a model for conservation and subsequently followed by the promulgation of the Natural Resources Conservation Council Decree which was later repealed by FEPA amendment, 1992. Sections 2 and 3 of the policy deals with securing development while at the same time sustaining the productivity of the natural vegetation; protecting wildlife; maintaining genetic diversity and avoiding forest and soil destruction. The first protected area in the country- the Kainji Lake National Park was established on 23rd September, 1975, by merging Borgu Game Reserve with the adjacent Zugurma Game Reserve. Presently, Nigeria has a series of protected areas, eight National Parks namely the Chad Basin, Gashaka-Gumti, Cross River, Yankari National Park, Kainji Lake and Old Oyo National Parks (the study area), Kamuku National Park and Okomu National Park (Inahoro, 1991).

According to Martin and Taylor (2013), the total protection of wildlife in the Sebungire region of Zimbabwe requires buffer zones to reduce conflict between man and animals. The effects of infrastructural development, industrial waste disposal and the use of chemicals on wildlife habitat have been pointed out by Afolayan, and Ayeni (1980); Atanda, (1994); mass destruction of ecosystem through man's activities such as deforestation as shown by Biswass *et al.*, (2005). Since the 1980s, the roles of communities for biodiversity conservation have been given serious consideration globally (Western, 2003). There is a movement toward bottom-up and decentralization approaches. They differ from the "fortress conservation", which is characterized by its top-down and centre-driven strategy (Berkes, 2004; Hulme and Murphree, 2001).

Studies have however revealed that in spite of the high level of commitment by government and Non-governmental Organizations (NGOs) to increase the global number of protected areas, wildlife population keep reducing at an alarming rate. Poaching is still a serious threat to many game species. This is a cruel and wasteful venture capable of depleting the resources God entrusted to man's care for the benefit of the present and future generations. Nigerian Tribune (2000) therefore describe poachers as the number one enemies of the nation who must be destroyed, eliminated and punished accordingly, as they are out of destroying the environment eliminate species of flora and fauna from the face of the earth. The director of Kainji Lake National Park, Alhaji Oladimeji Abdulsalam captures it all in his statement "if you know the degree of the destruction these poachers are capable of carrying out in our forest, then, you will realize that no punishment is too harsh as reward for their sabotage" (Nigerian Tribune, 2000) Some key aspects of conserving natural resources are causing increasing criticism from social scientists. The international conservation communities has expressed its concern that many of the costs of these protected areas are borne locally particularly by poor communities, while the global benefits accrued (WPC, 2003). This position was again re-echoed by the conservation community during the 2003 World Park Congress. However, while issues pertaining to biodiversity conservation are always given prominence and similar interests are lacking when the

(1) **The need for conservation:** As we advance relentlessly into the technological era, mankind is increasingly losing sight of the finite nature of our resources. In other words, the naturally endowed resources are becoming extinct (World Conservation Strategy, 2010). Resources are finite; the renewable and non-renewable natural resources are dwindling rapidly under the incredible pressure imposed by human population

through their activities. Popoola (2017) asked this question: “why should we conserve”? This particular question brought about the importance of wildlife to man. He went further to give answer in a simple phrase “the need for provision for future.” According to Nest, (2011) if people ignore the need for wildlife conservation, the endangered species will become extinct. If this happens, human being is out to lose much of great values that can hardly be replaced.

(2) Importance of wildlife resources to Nigerian economy.

(3) **Economic value-** Wildlife based tourism brings in foreign exchange into the country. It offers employment and also produces products of inestimable values as hides and skin, fur, pharmaceutical products among others.

(4) **Recreational value-** people derive a lot of pleasure from viewing games in their natural habitat.

(5) **Educational value-** schools organize excursions to wildlife parks to enable students see some biological phenomena that are unlikely or at least impossible to be demonstrated in conventional school laboratories.

(6) **Scientific and research value-** scientist researchers use wildlife in their experiments. For example, newly manufacture drugs are first tested on wildlife such as monkeys whose body mechanisms are similar to that of human beings before being administered on man.

(7) **Aesthetic and heritage value-** wild animals add to the natural beauty of the forest and grassland where they are found. They also feature in much traditional folklores teaching values and morals.

(8) **Sources of food-** wildlife resources are important source of food. In fact it forms greater parts of locally produced animal protein. Ayeni *et al.*, (2012).

(9) **Survival value-** every species of wildlife plays a role in helping and maintaining the balanced ecosystem on the earth. This system must continue to function, if life must continue. Thus, the loss of any species can threaten the survival of all forms of life including human being.

## 2.2. Biodiversity Conservation

Biodiversity is the wealth of life forms found on earth, that describe nature’s variety including both the number and frequency of plant and animal species as well as microorganisms (Meduna *et al.*, 2009; Audu and Ayuba, 2016) and diversity living things (Wilson and Tisdell, 2001). It has several components, such as composition, number of abundance, spatial distribution and interactions of species, genotype, trials, population, functional types and landscape units in a given ecosystem (Diaz *et al.*, 2015).

Biodiversity conservation on the other hand is a very popular approach in environmental science and has long remained a central theme in ecology and rangeland management. Conservation of biodiversity could either be in-situ or ex situ. It is critical to the maintenance of healthy environment, and its role in meeting human needs directly while maintaining the ecological process upon which our survival depends is enormous (Dushyant and Mishra, 2011). It provides direct benefits such as food, medicine and can affords us a life support system (Saidu, 2017), required for the recycling of essential elements (Carbon, Oxygen and Nitrogen). Notwithstanding, biodiversity conservation has encounter a lot of challenges even when most populace especially the rural dwellers agrees to the values and benefits accrue from it. In the same vein, returning an area to its original state is not only costly but demanding and often difficult.

It has been estimated that, over 40 percent of the global economy is based on biological products and processes (Christ *et al.*, 2003). However, outright conflict between conservation and indigenous approach has been the major problem of biodiversity conservation in Nigeria (Osunsina and Fagberiro, 2015) outdated polices, laws and poor funding (Saidu, 2017). Even though the country can boast of its protection and conservation network through national parks, Forest and game reserves distributed across the country’s vegetation, residents around protected areas have long- established sedentary agricultural systems and traditional ways of extracting resources from areas of ecological importance (Ogunjinmi, 2007), consequently resulting to biodiversity depletion, decline in rangeland productivity and made ecotourism in Nigeria’s protected areas unattractive. On a global scale, ecotourism is growing because of its international appeal (Lowman, 2004), through protection of the environment, economic sustainability, cultural integrity enhancement and education (UNWTO, 2002).

According to World Tourism Organization, wildlife-based tourism contributed 35.8% and 4.6% to total export and Gross National Product respectively for Kenya, in Nigeria was about 1.1% and 0.2% for export and Gross National Product respectively (Ayodele *et al.*, 2004). The sad part aspect now is the destruction caused to landscape during oil exploration and oil pollution, which has killed many animals, rendered many homeless and destroyed their livelihood (Meduna *et al.*, 2009). Biodiversity conservation, rangeland productivity and ecotourism activities have inter-connected network on the nation at large if well managed. Knowledge about biodiversity conservation challenges is valuable in stimulating technological innovation and providing the framework for sustainable development (NBSAPs, 2015). Thus, reliable institution mandated to protect these natural endowments need to be strengthened and supported (Saidu, 2017). The Protected Areas like Gashaka-Gumti National parks are meant to promote sustainable harvest, conservation education, and ecotourism and

benefit the host community. Therefore, this study sought to identify illegal activities carried out in the park by households in communities bordering the park, assess management problems and their implication on rangeland productivity and ecotourism activities.

### **2.3 Land use and Land Cover**

Land use and land cover (LULC) change is one of the most important forms of environmental change occurring in many of the world's mountain regions (Korner and Ohsawa, 2005). Land use refers to human activity on a piece of land, and land cover refers to its surface features (Lambin and Meyfroidt 2010). Recent small-scale analyses have highlighted LULC change in the Himalayas (eg overexploitation, fragmentation, and degradation; Chaudhary et al 2007). LULC change is of increasing concern with regard to national and global policies promoting sustainable mountain development (Kohler *et al.*, 2012). Policy-makers seek information on the rootcauses of LULC change in order to develop clearer polices and management guidelines that focus on causes, not symptoms. However, processes that drive LULC change in mountain regions are complex, occurring at various temporal and spatial scales, with interlinked environmental, social, and economic impacts, and they require multiple methods of analysis to understand the drivers and their impact on the environment, landscapes, and rural societies (Lambin and Meyfroidt, 2010).

As in other parts of the Himalayan region, traditional resource use in Sagarmatha National Park and Buffer Zone (SNPBZ) has changed rapidly since the mid-1970s in response to a range of interacting institutional, economic, political, cultural, climatic, and demographic processes (e.g.

Stevens 2013). Recent research using remote sensing data has focused on land cover change in SNPBZ (egBajracharya et al 2010), recognizing the complexity of many key assumptions about deforestation (eg Ives 2004). The area's glaciers have also received extensive spatial analysis (egThakuri et al 2013). However, there has been very little spatially explicit research on the ways that changing land-use strategies contribute to LULC change and vice versa (egLambin and Meyfroidt 2010). In this respect, social sciences are especially well placed to collect the fine-grained qualitative and quantitative information that is needed for a local-level analysis of LULC change (egVedwan and Rhoades 2001; Couzin 2007; Jurt *et al.*, 2015). Although remote sensing has been increasingly recognized as an essential tool for studying LULC change, spatial analysis alone may miss the underlying driving processes, unless combined with field studies at very fine scales (egLambin and Meyfroidt 2010). In particular, a narrative perspective grounded in the experiences and concerns of residents is important in understanding linkages between standard categories of driving forces and outcomes observed in patterns of LULC change and in targeting management efforts (eg Kennedy *et al.*, 2009; Lambin and Meyfroidt, 2011).

This study examined LULC change trajectories and change rates in SNPBZ from 1992–2011, and examined how local people perceived LULC change, particularly its drivers and temporal effects, using ethnographic and geospatial methods. As a result, this paper presents locally and finely contextualized knowledge developed by small mountain communities, which is important for interpreting LULC change trajectories and for developing local management approaches to decision-making as envisaged by the changing concept of United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site designation (Conradin and Wiesmann 2014). The conclusions drawn here will be helpful for planners engaged in protected area policy and resource management, not only in SNPBZ but also in similar areas.

### **2.4 Environment Condition in National Parks**

As the century begins, natural resources are under increasing pressure, threatening public health and development. Water shortages, soil exhaustion, loss of forests, air and water pollution, and degradation of coastlines afflict many areas. As the world's population grows, improving living standards without destroying the environment is a global challenge. Most developed economies currently consume resources much faster than they can regenerate. Most developing countries with rapid population growth face the urgent need to improve living standards (Conradin and Wiesmann 2014). Resources in the environment are not spared by man and exploitation increases by every new day, parts of china, India, former Soviet Union and Western U.S.A are experiencing decline in water tables and much of water use in irrigation farming resulting in lower sea levels, inadequate moisture in the atmosphere and the whole imbalance in the water cycle. FAO (2011) Land usage in the Alberta and Saskatchewan in North America to meet the food demands it has increased soil erosion, use of fertilizers and herbicides which are having an impact in the environment.

