

INCORPORATING COLLABORATION AND MOTIVATION FOR EFFECTIVE
MANAGEMENT OF PROTECTED AREAS IN NIGERIA

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INCORPORATING COLLABORATION AND MOTIVATION FOR EFFECTIVE
MANAGEMENT OF PROTECTED AREAS IN NIGERIA

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DEDICATION

Specially dedicated to my parents *Hassan Modibbo* and *Fadimatu Hassan*, my wife
Hadiza Ahmed and my Children Muhammad, Fadimatu and Zainab.

May Almighty Allah reward you abundantly.

Ameen

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ABSTRACT

Protected areas are areas of high ecological diversity, often associated with environmental, social and economic benefits at both local and global scales. To date, the International Union for Conservation of Nature (IUCN) framework has been applied to manage protected areas. In Nigeria, there are over a thousand protected areas. However, most of these areas are continuously managed without considering the aspect of local communities, which result in ineffective management. Poorly motivated managers/rangers of protected areas have also affected the quality of management. Therefore, the research is aimed at extending the IUCN framework for protected area management by collaborating with the local communities and enhancing the role of managers. Using mixed method research design, questionnaires were administered to 191 managers/rangers from 3 protected areas namely Yankari, Lame-Burra and Sumu; 300 respondents from six communities located close to the protected areas; interview with 5 key informants; and field observation. Structural Equation Modelling was used in analysing data collected from managers/rangers; while differences in viewpoint of the communities were determined using Chi-Square. The overall perception of managers/rangers of the protected areas indicate that, collaboration has direct and significant influence, while motivation has direct but insignificant influence on protected area management. Communities that benefited from the establishment of the protected areas tend to have more interest in the management of the protected areas, and willing to accept management responsibilities. Based on the identified variables, the research developed a model for effective management of protected areas, and a framework within which local communities can be incorporated in management of the protected areas. The research further recommends the use of this empirical evidence by decision-makers in re-aligning management policies, and implementation of management programmes.

ABSTRAK

Kawasan perlindungan merupakan kawasan yang mempunyai kepelbagaian ekologi yang tinggi dan seringkali dikaitkan dengan pelbagai kebaikan alam sekitar, sosial dan ekonomi pada skala tempatan dan global. Sehingga kini, rangka kerja *International Union for Conservation of Nature (IUCN)* telah digunakan untuk mengurus kawasan perlindungan. Di Nigeria terdapat lebih seribu pelbagai jenis kawasan perlindungan. Bagaimanapun, kebanyakan kawasan ini diurus tanpa mengambilkira aspek penglibatan komuniti tempatan yang tinggal di kawasan sekitar menyebabkan pengurusan tidak cekap. Pengurus/renjer kawasan perlindungan yang mempunyai motivasi yang lemah juga menjejaskan kualiti pengurusan. Justeru, kajian ini bertujuan untuk meluaskan rangka kerja IUCN untuk kawasan perlindungan dengan menggabungkan kerjasama komuniti setempat dan meningkatkan peranan pengurus/renjer. Kajian ini menggunakan kaedah rekabentuk penyelidikan bercampur, menggabungkan soal selidik terhadap 191 pengurus/renjer dari tiga kawasan rezab hidupan liar iaitu Yankari, Lame-Burra dan Sumu, kajian persepsi ke atas 300 responden dari enam komuniti setempat, temubual bersama lima pemberi maklumat utama serta tinjauan lapangan. Permodelan Persamaan Berstruktur telah digunakan untuk menetapkan pembolehubah yang mempengaruhi keberkesanan pengurusan kawasan kajian. Perspektif pengurus/renjer secara umumnya mendedahkan bahawa, kolaborasi mempunyai pengaruh langsung, positif dan signifikan manakala motivasi mempunyai pengaruh langsung namun tidak signifikan terhadap pengurusan kawasan perlindungan. Kajian juga menemukan bahawa komuniti tempatan yang menerima faedah daripada penubuhan kawasan perlindungan mempunyai lebih banyak kepentingan dalam pengurusan kawasan perlindungan, dan lebih bersedia menerima tanggungjawab untuk sama-sama mengurus kawasan tersebut. Kajian ini membangunkan model berdasarkan pembolehubah yang dikenalpasti bagi pengurusan kawasan perlindungan yang efektif dan juga rangka kerja di mana masyarakat setempat boleh dilibatkan di dalam pengurusan kawasan perlindungan. Kajian turut mengesyorkan bahawa penggunaan bukti empirikal ini perlu digunakan oleh pembuat keputusan bagi menyusun semula dasar pengurusan dan pelaksanaan program pengurusan.