Forest clearing in South America in the Amazon for economic development has brought changes in climate of countries like Brazil where they have reported landslides, flooding and droughts in Colombia. This results as an ignorance to care for the resource of vegetation and land. In china Asia, the blinds eye given to the environment has resulted in acceleration of melting of ice at a high rate which has now become a concern to the Chinese government because they fear the worst may follow. Vanclay et al., (2001) Africa feels the knock of the impacts of the environment rooting from all sides, this is to mean the degradation especially of the atmosphere it is highly influenced by the developed countries.

In the continent there is a run for industrialization and developments which also encourages more environmental crisis and the impacts are majorly revealed by global warming and in particular changes in the weather patterns, mudslides from heavy rains, drought and flooding. Now it is obvious that the international organization present in the continent that are endeavored to mitigate environmental collapse shows the impacts are felt and its reversal is worthy, or if not, the entire world suffers severely. Public health deterioration which arises from unclean water, alongside sanitation kills 12 million people each year mostly from developing countries. This implies that the unsustainable use of water resource result to those deaths. Most communities use the water for all household needs and the sharing of the water source with animals contribute largely on the degradation of the waters. Dudley (2002).

Loss of biological diversity on an unprecedented scale, the earth's biological diversity is crucial to the continued vitality of agriculture and medicine and perhaps even to life on earth itself. Yet human activities are pushing many thousands of plant and animal species into extinction. Two of every three species is estimated to be in decline. Although tropical forests cover only six percent of Earth's land surface, they happen to contain between 70% and 90% of all of the world's species. As a result of deforestation, we are losing between 50 and 100 animal and plant species each day. Inevitably, the loss of species entails a loss of genetic resources. Many of these species now facing the possibility of extinction are of enormous potential to humans in many areas; especially medicine.

As at 1991, over 25% of the world's pharmaceutical products were derived from tropical plants and even now the trend still remain but at a different percentage. By contributing to the extinction of multiple species of plants and animals, we might be destroying the cures for many of the diseases that plague the human race today. Tropical forests can receive as much rain in an hour as London would expect in a wet Climate change cannot go unmentioned as impact arising from the rampant utilization of resources. Earth has an atmosphere which contains a variety of gases, all in a delicate balance, to ensure life on Earth. One of these gases in Earth's atmosphere is carbon dioxide; a gas which helps moderate heat loss to outer space. Insulating gases such as carbon dioxide are called "greenhouse gasses because their function is much like that of the glass in a greenhouse: they allow solar heat into the system, but discourage its escape". Other greenhouse gases include methane, chlorofluorocarbons, nitrous oxide, and ozone. If there are additional greenhouse gases, there will be a gradual increase in temperature on Earth's surface. This could lead to changes in weather patterns, sea levels, and other cycles in nature that directly affect life on Earth.

The process of greenhouse gas increase is quite simple. Carbon dioxide levels increase for a number of reasons; but one of the main factors contributing to the increase of carbon levels is decay of woody material. The only way to help moderate the levels of carbon dioxide in the atmosphere is through plant life. Alive plants and trees absorb the carbon dioxide from decaying plants and trees. With a decrease in trees and plant life (due to inappropriate harvesting of resources) it is much harder to moderate these levels. Ultimately, the amount of carbon will increase due to a lack of plant life present to keep the carbon dioxide levels in check. This whole process leads to an "albedo effect which reflects more heat and light back into the atmosphere than would be the case if the sun shone on green trees". The bottom line is that the increase in the carbon level and other greenhouse gas levels into the atmosphere leads to an increase in temperature, and eventually a change in climate and weather.

## **2.5 Human activities on National Park**

Humans have long established their dependence on natural resources for essential life requisites and concurrently demonstrating limited consideration for impending changes that may affect the supply of these resources. The continuous reliance of humans on natural resources has been exacerbated by a recorded increase in population growth and diverse activities of distinct human societies on the available natural resources. Human influences particularly affecting ecosystem processes are causing unusual changes such as changing spatial extent, composition, and configuration of habitats and species, and are depleting species population. Human linked threats on habitat and species, particularly large mammals, have motivated the inclusive and increasing consideration of humans in conservation planning. Yet, it is not fully known how the abundance and distribution of different large mammal species are related to different human activities, and how large mammal species respond to different habitats and habitat alterations caused by humans. The human society in Cameroon is diverse and has emerged from various ethnic and cultural backgrounds.

Three main human societies in which others are embedded in Nigeria include; hunter gatherer, agrarian, and industrial societies. The human society, cultures, and attitude of the Nigeria people are tightly associated with the ecosystem around them and have actually influenced the ways people relate with and use natural resources. While some tradition or local cultures promote the conservation of sacred places and species through traditional binding laws and taboos some are encouraging the exploitation and use of natural resources for either traditional medicine, decoration, consumption, and commercialization that to a larger extent has led to

depletion of resources. The increasing need for natural resources for wellbeing by the Cameroonian society has triggered the modification of old technology and the introduction of new techniques for resource collection.

## **2.6 Problems facing National Parks**

**(1) Rapid Development of Managerial Capacity:** Virtually every park department in Latin America has far more work than it can possibly handle. Most departments have been given considerable responsibility by government, including the recent mandates cited.

The challenge to the departments is to lift the capacity of the personnel to the level of the task, and this must be done as quickly as possible because the interest and the mandate are currently there, and the job needs doing in the best interest of the nation. It is suggested that park departments begin with park planning and management workshops to acquaint all personnel with concepts, terms and alternatives for action, to create a common bond among personnel, and to set the stage for planning national park units and the park system (Conradin and Wiesmann 2014).

The workshops need not require more than two or three weeks each and should involve no more than 15 or 20 officers at each session. A park planning exercise can be held in 3-4 days depending upon logistics and scale of the area. Once a planning team is clear on its job, a conceptual-level plan for a park can be prepared in 3-4 weeks. Naturally, plans will take years to mature, but the challenge is to write a first draft. In so doing, the personnel will learn to identify the questions and problems peculiar to each area, and to focus their efforts upon the real issues concerning the management and development of the park. They can then select priorities for action and prepare a schedule of work which will include the research necessary to support management decisions. Park managers can prepare articles for the journal (in Spanish, French or English) can send comments and criticism to the editor, and can help shape the journal to become more relevant and useful (Conradin and Wiesmann 2014).

**(2) Development of a Systems Perspective:** Most park departments have been viewing so closely the destruction of natural resources, species extinction, and the salvaging of remaining wild places that little time has been left to develop the capacity to analyze resource systems. Specifically, all resources must be examined in terms of systems. Where does the water come from, and where is it going? Who is doing what upstream, downstream? What can affect this site, and what in this site can affect the area downstream? This holds obviously for watersheds, and it also holds for forests, estuaries, coral reefs, ocean currents and other habitats and ecosystems.

A park manager should always think in terms of "Where did it come from, what tones it do here, and where is it going?" What depends upon what? Plainly, this is ecology. The park manager needs to be an applied ecologist (Conradin and Wiesmann 2014). Pragmatically, the Systems perspective provides the framework within which the park professional can make a major contribution to land use planning. Park management is the field which must specialize in studying, identifying, selecting and caring for the critical areas for natural energy flow and natural activity which keep the biosphere operating.

**(3) Development of Methods for the Management of Wild lands which can deal with both Conservation Objectives and Direct Human Use:** The land around most established national parks is already in direct human uses such as agriculture, forest and fisheries, in their intensive or extensive forms. In the extreme cases, parks are either bounded by rice fields and exotic tree plantations on the one hand, or by the almost wild rants utilized by Indian forest dwellers for traditional forms of hunting and fishing, on the other. Where the surrounding land use is not capable of buffering adverse external activities, the long-run survival of national parks for their ecological values is insecure. As discussed throughout the above chapters. Parks are a special form of land management for maintaining and enhancing the human environment. To accomplish this goal, large tracts of land need to remain in a natural form.

It is becoming clear, moreover, that parks alone cannot possibly maintain species and their habitats. Parks will protect some of them, hopefully, the most important and in the form of ecosystems. But, plants and animals fly, crawl, walk, run, or swim. Pollen moves for hundreds of kilometers, Birds responsible for the seeding of important timber trees cover a large territory. Marine species may spend parts of their life cycle in estuaries, marshes, coral reefs, or in the open ocean. Obviously, something must be done to maintain species, habitats, diversity, and environmental regulation elsewhere, outside the national parks.

In many of Latin America's wild and semi-wild lands, so-called "primitive" cultures can be found which have adapted technologies for utilizing rainforests, coastal lands and the sea during ten and more millennia. They have learned to work with the ecosystem, that is, their technologies are applied to the environment in ways

which do not destroy or disrupt natural processes. Other peoples in these areas originated from European immigration and in some cases are involved in colonization with simple technologies.

**(4) Development of a Range of Categories for Management of Wildlands:** Agriculture, silviculture and mariculture are technologies for combining inputs to produce outputs related to particular goals: to feed people, to build homes and schools, to make paper, etc. There is a missing class in this traditional breakdown which typifies the plight of park management. Where is the technology for combining inputs to produce outputs relates to ecosystem conservation, genetics, water resources, recreation, research on natural systems, etc.? Variably this is called forestry, nature management or wildland management. These Terms are not synonymous, but they are close. A common distortion, however, has come from equating silviculture with forestry, trees with the forest, wood with foresters!

**(5) Development of Government Support:** The support of the government means many things. It means budgeting annual funds to pay salaries, maintain installed facilities and operate the national parks and the necessary offices. It also means sufficient funds for the development of new facilities and new parks. It means support to establish new positions as necessary to place newly hired officers in the department as new parks are established and as the capacity to manage must grow. Support means the ability to pass new laws and policies to keep the department modern and up to the moment. There should be participation of the department in issues and decisions on natural resources. The department should be able to obtain rants through the normal legal process for new or expanded parks, to import special supplies and equipment if they are not available locally, to obtain scholarships for officers to earn advanced degrees to take special courses, and for officers of the department to attend key international meetings on conservation. However, "the proof of the pudding, is in the eating." The department must be able to demonstrate its usefulness to the nation, its capacity to manage, and the advantage of support to its activities relative to other demands upon the national budget.

**(6) Development of Scientific and Technical Support for Decision-Making:** There are a series of problems which require scientific and technical support. They include: the determination of the appropriate size and shape of parks and reserves; determination of criteria for the selection of the various types of parks and reserves; identification of the habitat requirements for the major species in parks and reserves and elsewhere in the country; design of the techniques for appropriate manipulation of the habitats as necessary; determination of the potential mixes of output from different types of parks and reserves; determination of the gaps in the national park system; and, understanding of the indicators from the feedback of management practices being applied (Conradin and Wiesmann 2014).

**(7) Evaluation of Park Management Activities:** Considerable energy and funds are spent on building facilities, managing habitats, conducting visitors, in starting interpretative programs, and in trying to inventory and learn about the resources of the parks. Little if any input is made in observing the results of each management activity. What is required is that each department develop a simple procedure for "monitoring" management activities, development projects, and the natural and cultural resources. Observations on relevant indicators must be made and evaluated. The monitoring system then ensures that the implications are given to decision-making (Conradin and Wiesmann 2014).

**(8) Alteration and Destruction of Wild lands:** There are many kinds of alteration and destruction of wild lands including colonization, logging, hunting, agriculture, and such things as road and power line construction, mining prospection and human settlements. Obviously, whether these activities are positive or negative depends upon ones point of view. The problem lies not in judging if they are "good" or "bad", but in the process by which wild land is allocated for such development. Specifically, wildlands are being irreversibly altered before being examined to determine their environmental significance. Is the site a critical habitat for animals or plants? Is the drainage such that flooding or excessive drying will occur elsewhere if this site is altered? Swamps are drained with little regard for the fact that they are the centers for the transformation of many important nutrients. Coastal developments destroy coral reefs which provide habitat to a large proportion of fish eaten by humans.

**(9) Awareness of International Programs, Criteria and Activities:** A very common current problem is the inability to keep informed about all that is going on in conservation. There are several meetings each month, more publications than a person can read even if he retires from active work, and conflicting criteria and values within the conservation movement. What does a park officer in Latin America do to make any sense out of all this? The most positive manner to become aware is to become involved. Experience would show that before departments of individuals enter into the international arena they would do well to gain experience in their own country. The reason is that principles and concepts can be usefully drawn from field experience in a particular

context. Excessive theoretical or abstract work without the field work to back it, often leads to frustration because of inapplicability.

**(10) Development of Mechanisms for Treating Problems and Opportunities on International Boundaries. Resources know no political Boundaries.** Watersheds are the most common example of resources which pass from country to country, defying ownership. Other examples include ocean currents, fisheries and birds.

## **2.7 Solutions to the problems facing National Parks**

**1. Fund Our National Parks:** The National Park Service is primarily funded by Congress through both the annual appropriations cycle as well as some mandatory funds. The National Park System also receives funding through park entrance and user fees, as well as private philanthropy.

**2. Enact the Wildfire Disaster Funding Act:** One of the most significant pieces of legislation I've authored this Congress is a bill to fix the way we currently budget for wildfire suppression by treating catastrophic wildfires like other natural disasters. Currently, agencies like the Forest Service must borrow from non-fire accounts when fire suppression costs exceed the budget. "Fire borrowing" was intended to be an extraordinary measure, but as fire seasons have grown more destructive it has become common practice—and has created a devastating cycle that prevents agencies from doing needed hazardous fuels removal or timber harvests, leading to worse fires. Many Idahoans, including myself, have called for better management of our forests, but until we reform the way we budget for wildfires, none of the actions we advocate including thinning, timber harvesting, and active management can consistently take place.

**3. Reduce the Growing Transportation Maintenance Backlog:** Transportation Services is responsible for the planning, maintenance and operations of 5,600 km of roads. Local, collector and arterial roads make up 5,170 km of the road network. The remainder is comprised of expressways and laneways. Each year, as part of the City's budget process, updates are provided detailing the asset value and backlog of State of Good Repair (SOGR) needs for all roadways.

**4. Ensure Collected Fees Return to the Parks:** A comprehensive discussion on the controversy over fees for use of public lands can be found in Anderson (2000), Watson and Gamini (1999) and Winter, Palucki, and Burkhardt (1999, pp. 207–209) where possible adverse effects include reduced visitation, decreased public support, non-compliance, and the exclusion of the economically disadvantaged and minorities. For example, a mail survey of New Hampshire and Vermont households (More & Stevens, 2000) indicates that, although widely supported, user fees might have had a discriminatory impact on the participation of low-income households. Addressing this concern, Dustin, More, and McAvoy (2000) argued that the national parks are a public good that should be fully funded through taxes and accessible to all people. The authors state that if certain socioeconomic groups are excluded from public lands because of user fees, the very purpose of public recreation becomes questionable. Another concern (Anderson & Freimund, 2014) involves the inappropriate impact that usage fees might have on policy and decision-making, since the individual sites retain 80% of the fee revenues while the other 20% is allocated to the agency at the regional level. Accordingly, Martin (2019) asserts that user fees have implications far beyond raising revenue and deciding how to spend it.

**5. Double the Investment:** National parks should not be considered as a few scattered nature reserves, but as an integrated system. They believed that the construction of Chinese National Park System was extremely valuable and meaningful in terms of ecological protection, national economic development, historic and cultural passing and spreading, social order stabilization and national health.

**6. Security agencies need improvement:** Therefore, the various security agencies and the military should work together effectively to ensure safety of lives.

**7. Adjusting Measures to Local Conditions** Though the national park system originated in the US, it falls into different categories of management models, which embodies the principle of "adjusting measures to local conditions". According to Zhou, Xu, & Zhou (2014), based on the management experience of the foreign national parks, there are generally four typical management models: centralization management model based on national identity building, co-management model driven by citizen's recreations, self-management model started from nature conservation and sustainable management model oriented by ecological tourism.

**8. State Dominance:** This state-steering and unified management system has two merits: on the one hand, it causes brand gathering and amplification effect. For the time-being, American national parks have been

made a part of national image, some major national parks such as the Yellow Stone national park and the Grand Canyon national park have developed into world-class tourism destinations, enjoying high reputation in the international travel market.

### III. Research Methodology for the Study

The source of data for this research work is primary source by administered 100 questionnaires to Staff and non-Staff (the people living around the community) of Old Oyo National Park in Nigeria. The responses of those Staff and people living around the community of Old Oyo National Park were run and analyzed using a Statistical software called Statistical Package for Social Sciences (SPSS). The adopted statistical distribution/methodology is Pearson's Chi-Square distribution- Test of independence of attributes and each research hypotheses were interpreted accordingly based on the probability value popularly known as P-value.

#### 3.1 The Chi-Square Distribution

All of the inferential statistics we covered in the previous lectures are called parametric statistic. To use these statistics, we make some assumptions about the distributions they come from, such as they are normally distributed. With parametric statistics, we also deal with data for the variable that is at the interval or ratio level of measurement, i.e. test scores, physical measurements, etc. We shall now consider a widely used non-parametric test, Chi-square, which can use with data at the nominal level, that is, data that is classificatory. The symbol  $\chi$  is the Greek letter "chi". The sampling distribution of  $\chi^2$  is called  $\chi^2$  - distribution. The chi-square distribution was first discovered by Helmert in 1876 and later independently by Karl Pearson in 1900.

##### 3.1.1 The Chi-Square Distribution:

The chi-square ( $\chi^2$ ) distribution is obtained from the values of the ratio of the sample variance and population variance multiplied by the degrees of freedom, n. this occurs when the population is normally distributed with population variance,  $\sigma^2$ .

$$\chi^2 = \frac{(n-1)s^2}{\sigma^2} = \frac{df \times s^2}{\sigma^2}.$$

##### 3.1.2 Properties of the Chi-Square Distribution:

1. Chi-square is non-negative. It is the ratio of two non- negative values; therefore, it must be non-negative itself.
2. Chi-square is non- symmetric.
3. There are many different chi-square distributions, one for each degree of freedom.
4. The degree of freedom when working with a single population variance is  $n - 1$ .
5. For degrees of freedom greater or equal to 30, the curve approximates to the normal curve.
6. The mean of chi-square distribution is  $n$  and variance is  $2n$ .

##### 3.1.3 Conditions for the Application of $\chi^2$ - Test

The following are the basic conditions for the applications of Chi-Square:

1. The sample must be randomly drawn from the population.
2. Data must be reported in raw frequencies (**not percentage or ratios**).
3. Measured variables must be independent.
4. Values / categories on independent and dependent variables must be mutually exclusive and exhaustive.
5. Observed frequencies or values cannot be too small. It should contain at least 5 observations.

##### 3.1.4 The Chi-Square Test Statistic

The chi-square statistic is used to compare the **observed frequency** of some observations with an **expected frequency**. The comparison of observed and expected frequencies is used to calculate the value of the chi-square statistic which in turn can be compared with the distribution of chi-square to make an inference about a statistical problem.

The symbol for chi-square and the formula / test statistic are as follows:

$$\chi_{cal}^2 = \sum \frac{(O-E)^2}{E}$$

Or

$$\chi_{cal}^2 = \sum_{i=1}^m \sum_{j=1}^n \frac{(O_{ij}-E_{ij})^2}{E_{ij}}$$

Where:

O = the observed frequency

O<sub>ij</sub> = the observed frequency in the ith row and jth column.

E = the expected frequency.  
 $E_{ij}$  = the expected frequency in the  $i$ th row and  $j$ th column.

**Remarks:**

(i) 
$$E = E_{ij} = \frac{\text{Row Total} \times \text{Column Total}}{\text{Grand Total}} = \frac{R_i \times C_j}{n}$$

Where:

R = Row and

C = Column.

(ii) The degrees of freedom for the one dimensional chi-square statistic is **df = n-1**.

Where **n** is the number of categories or levels of independent variable.

(iii) In case of using contingency table, the degrees of freedom become  
 $df = (r-1)(c-1)$

Where: r = Number of rows,

c = Number of columns

(iv) The chi-square tabulated/ critical value is

$$\chi_{tab}^2 = \chi_{\alpha, (r-1)(c-1)df}^2$$

**3.1.5 Applications of Chi-Square Test**

A few important application of  $\chi^2$  – test are as follows:

1. Test of independence of attributes.
2. Test of goodness – of – fit.
3. Yate’s correction continuity.
4. Test of population variance.
5. Test of homogeneity.

**3.2 Applications of Chi-Square Distribution**

The  $\chi^2$  statistic plays an important role in tests dealing with count data, or enumeration data. This is the data required in dealing with problems where information is obtained by counting rather than measuring. In this lecture, we shall examine the following important applications of  $\chi^2$ – test:

1. Test of independence of attributes and
2. Goodness-of-fit test.

**3.2.1 Test of Independence of Attributes**

The test of independence uses the contingency table format and is also referred to as a “**Contingency Table Test**”. Then, what is contingency table?