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

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LIST OF ABBREVIATIONS

AMOS	-	Analysis Moment of Structures
AVE	-	Average Variance Extracted
CBO	-	Community-Based Organizations
CFI	-	Comparative Fit Index
CL	-	Collaboration
CPMDF	-	Chief Personnel Manager, Department of Forestry
CR	-	Critical Region
CT	-	Context
EC	-	European Commission
EFA	-	Exploratory Factor Analysis
FAO	-	Food and Agriculture Organization
FEPA	-	Federal Environmental Protection Agency
GDP	-	Gross Domestic Product
GMLBGR	-	General Manager, Lame-Burra Game Reserve
GMSWP	-	General Manager, Sumu Wildlife Park
HPYGR	-	Head of Protection, Yankari Game Reserve
IN	-	Input
IUCN	-	International Union for Conservation of Nature
KMO	-	Kaiser-Meyer-Olkin
LBGR	-	Lame-Burra Game Reserve
MI	-	Maximum Likelihood
MLE	-	Maximum Likelihood Estimation
MT	-	Motivation
NCF	-	Nigeria Conservation Foundation
NFI	-	Normed Fit Index
NGO	-	Non-Governmental Organization
NPE	-	National Policy on Environment

NPS	-	National Parks Service
OP	-	Output
OC	-	Outcome
P	-	Probability Value
PA	-	Protected Area
PAME	-	Protected Area Management Effectiveness
PCA	-	Principal Component Analysis
PCFI	-	Parsimonious Comparative Fit Index
PL	-	Planning
PMWCS	-	Project Manager, World Conservation Society
PNFI	-	Parsimonious Normed Fit Index
PPA	-	Program on Protected Areas
PR	-	Process
RMSEA	-	Root Mean Square Error of Approximation
SEM	-	Structural Equation Modelling
SRMR	-	Standardized Root Mean Square Residual
SWP	-	Sumu Wildlife Park
TLI	-	Tucker-Lewis Index
UNCSD	-	United Nations Conference on Sustainable Development
UNEP	-	United Nations Environment Programme
WCMC	-	World Conservation Monitoring Centre
WCPA	-	World Commission on Protected Areas
WDPA	-	World Database on Protected Areas
WWF	-	World Wide Fund
YGR	-	Yankari Game Reserve

LIST OF SYMBOLS

H_1	-	Alternate hypothesis
H_0	-	Null hypothesis
Ha	-	Hectares
Km	-	Kilometre
%	-	Percentage
°	-	Degree
'	-	Minutes
p		Probability
df	-	Degree of freedom
e_x	-	Error Measurement
	-	Latent Construct
	-	Observed Variable
	-	Effect
	-	Correlation
*	-	Significant at 95% significance level
**	-	Significant at 99% significance level
***	-	P-value significance
<-->	-	Correlation/relationship
<	-	Less than
>	-	Greater than

LIST OF APPENDICES

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The concept of creating protected areas is a strategy for conservation of natural resources of significant value; meet social needs; economic benefits and maintains natural services, through effective management. Protected area can be defined as “*a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*” (Leverington *et al*, 2008). Worldwide, the number of protected areas keeps increasing both in number and size. There are over 200,000 protected areas across the globe (Juffe-Bignoli *et al*, 2014; IUCN and UNEP-WCMC, 2012). They inhabit the most productive and valuable ecosystems; ensure delivery of goods and services for the support of human health; safety through protection from disasters; and welfare through provision of food/forest products (Thompson and Hollis, 1995; Carney *et al*, 2014; Giri *et al*, 2015). The growth in number and size of protected areas results to increasing concern about their management by national and international bodies. The International Union for Conservation of Nature (IUCN) is among the leading international bodies that play significant role in protected area management, to an extent of developing a framework for protected area management in 2006 (Hockings *et al*, 2006). The framework focuses on six elements of protected area management namely: context, planning, input, process, output, and outcome. The framework has in the last decade become protected area management theory for effective management and governance of the areas.