Contingency table – A (r × c) contingency table shows the observed frequencies for two categorical variables arranged in **r** rows and **c** columns. The sum of all observed frequencies is **n**, the sample size. The contingency table format is displayed as follows:

**r × c Contingency Table**

Variable Y	Variable X				Row total
	$X_1$	$X_2$	...	$X_c$	
$Y_1$	$O_{11}$	$O_{12}$	...	$O_{1c}$	$R_1$
$Y_2$	$O_{21}$	$O_{22}$	...	$O_{2c}$	$R_2$
.	.	.	...	.	.
.	.	.	...	.	.
.	.	.	...	.	.
$Y_r$	$O_{r1}$	$O_{r2}$	...	$O_{rc}$	$R_r$
<b>Column Total</b>	$C_1$	$C_2$	...	$C_c$	$N$

**Remarks:**

- (i) The variables X and Y have been classified into mutually exclusive categories.
- (ii) The values  $O_{ij}$  in row  $i$  and column  $j$  of the table shows the frequency of observations fallen in each joint categories  $i$  and  $j$ .
- (iii) The row and column totals are the sums of the frequencies.
- (iv) The row and column totals add up to a grand total or overall total **n**, which represents the sample size.

(v) The expected frequency,  $E_{ij}$ , corresponding to the observed frequency in row  $i$  and column  $j$  in each cell of the contingency table, is calculated as follows:

$$E_{ij} = \frac{\text{Row } i \text{ Total}}{\text{Sample size}} \times \frac{\text{Column } j}{\text{Sample size}} \times \text{Grand Total}$$

$$= \frac{R_i}{n} \times \frac{C_j}{n}$$

$$\square E_{ij} = \frac{R_i \times C_j}{n}$$

However, the  $\chi^2$  -test statistic measures how much the observed frequencies differ from the expected frequencies when variables are independent.

**Test Procedures:**

**Step 1:** State the null and alternative hypothesis i.e.

**H<sub>0</sub>:** No relationship or association exists between two variables i.e. they are independent.

**H<sub>A</sub>:** A relationship exist i.e. they are dependent.

**Step 2:** Select a random sample and record the observed frequencies

(i.e. O values) in each cell of the contingency table and calculate the row total, column total and grand total.

**Step 3:** Calculate the expected frequencies (i.e. E values) for each cell.

**Step 4:** Define the chi-square test – statistic and obtain its value which is called chi- square calculated value ( $\chi^2_{cal}$ ) i.e.

$$\chi^2_{cal} = \sum \frac{(O-E)^2}{E}$$

**Step 5:** Calculate the degrees of freedom  $df = (r - 1) (c - 1)$ , where  $r$  = number of rows and  $c$  = number of columns.

**Step 6:** Obtain the critical values or chi-square tabulated value.

$$\square \chi^2_{tab} = \chi^2_{\alpha, (r-1)(c-1)df}$$

Where  $\square$  is the level of significance and then, this value of  $\chi^2$  corresponds to an area in the right tail of the distribution.

**Step 7:** Write the Decision Rule i.e.

Reject  $H_0$  if  $\chi^2_{cal} > \chi^2_{tab}$ . Otherwise do not reject  $H_0$ .

Alternatively based on Probability value called P-value,

Reject  $H_0$  if  $P - value > \alpha\%$  ( $Alpha \% = level\ of\ significance$ ). Otherwise do not reject  $H_0$ .

**Step 8:** Compare the  $\chi^2_{cal}$  and  $\chi^2_{tab}$  and then decide whether the variables are independent or not, using the decision rule in step 7 above.

**IV. Results and Discussion**

**4.1 Descriptive Statistics on Demographic Details of the Respondents**

**Table 4.1: Sex of the Respondents**

		Frequency	Percent
Valid	Male	66	66.0
	Female	34	34.0
	Total	100	100.0

Source: 2022 Field Survey

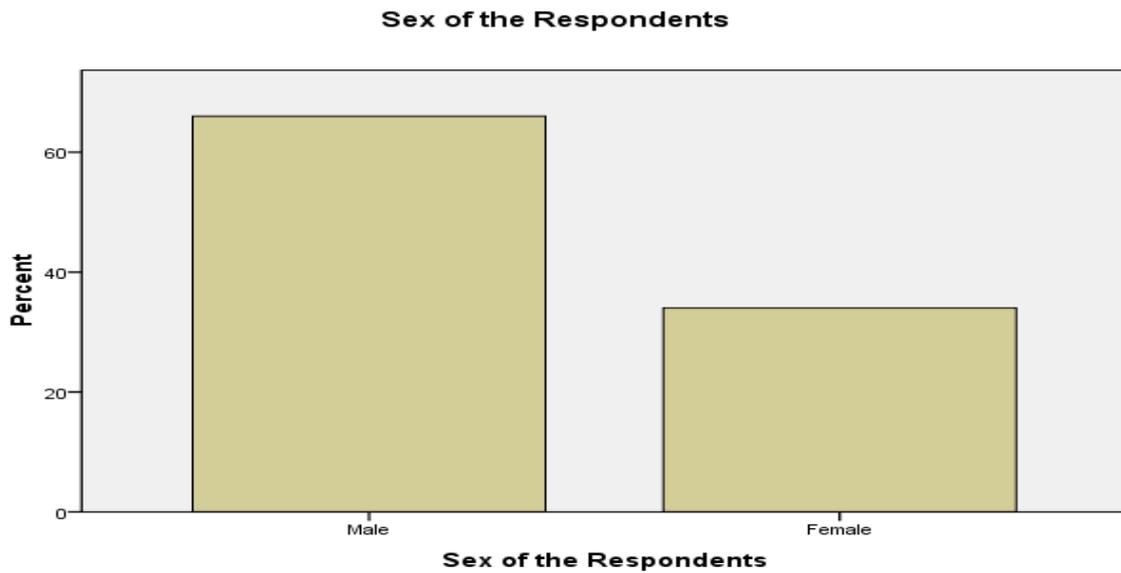


Figure 4.1: Simple Bar Chart for the Sex of the respondents

The percentages of the male and female respondents on the importance, problems and strategies of Old Oyo National Park in Nigeria were about 66% and 34% respectively (see Table 4.2). That is to say the Table 4.1 and figure 4.1 above revealed that there are more males' respondents on the importance, problems and strategies of Old Oyo National Park in Nigeria than females' respondents.

Table 4.2: Age of the Respondents

		Frequency	Percent
Valid	18-25 Years	10	10.0
	26-35 Years	48	48.0
	36-45 Years	42	42.0
	Total	100	100.0

Source: 2022 Field Survey

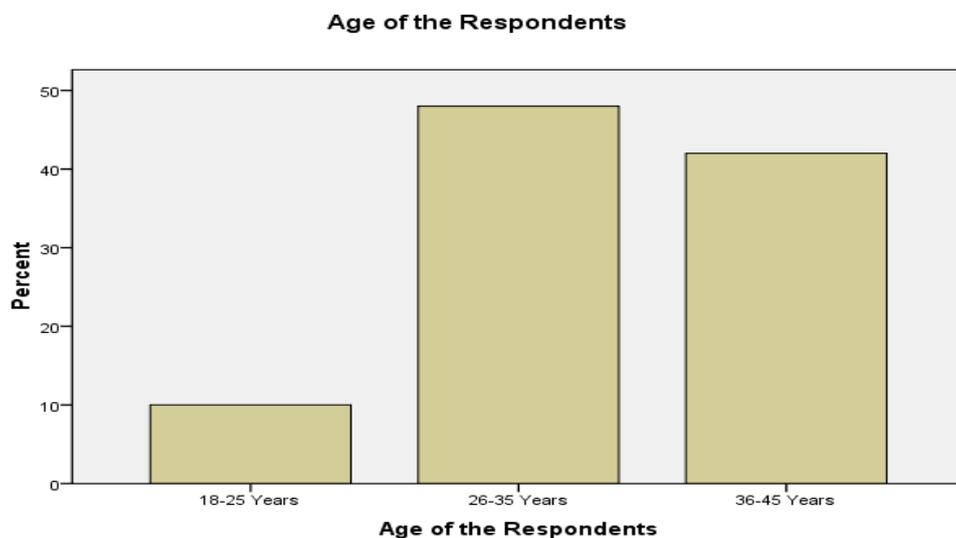


Figure 4.2: Simple Bar Chart for the Age of the respondents

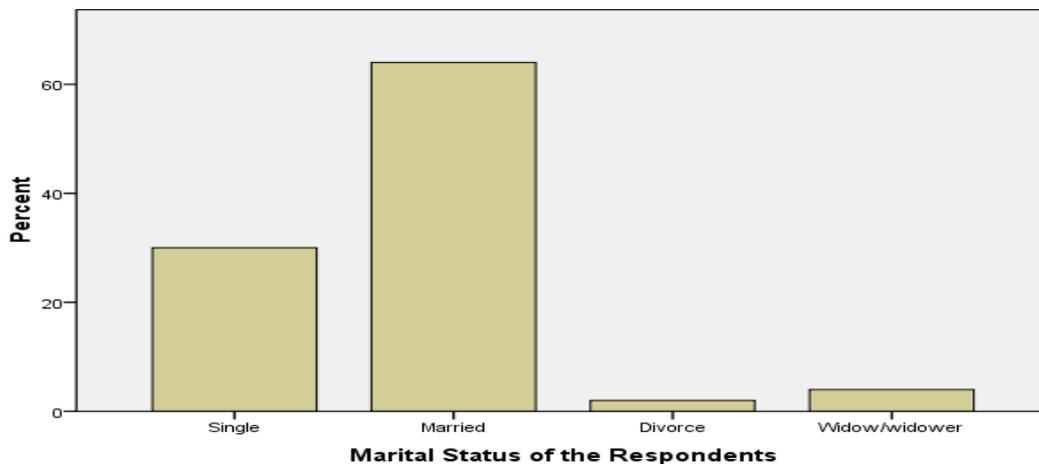
The percentage of the age group (18 – 25) years, (26 – 35) years and (36 – 45) years were 10%, 48% and 42% respectively. The age of the most of the respondents participated in this survey lies between 26 and 45 years of age. However, this project revealed that the percentage of the age group (26 – 35) years is more than that of others age groups on the importance, problems and strategies of Old Oyo National Park in Nigeria with the highest percentage of 48% (see Table 4.2 and Figure 4.2).

**Table 4.3: Marital Status of the Respondents**

		Frequency	Percent
Valid	Single	30	30.0
	Married	64	64.0
	Divorce	2	2.0
	Widow/widower	4	4.0
	Total	100	100.0

Source: 2022 Field Survey

**Marital Status of the Respondents**



**Figure 4.3: Simple Bar Chart for the Marital Status of the respondents**

The percentages of the marital status of the respondents on the importance, problems and strategies of Old Oyo National Park in Nigeria for Single, Married, Divorce and Widow/widower were 30%, 64%, 2% and 4% respectively. Therefore, this project revealed that most of the respondents participated in the research work were married respondents with about 64% (see Table 4.3 and Figure 4.3 above).

**Table 4.4: Education Qualification of the Respondents**

		Frequency	Percent
Valid	OND/NCE	22	22.0
	HND/B.Sc.	72	72.0
	M.Sc.	6	6.0
	Total	100	100.0

Source: 2022 Field Survey

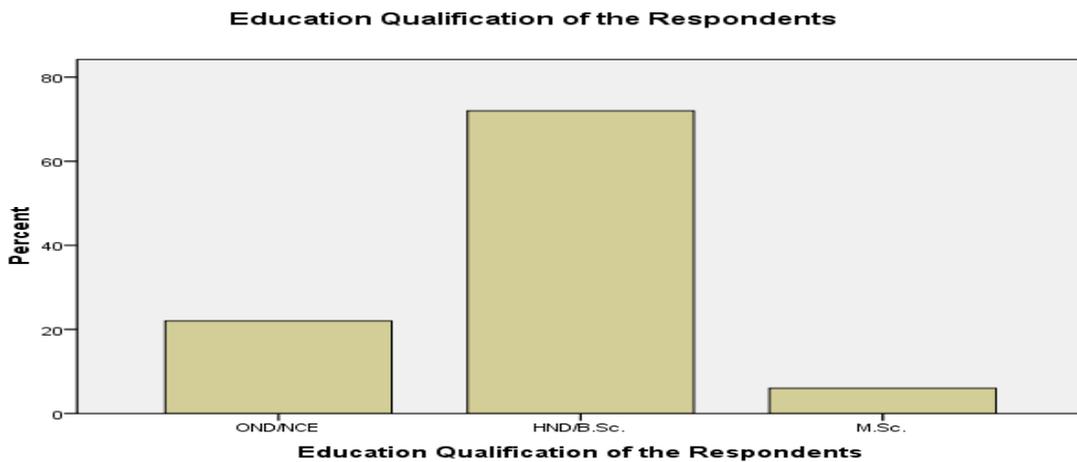


Figure 4.4: Simple Bar Chart for the Educational Qualification of the respondents

The percentages of Education Qualification of the respondents on the importance, problems and strategies of Old Oyo National Park in Nigeria for OND/NCE, HND/B.Sc. and M.Sc. were 22%, 72% and 6% respectively. Therefore, this research work revealed that most of the HND/B.Sc. holders participated in the survey (see Table 4.5 and figure 4.4).

Table 4.5: Working Experience of the Respondents

		Frequency	Percent
Valid	Below 5 Years	40	40.0
	5-10 Years	40	40.0
	11-15 Years	16	16.0
	15 Years above	4	4.0
	Total	100	100.0

Source: 2022 Field Survey

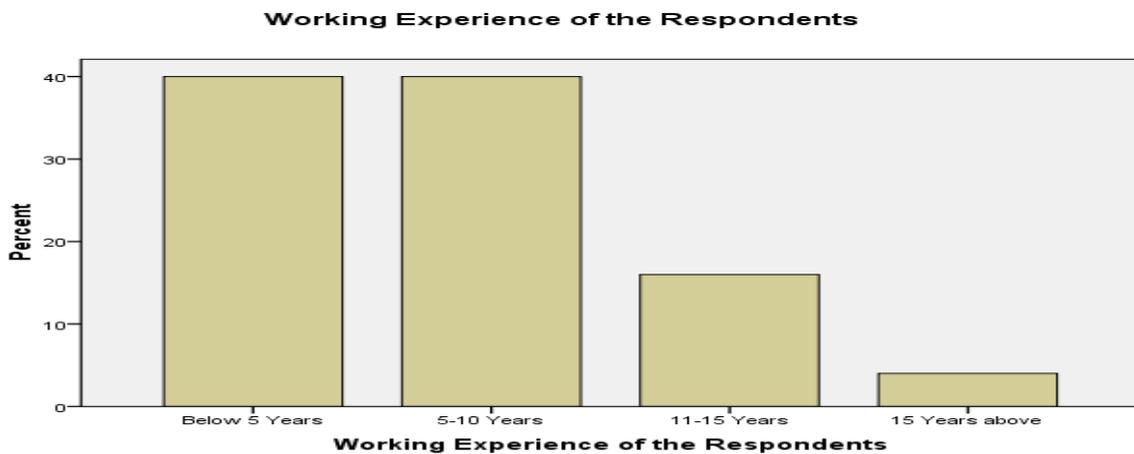


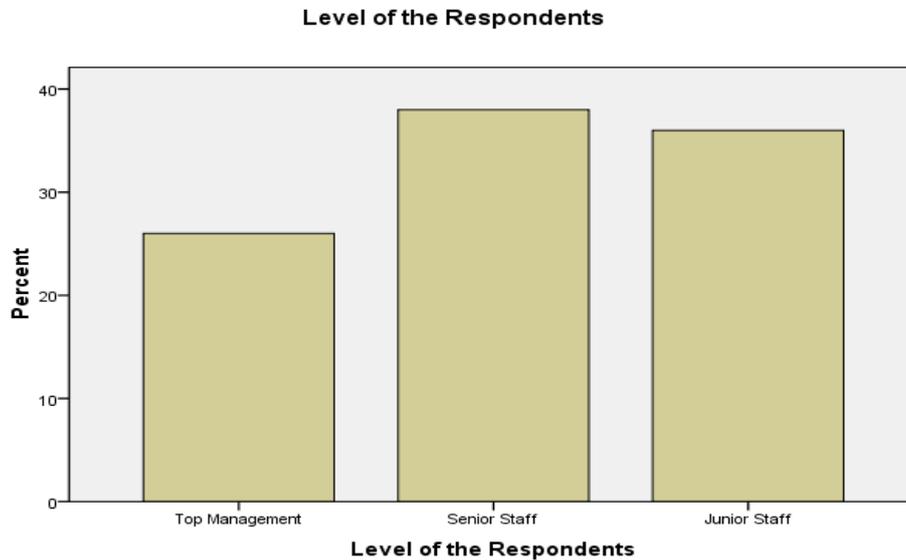
Figure 4.5: Simple Bar Chart for the working experience of the respondents

The percentages of the years of experience of the workers at Old Oyo National Park in Nigeria for below 5 years, 5-10 years, 5 – 10 years, 11 – 15 years and 15 years and above were 40%, 40%, 16% and 4% respectively. Therefore, this research work revealed that, the most experience workers at Old Oyo National Park in Nigeria are those that have worked between 0-10 years (see Table 4.5 and figure 4.5).

**Table 4.6: Level of the Respondents**

		Frequency	Percent
Valid	Top Management	26	26.0
	Senior Staff	38	38.0
	Junior Staff	36	36.0
	Total	100	100.0

Source: 2022 Field Survey



**Figure 4.6: Simple Bar Chart for the Level/Post Status of the respondents**

The percentages of the level/post status of the workers at Old Oyo National Park in Nigeria for the Top Management, Senior Staff and Junior Staff were 26%, 38% and 36% respectively. Therefore, this project revealed that most of the workers at Old Oyo National Park in Nigeria are Senior Staff with about 38% while the least workers are the Top Management with the lowest percentage of 26% (see Table 4.6 and Figure 4.6).

**4.2 Analysis of Statistical Data and Test of Hypotheses**

The responses of the 100 health care workers on solid waste disposal methods in Saki-West Local Government were run and analyzed using a Statistical software called Statistical Package for Social Sciences (SPSS). The adopted statistical methodology are Pearson Chi-Square distribution and Fisher’s Exact Test. Also, each research hypotheses were interpreted accordingly based on the probability value popularly known as P-value.

**4.3 Test of the Hypotheses on the Community Conservation Practices in Old Oyo National Park in Nigeria**

**4.3.1 Hypotheses One:**

$H_{o1}$ : There is no significant relationship between the working experience and community conservation (grazing) practice in Old Oyo National Park.

$H_{A1}$ : There is significant relationship between the working experience and community conservation (grazing) practice in Old Oyo National Park.

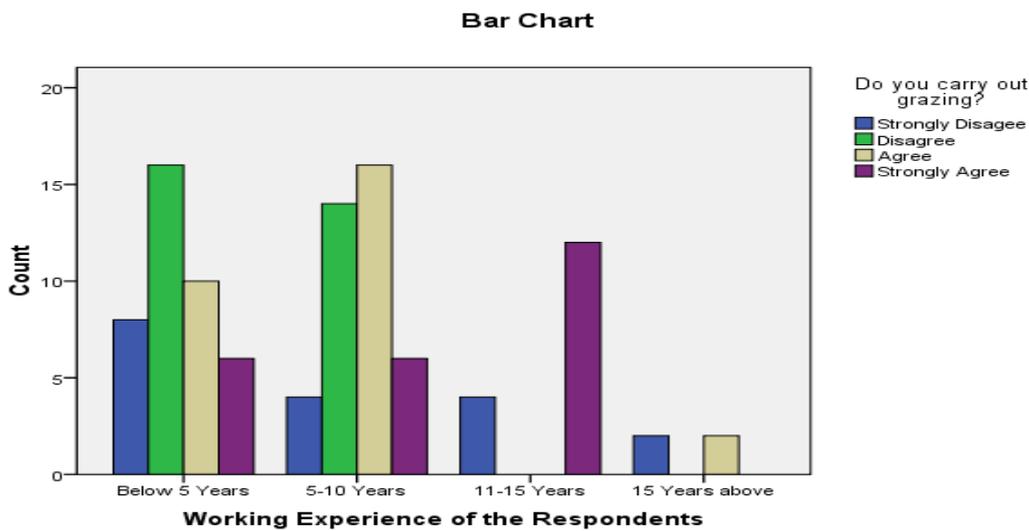


Figure 4.7: Multiple Bar Chart for the responses on hypothesis one of the respondents

Table 4.7: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	40.246 <sup>a</sup>	9	.000
Likelihood Ratio	44.753	9	.000
N of Valid Cases	100		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .72.

Source: SPSS output (1)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{o1}$  if  $P - value > \alpha\%$  ( $Alpha \% = level\ of\ significance$ ). Otherwise do not reject  $H_{o1}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether there is significant relationship between the working experience and community conservation (grazing) practice in Old Oyo National Park. The SPSS results/output (1) above revealed that (Chi-Square value = 40.246, degrees of freedom = df = 9 and p-value = 0.000). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{o1}$ ) and conclude that there is significant relationship between the working experience and community conservation (grazing) practice in Old Oyo National Park at 5% level of significance.

**4.3.2 Hypotheses two:**

$H_{o2}$ : There is no significant relationship between the education qualification and community conservation (fishing) practice in Old Oyo National Park.

$H_{A2}$ : There is significant relationship between the education qualification and community conservation (fishing) practice in Old Oyo National Park.