Effective management of protected areas plays significant role in maintaining the natural setting and sustain services offered by the natural systems, depending on the category of the area. Also, the areas are managed to ensure sustainability of their benefits. Protected area management effectiveness has gained global recognition as the IUCN have developed a framework for assessing management effectiveness of protected areas across the globe (Hockings, *et al*, 2006; Leverington *et al*, 2010; Addison *et al*, 2015). However, application of the framework seems to be difficult/not suitable across all countries due to disparities in protected area category; nature of resources available; threats; people; environment; and local setting across the countries of the globe.

In Nigeria, protected areas exist in form of national parks, game reserves, game sanctuary, nature reserves, forest reserves, and wetlands. They are managed for the purpose of conservation of unique and valuable natural resources; maintain natural services; and sustaining human communities (Hassan *et al*, 2015; Watson *et al*, 2014; Marguba, 2003). Several government policies and legislation in Nigeria such as Decree No. 46 of 1979, Decree No. 36 of 1991, and Decree No. 46 of 1999 were put in place to ensure effective management of protected areas. In addition, a number of institutions such as the Department of Forestry, Ministry of Environment, Ministry of Culture and Tourism, the National Parks Service, the Federal Environmental Protection Agency (FEPA) were established; and programmes such as the Support Zone Community Development were set up to ensure proper planning, management, and sustainability of these areas.

However, most of the management policies and programmes are not able to yield expected outcome (Marguba, 2003). Similarly, due to the involvement of more than one agency in the management of these protected areas, it is sometimes difficult to state clearly responsibilities of each of the agencies in managing the protected areas. For instance, the Federal Environmental Protection Agency in its Decree No 59 (1992) indicates that, it is its responsibility to protect and manage the environment (biodiversity and other natural resources) through comprehensive national policy and prepare master plans for managing these natural resources; the National Parks Service have mandated all protected areas to prepare management plans; however, most of the protected areas do not have management plans that guides protection and

management activities. This has resulted in poor management of protected areas. They are continuously threatened by human activities (Thompson and Hollis, 1995; Imasuen *et al*, 2013; Oduntan *et al*, 2013).

Previous studies reveal that collaboration plays a significant role in environmental management (O’Riordan 1989; Nursey-Bray and Rist 2009; Dixon and Dougherty, 2010; Ezebilo and Mattsson 2010). This is through the involvement of affected parties in planning and management process as well as dialogue. Collaboration has long been a technique for achieving environmental goals, however, in Nigeria, collaboration with local communities in managing protected areas is lacking. The effectiveness of protected area management improves with an increase in the involvement of local communities in the management process (Ezebilo and Mattsson 2010); since the protected areas are located in human-dominated areas. In Nigeria, protected areas are surrounded by a number of communities; for example, there are over 200 communities located within 1-5km radius of the Yankari Game Reserve boundary (Aaron, 1993). Therefore, collaborating with the communities around protected areas through negotiation, shared responsibility; and understanding can yield better management outcome.

Similarly, motivation is also an important factor that needs to be considered in protected area management. Studies in the field of environmental resource management have indicated that motivation is important in achieving environmental success (Cetas and Yasue, 2015). In Nigeria, Protected area managers are not properly motivated. A study conducted by Ogunjinmi *et al* (2008) on factors affecting job satisfaction among rangers in Yankari game reserve reveals that, 87.5% of the rangers were dissatisfied with their professional job as ranger, and 92.5% of the rangers were poorly motivated, where the rangers’ earning is small, they are denied further training, and forced to work in environment that lack facilities aiding management. Protected area managers/rangers need to get good pay and incentives such as best performance, arrest-bonus, that can motivate them and increase their performance in management and patrol activities. This is important because human-environment interaction cannot be avoided and protected areas are located in human-dominated areas where communities are located next to protected area boundary or

within a short distance to the protected areas, which subject the areas to several threats and pressure by the people.