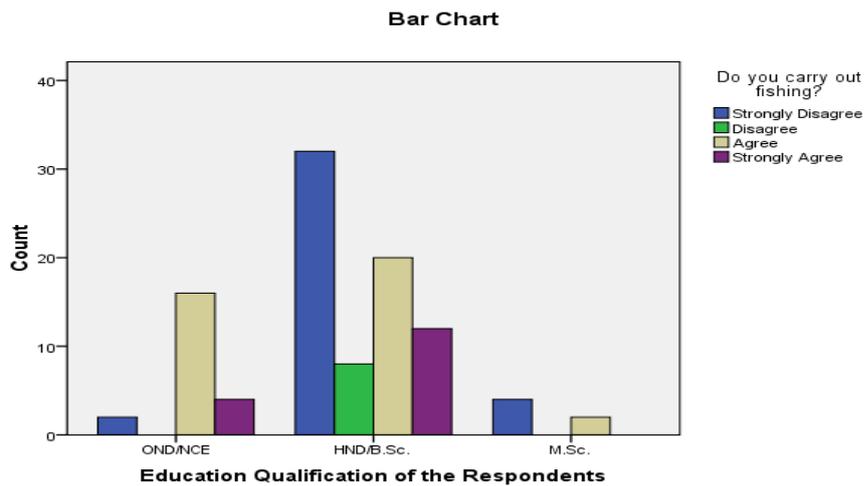


Figure 4.8: Bar Chart for the responses on hypothesis two of the respondents

Table 4.8: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.076 <sup>a</sup>	6	.003
Likelihood Ratio	23.774	6	.001
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .48.

Source: SPSS output (2)<sup>a</sup>Pearson Chi-Square test result.

**Decision Rule:**

Reject  $H_{02}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{02}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether there is significant relationship between the education qualification and community conservation (fishing) practice in Old Oyo National Park. The SPSS results/output (2) above revealed that (Chi-Square value = 20.076, degrees of freedom = df = 6 and p-value = 0.003). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{02}$ ) and conclude that there is significant relationship between the education qualification and community conservation (fishing) practice in Old Oyo National Park at 5% level of significance.

**4.3.3 Hypotheses three:**

$H_{03}$ : There is no significant relationship between the working experience and community conservation (deforestation) practice in Old Oyo National Park.

$H_{A3}$ : There is significant relationship between the working experience and community conservation (deforestation) practice in Old Oyo National Park.

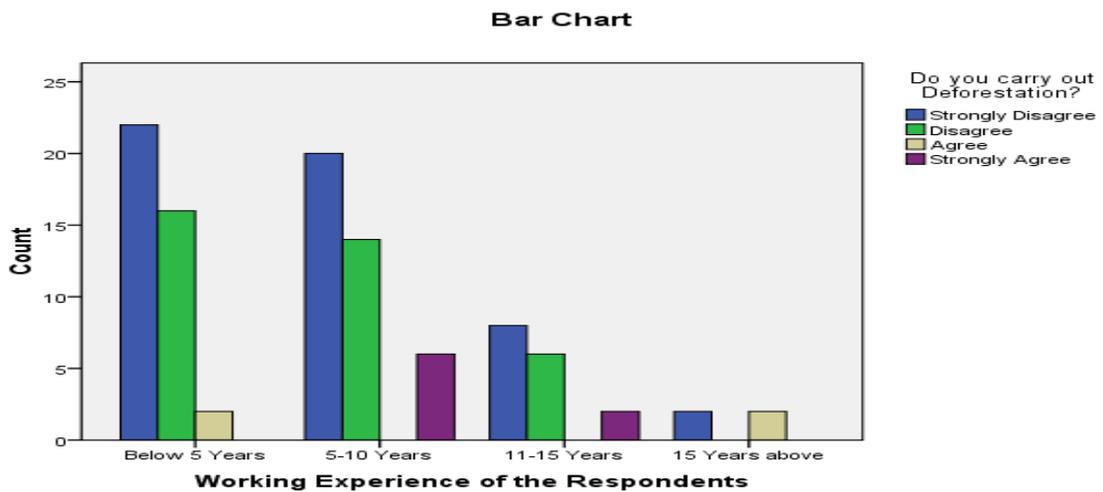


Figure 4.9: Bar Chart for the responses on hypothesis three of the respondents

Table 4.9: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.629 <sup>a</sup>	9	.000
Likelihood Ratio	23.511	9	.005
N of Valid Cases	100		

a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is .16.

Source: SPSS output (3)<sup>Pearson Chi-Square test result</sup>

**Decision Rule:**

Reject  $H_{03}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{03}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether there is significant relationship between the working experience and community conservation (deforestation) practice in Old Oyo National Park. The SPSS results/output (3) above revealed that (Chi-Square value = 31.629, degrees of freedom = df = 9 and p-value = 0.000). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{03}$ ) and conclude that there is significant relationship between the working experience and community conservation (deforestation) practice in Old Oyo National Park at 5% level of significance.

**4.3.4 Hypotheses four:**

$H_{04}$ : There is no significant relationship between the working experience and community conservation (**bush burning**) practice in Old Oyo National Park.

$H_{A4}$ : There is significant relationship between the working experience and community conservation (**bush burning**) practice in Old Oyo National Park.

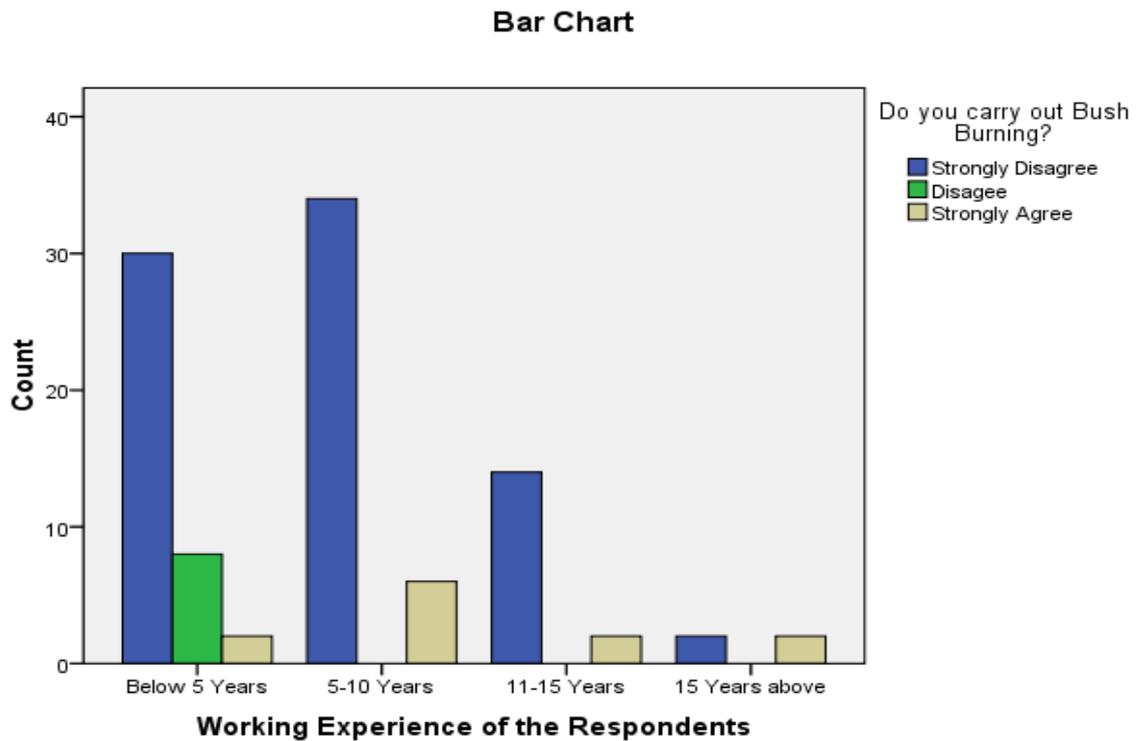


Figure 4.10: Bar Chart for the responses of the respondents on hypothesis four

Table 4.10: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.563 <sup>a</sup>	6	.003
Likelihood Ratio	20.588	6	.002
N of Valid Cases	100		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .32.

Source: SPSS output (4)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{04}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{04}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether there is significant relationship between the working experience and community conservation (**bush burning**) practice in Old Oyo National Park. The SPSS results/output (4) above revealed that (Chi-Square value = 19.563, degrees of freedom = df = 6 and p-value = 0.003). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{04}$ ) and conclude that there is significant relationship between the working experience and community conservation (**bush burning**) practice in Old Oyo National Park at 5% level of significance.

**4.3.5 Hypotheses Five:**

$H_{05}$ : There is no significant relationship between the working experience and community conservation (**honey harvesting**) practice in Old Oyo National Park.

$H_{A5}$ : There is significant relationship between the working experience and community conservation (**honey harvesting**) practice in Old Oyo National Park.

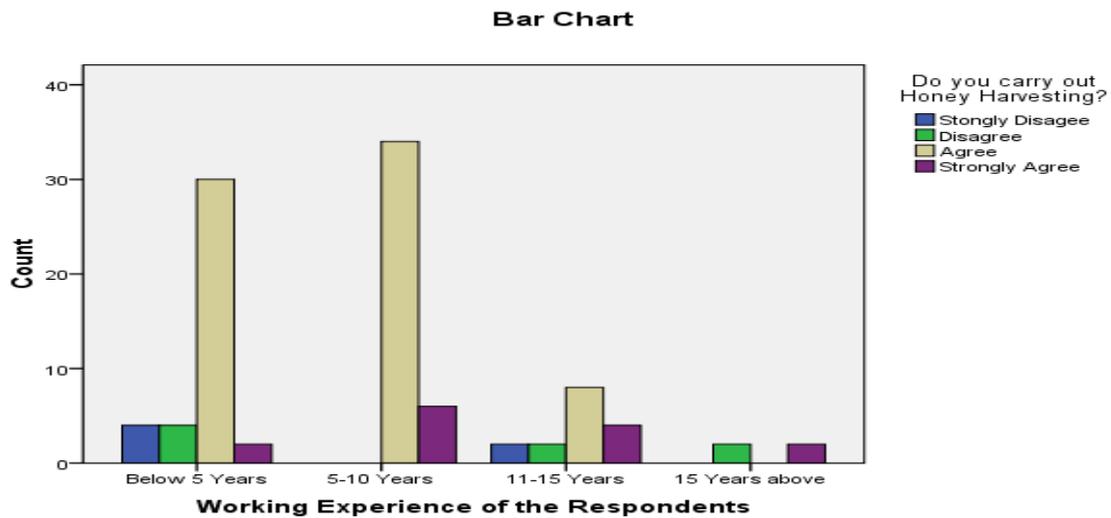


Figure 4.11: Multiple Bar Charts for the responses of the respondents on hypothesis five

Table 4.11: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.831 <sup>a</sup>	9	.000
Likelihood Ratio	32.265	9	.000
N of Valid Cases	100		

a. 11 cells (68.8%) have expected count less than 5. The minimum expected count is .24.

Source: SPSS output (5)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{05}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{05}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether there is significant relationship between the working experience and community conservation (**honey harvesting**) practice in Old Oyo National Park. The SPSS results/output (5) above revealed that (Chi-Square value = 29.831, degrees of freedom = df = 9 and p-value = 0.000). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{05}$ ) and conclude that there is significant relationship between the working experience and community conservation (**honey harvesting**) practice in Old Oyo National Park at 5% level of significance.