Therefore, the primary aim of this study is to provide in-depth understanding and explanation of the role of collaboration with local communities and staff motivation with respect to IUCN framework for the purpose of achieving effective management of protected areas in Nigeria. The study integrates elements of collaboration and motivation into the IUCN framework. The extended model intends to estimate the influence of collaboration and motivation on protected area management effectiveness using Analysis of Moment of Structures (AMOS), which is a multivariate analysis technique of testing a hypothesized model.

1.2 Problem Statement

The 20th century has witnessed a significant increase in the number of protected areas, with over 200,000 protected areas across the world, covering 28.4 million km² (Watson *et al*, 2014); with several local and global importance (Hockings *et al.*, 2006). This led to the establishment of agencies purposely to manage these areas. Similarly, several international agencies such as the International Union for Conservation of Nature (IUCN), World Wide Fund (WWF) for Nature are concerned with managing protected areas around the world due to their global importance. In Nigeria, investment in protected area management also continues to increase, as both governmental and non-governmental organizations contribute funds, equipment, facilities, and personnel for managing protected areas. Yet, these areas are poorly managed and continuously threatened by the activities of humans who are either from the local communities surrounding these areas or from far distance (USAID, 2008; Mohammed *et al*, 2010; Usman and Adefalu, 2010). These threads are in form of firewood collection, logging, hunting as well as encroachment into the areas for the purpose of agriculture. This is due to their location in areas surrounded by several communities. Input in protected areas for better management is lacking. Studies indicate that countries in some cases are

unable to provide adequate resources, funding and staff needed to perform effective management of protected areas (Watson *et al*, 2014).

Previous studies revealed that protected areas in Nigeria are continuously de-reserved (Osemeobo, 1990); illegal use of land and exploitation of protected area resources becomes a common practice (Carey *et al*, 2000; FAO, 2010); habitat loss and encroachment (Mulongoy and Chape 2004; Ogunjinmi *et al*, 2009; Mohammed *et al*, 2010). Dearden *et al* (2005) emphasized that, increasing the number of protected areas is not enough, but proper management to ensure that they are effectively managed. A study conducted by Leverington *et al* (2010) on ‘Global Analysis of Protected Area Management Effectiveness’ reveals that 42% of the areas included in the study are associated with major deficiencies, and therefore calls for more assessment of protected area management. The findings of Leverington *et al* (2010) indicating major deficiencies is based on a meta-analysis of previous studies conducted and additional records of protected area management effectiveness around the world from both governmental and non-governmental organizations across the world; where 4,092 assessments were conducted in 3,038 protected areas using 14 different methodologies in determining the effectiveness of protected area management. Based on the rigor of the study and its coverage, their conclusion on major deficiencies may be justified. Therefore, there is need to conduct more assessments to provide an in-depth understanding of protected area management effectiveness, particularly in sites that have not undergone assessment. Similarly, researchers revealed that only 20-50% of the protected areas assessed were qualified as effectively managed (Laurance *et al*, 2012; Leverington *et al*, 2010; and Blom *et al*, 2004).

Although the IUCN has developed a framework for assessing protected area management effectiveness (Hockings *et al*, 2006), few protected areas use the framework to determine their management effectiveness. Kolahi *et al* (2013) in Iran, and Leverington *et al*, (2010) in selected protected areas across the globe. The lack of utilization of the IUCN framework could be due to its one size fits all approach. This is not realistic, as there are disparities in local settings, nature, and level of awareness of the local/indigenous people surrounding the protected areas and

requirement for protected area management in different countries. Different regions of the world have peculiar problems related to protected area management.

In Nigeria, the number of protected areas increased from 1 in 1899 (Lowe, 1984) during the colonial period to 800 in 1980 (two decades after independence) and reached 1021 in 1999 (after becoming democratic state) (Appendix D) (Hassan *et al.*, 2015; Deguignet, 2014; USAID, 2008; Nigeria First National Biodiversity Report; 2001; Oladipo *et al.*, 2001; Olaleye and Ameh, 1999 and IUCN, 1998), distributed across the country. The primary aim of establishing these protected areas in Nigeria is for the purpose of conservation of valuable environmental resources, tourism and recreation, research/education and propagation of wildlife through effective management (Osemeobo, 1990; Gbadegesin and Ayileka, 2000).