**4.4.2 Hypotheses Six:**

$H_{06}$ : There is no significant relationship between the working experience and hunting practice in Old Oyo National Park.

$H_{A6}$ : There is significant relationship between the working experience and hunting practice in Old Oyo National Park.

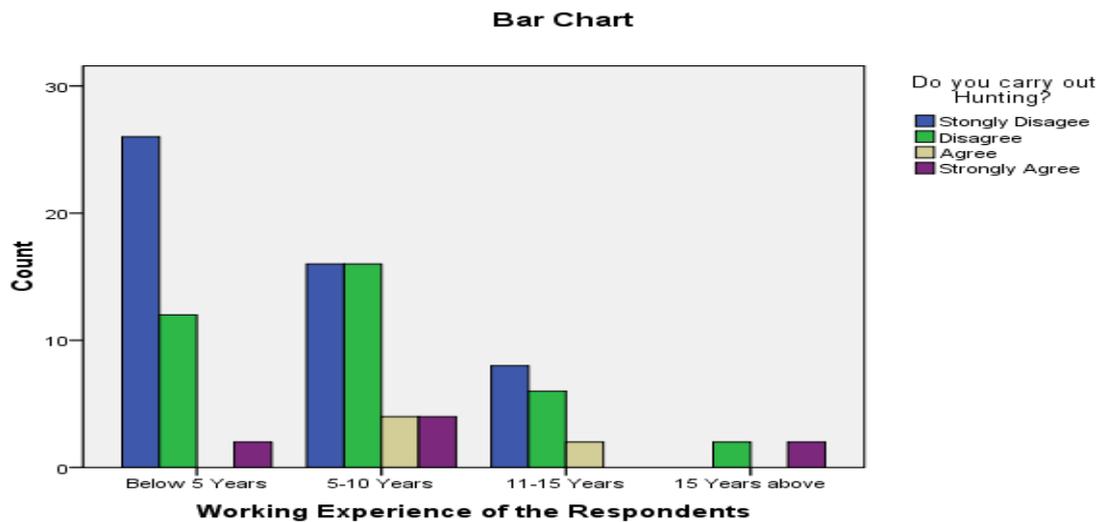


Figure 4.12: Multiple Bar Charts for the responses of the respondents on hypothesis Six

Table 4.12: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.989 <sup>a</sup>	9	.013
Likelihood Ratio	21.560	9	.010
N of Valid Cases	100		

a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is .24.

Source: SPSS output (6)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{06}$  if  $P - value > \alpha\%$  ( $Alpha \% = level\ of\ significance$ ). Otherwise do not reject  $H_{06}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether there is significant relationship between the working experience and hunting practice in Old Oyo National Park. The SPSS results/output (6) above revealed that (Chi-Square value = 21.696, degrees of freedom =  $df = 12$  and  $p\text{-value} = 0.041$ ). Since the  $p\text{-value}$  is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{06}$ ) and conclude that there is significant relationship between the working experience and community conservation (**Hunting**) practice in Old Oyo National Park at 5% level of significance.

**4.4 Test of the Hypotheses on the Problems affecting Biodiversity Conservation of the Old Oyo National Park in Nigeria**

**4.4.1 Hypotheses Seven:**

$H_{07}$ : Non maintenance of equipment is not a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria.

$H_{A7}$ : Non maintenance of equipment is really a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria.

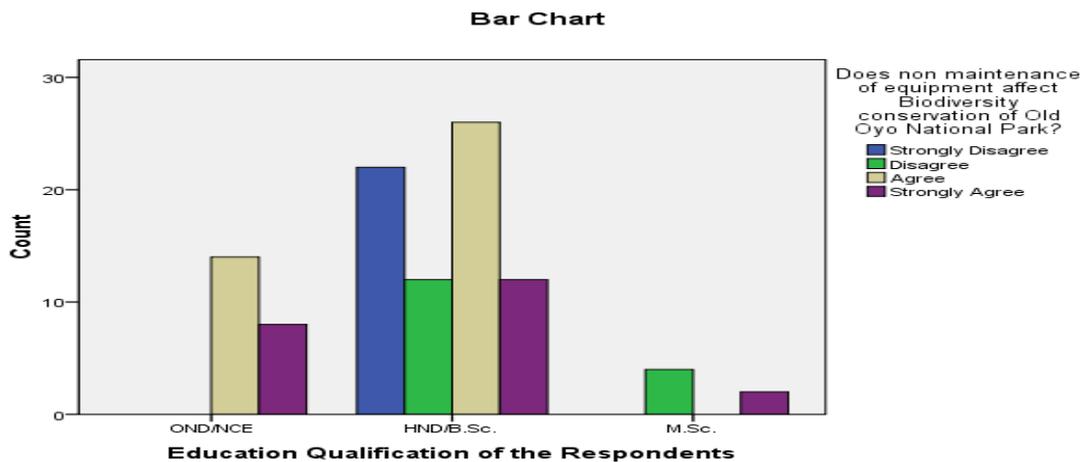


Figure 4.12: Multiple Bar Charts for the responses of the respondents on hypothesis Seven

Table 4.13: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.812 <sup>a</sup>	6	.000
Likelihood Ratio	37.572	6	.000
N of Valid Cases	100		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .96.

Source: SPSS output (7)

**Decision Rule:**

Reject  $H_{07}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{07}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether non maintenance of equipment is really a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria. The SPSS results/output (7) above revealed that (Chi-Square value = 30.812, degrees of freedom = df = 6 and p-value = 0.000). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{07}$ ) and conclude that non maintenance of equipment is really a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria at 5% level of significance.

**4.4.2 Hypotheses Eight:**

$H_{08}$ : Insecurity is not a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria.

$H_{A8}$ : Insecurity is really a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria.

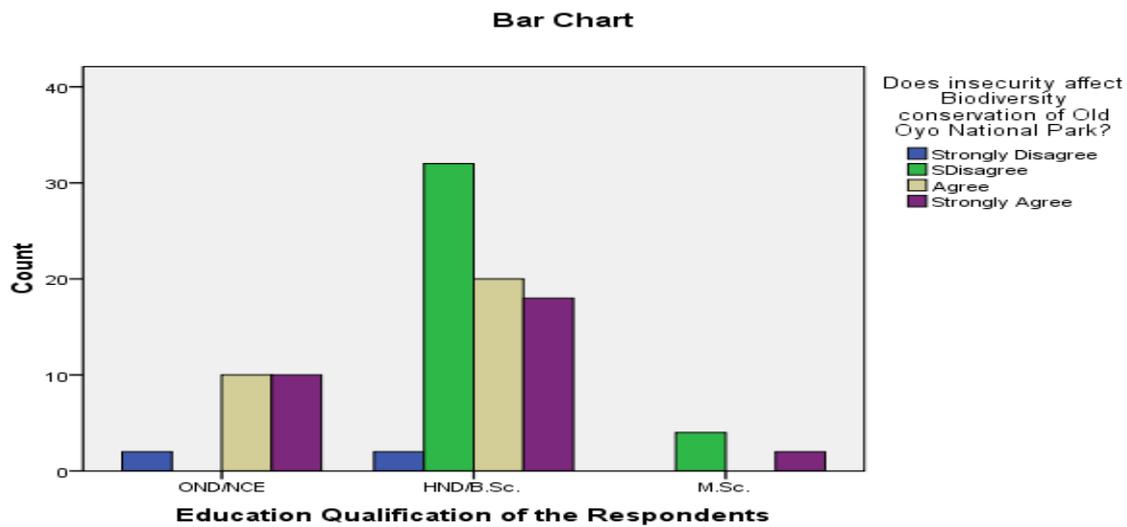


Figure 4.13: Multiple Bar Charts for the responses of the respondents on hypothesis eight

Table 4.14: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.892 <sup>a</sup>	6	.004
Likelihood Ratio	27.641	6	.000
N of Valid Cases	100		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .24.

Source: SPSS output (8)<sup>a</sup> Pearson Chi-Square test result.

**Decision Rule:**

Reject  $H_{08}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{08}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether Insecurity is really a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria. The SPSS results/output (8) above revealed that (Chi-Square value = 18.892, degrees of freedom = df = 6 and p-value = 0.004). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{08}$ ) and conclude that Insecurity is really a significant problem affecting Biodiversity conservation of the Old Oyo National Park in Nigeria at 5% level of significance.

**4.5 Test of the Hypotheses on the Best Conservation Management Practices at Old Oyo National Park in Nigeria**

**4.5.1 Hypotheses Nine:**

$H_{09}$ : Flood mitigation does not help in limiting destruction of crops in the Old Oyo National Park in Nigeria.

$H_{A9}$ : Flood mitigation really help in limiting destruction of crops in the Old Oyo National Park in Nigeria.

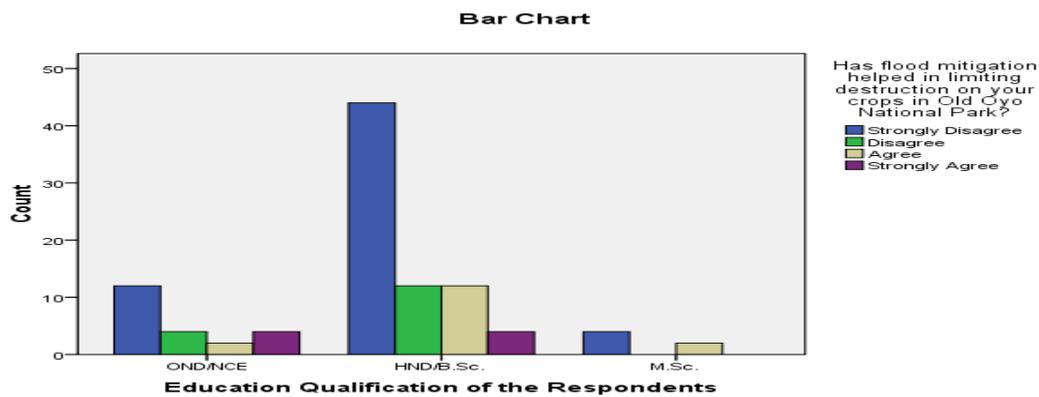


Figure 4.13: Multiple Bar Charts for the responses of the respondents on hypothesis nine

Table 4.15: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.886 <sup>a</sup>	6	.332
Likelihood Ratio	7.478	6	.279
N of Valid Cases	100		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .48.

Source: SPSS output (9)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{09}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{09}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether flood mitigation really help in limiting destruction of crops in the Old Oyo National Park in Nigeria. The SPSS results/output (9) above revealed that (Chi-Square value = 6.886, degrees of freedom = df = 6 and p-value = 0.332). Since the p-value is greater than 0.05 (5%) level of significance, then we do not reject the null hypothesis ( $H_{09}$ ) and conclude that flood mitigation does not help in limiting destruction of crops in the Old Oyo National Park in Nigeria at 5% level of significance.

**4.5.2 Hypotheses Ten:**

$H_{010}$ : Illegal grazing does not influence vegetation cover within the Old Oyo National Park in Nigeria.

$H_{A10}$ : Illegal grazing really influence vegetation cover within the Old Oyo National Park in Nigeria.

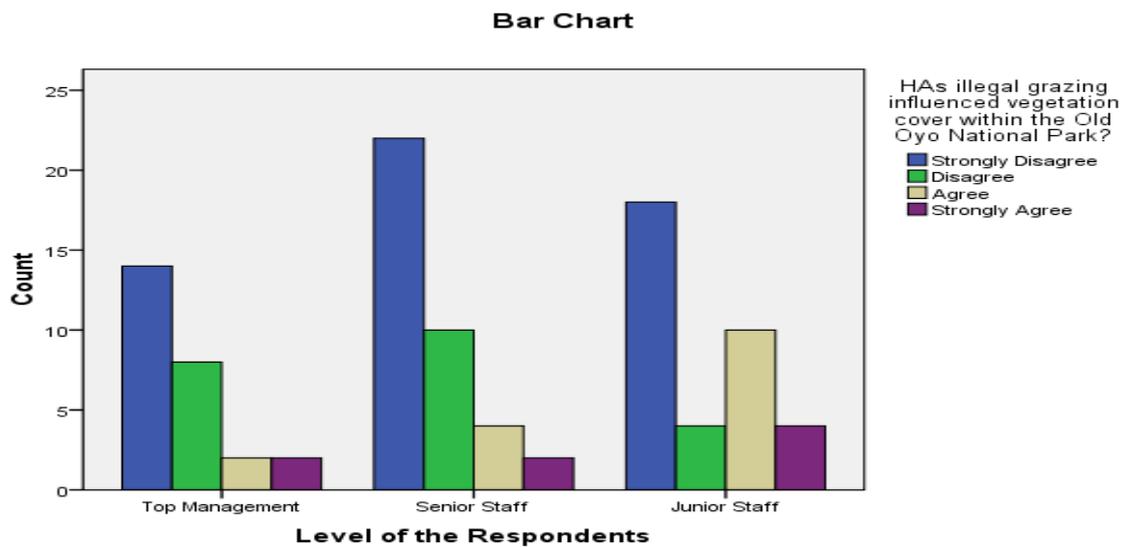


Figure 4.14: Multiple Bar Charts for the responses of the respondents on hypothesis ten

Table 4.16: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.133 <sup>a</sup>	6	.166
Likelihood Ratio	9.249	6	.160
N of Valid Cases	100		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 2.08.

Source: SPSS output (10)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{010}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{010}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether Illegal grazing really influence vegetation cover within the Old Oyo National Park in Nigeria. The SPSS results/output (10) above revealed that (Chi-Square value = 9.133, degrees of freedom = df = 6 and p-value = 0.166). Since the p-value is less than 0.05 (5%) level of significance, then we do not reject the null hypothesis ( $H_{010}$ ) and conclude that illegal grazing does not influence vegetation cover within the Old Oyo National Park in Nigeria at 5% level of significance.

**4.5.3 Hypotheses Eleven:**

$H_{011}$ : Soil erosion does not help in monitoring the flow of water within the Old Oyo National Park in Nigeria.

$H_{A11}$ : Soil erosion really help in monitoring the flow of water within the Old Oyo National Park in Nigeria.

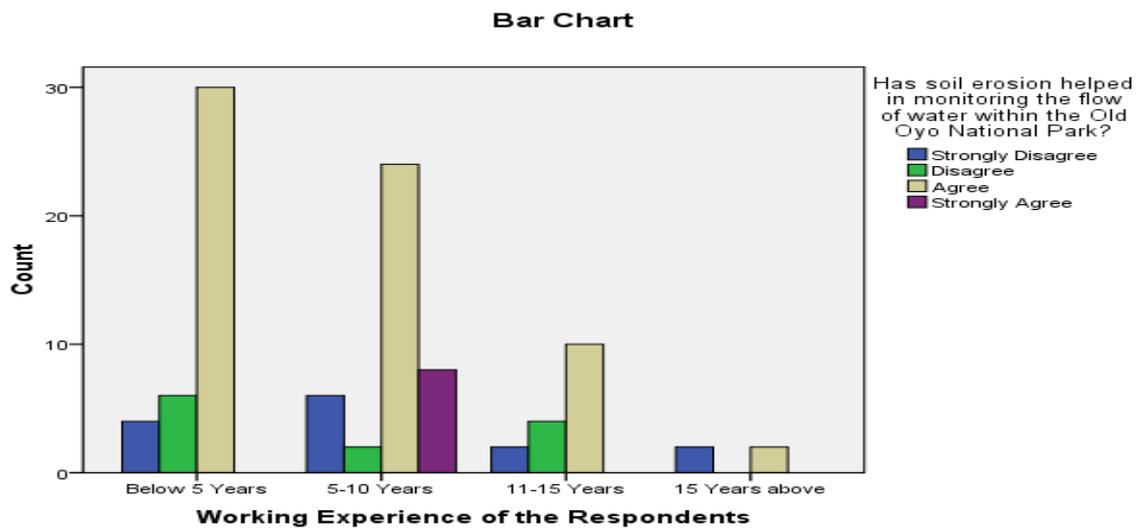


Figure 4.15: Multiple Bar Charts for the responses of the respondents on hypothesis eleven

Table 4.17: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.775 <sup>a</sup>	9	.010
Likelihood Ratio	23.378	9	.005
N of Valid Cases	100		

a. 11 cells (68.8%) have expected count less than 5. The minimum expected count is .32.

Source: SPSS output (11)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{011}$  if  $P - value > \alpha\%$  ( $\alpha\%$  = level of significance). Otherwise do not reject  $H_{011}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether Soil erosion really help in monitoring the flow of water within the Old Oyo National Park in Nigeria. The SPSS results/output (11) above revealed that (Chi-Square value = 21.775, degrees of freedom = df = 9 and p-value = 0.010). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{011}$ ) and conclude that Soil erosion really help in monitoring the flow of water within the Old Oyo National Park in Nigeria at 5% level of significance.

**4.5.4 Hypotheses Twelve:**

$H_{012}$ : Biodiversity does not help in controlling growth and irradiation of invasive species within the Old Oyo National Park in Nigeria.

$H_{A12}$  Biodiversity really help in controlling growth and irradiation of invasive species within the Old Oyo National Park in Nigeria.

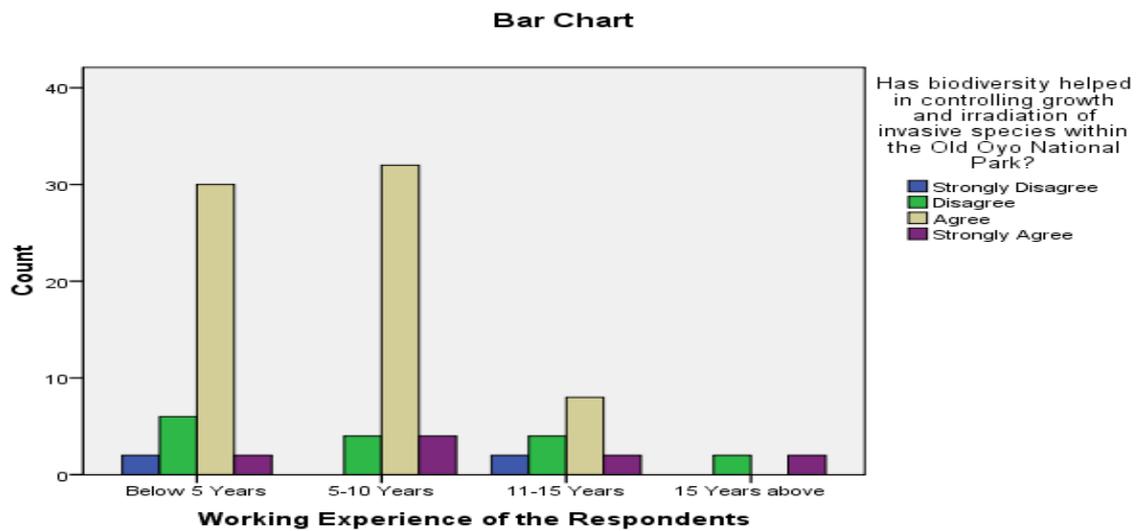


Figure 4.16: Multiple Bar Charts for the responses of the respondents on hypothesis twelve

Table 4.18: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.304 <sup>a</sup>	9	.011
Likelihood Ratio	20.904	9	.013
N of Valid Cases	100		

a. 11 cells (68.8%) have expected count less than 5. The minimum expected count is .16.

Source: SPSS output (12)<sup>Pearson Chi-Square test result.</sup>

**Decision Rule:**

Reject  $H_{012}$  if  $P - value > \alpha\%$  (Alpha % = level of significance). Otherwise do not reject  $H_{012}$ .

**Conclusion:**

The Pearson Chi-Square test of independent was conducted to examine whether Biodiversity really help in controlling growth and irradiation of invasive species within the Old Oyo National Park in Nigeria. The SPSS results/output (12) above revealed that (Chi-Square value = 21.304, degrees of freedom = df = 9 and p-value = 0.011). Since the p-value is less than 0.05 (5%) level of significance, then we strongly reject the null hypothesis ( $H_{012}$ ) and conclude that Biodiversity really help in controlling growth and irradiation of invasive species within the Old Oyo National Park in Nigeria at 5% level of significance.

**V. Conclusion and Recommendations**

**5.1 Conclusion**

In conclusion, National Parks management agencies require new strategies to curb illegal activities in the parks. It is obvious that the traditional measures such as arrest and prosecution of poachers have failed; conservation awareness aimed at changing local attitude will go a long way in reducing incessant attack on the integrity of biological systems in our Parks. If people ignore the need for wildlife preservation, the endangered species will be extinct, this happen when human being is out to lose much of great value that can hardly be replace. It offers employment and also produced product of inestimable value as hides, skin, fur, pharmaceutical product among other.

**5.2 Recommendations**

It hereby recommended that:

1. Establishment of income generating projects for the inhabitants of the surrounding protected areas. Most of the factors leading to encroachment of the protected areas are not unconnected with economic reasons. The economically impoverished communities cannot be expected to be interested in conservation while their basic subsistence needs have not been met. Hence, efforts should be made to improve their socio economic well-being in order for them to be comfortable to be interested in resources conservation.

2. The development needs of the local community should be met from alternative sources; when there are alternative sources of income on which people can sufficiently depend, then, there may likely be no need to tap illegally from the conserved resources, and this will lessen their impacts on the resources to be conserved.
3. The indigenes of the areas surrounding the park should be involved in the planning and management of resources and should also be made to benefit therefrom. This can be achieved through employing the indigenes as guards and training them as conservation agents.
4. Adequate financial assistance from both government and non-governmental organizations should be forthcoming for conservation programmes. Part of this can be utilized to empower the inhabitants of the area, so as to reduce pressure on the forest resources.

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