Protected areas in Nigeria are poorly managed (Usman and Adefalu, 2010; Wildlife Conservation Society, 2012-2016; USAID 2008) and lack of required protection in terms of training, patrol, enforcement (USAID 2008). Biodiversity loss in Nigeria is at an alarming rate, and it is the combination of both human activities and managerial problems (Fourth National Biodiversity Report, 2010). It has been estimated that 10% of the total land area designed as protected areas in Nigeria are not able to achieve the target of conserving their 25% total landmass (Ite, 1998). Similarly, according to FAO (2010), Nigeria is ranked third in the world that loses its forest resources, with a rate of -3.7% annual net loss between 2000-2010, and protected areas are where the concentration of these resources are found. The Global Environment Facility (2002) states that protected areas in Nigeria are not effectively managed and their support zones are becoming threats to the areas. Environmental degradation has increased in many sites, illegal and extensive use of land, as well as unsustainable exploitation of protected area resources becomes a common practice (Federal Government of Nigeria, 2012; Fourth National Biodiversity Report, 2010; Ite, 1996; Carey *et al.*, 2000; Osemmeobo, 1990, 2001; Mohammed *et al.*, 2010; Wildlife Conservation Society, 2012-2016; USAID, 2008; FAO, 2010; Mulongoy and Chape 2004; Ogunjinmi *et al.*, 2009).

To date, little if not nothing is known about the management of protected areas and their ability to achieve effective management in Nigeria, as empirical

research in this field is lacking and also management records from agencies responsible for managing these protected areas are lacking. Protected areas management effectiveness is still at infancy level (Watson *et al*, 2014). There is no empirical research that focused on developing a model for effective management of protected areas that is suitable for the local setting in Nigeria. Lack of evidence on the effective management of protected areas in Nigeria has been raised by (Mulongoy and Chape, 2004); the need for a novel model for effective management of protected areas has been emphasized by (Watson *et al*, 2014).

Previous studies highlighted that collaboration with local communities in protected area management yields better outcome, successful management, and sustainability of the areas (Hyakumura, 2010; Berkes, 2010; Lockwood, 2010; Vodouhe *et al.*, 2010; Davies and White, 2012); resolves conflicts between local communities surrounding the areas and the managers, as well as ensuring equitable partnership between the two parties (Berkes, 2009; Nursey-Bray and Rist, 2009; Berkes, 1991; Parr *et al*, 2008; Ezebilo and Mattsson, 2010; Gray, 1989). Similarly, a study conducted by Nielsen (2012) on ‘Capacity Management in Protected Area Management’ that involves 832 protected areas from 24 countries indicates that collaboration in the management of protected areas contributes to the success of the areas. Malaysia, for example, is one of the countries that have been successful in collaborating with NGOs, research institutions, local business, tourism agencies and maintaining a cordial relationship with local communities (Nielsen, 2012). Kurdoglu and Cokcaliskan (2011) and Neilsen (2012) emphasize that non-involvement of local communities in planning and management process of protected areas can lead to more conflict. Watson *et al* (2014) indicated a need to come up with a novel model that collaborates with local communities for effective protected areas. By collaborating with the local communities and other affected parties, the responsibilities of management shift from government or managers to all parties involved (collective responsibility). Due to the significance of collaboration in protected area management, it becomes necessary to integrate it into the IUCN framework so as to ensure effective management of protected areas in Nigeria. This is to overcome the problems of ineffective management of protected areas.

Similarly, studies focusing on the incorporation of psychological needs, particularly motivational values in protected area conservation and management are lacking (Cetas and Yasue, 2015). There has been call by researchers to extend researchers that integrate human dimension and environment (Lemieux *et al*, 2012; Ruiz-Mallén *et al*, 2015; Mascia 2002; Adams, 2007). However, the few motivations studies conducted in the field of protected area management are not focused staff motivation, but on surrounding communities to reduce their adverse effects on the protected areas (Cetas and Yasue, 2015). The view of this study is that, the motivation of protected area managers should not be over looked because the nature of job is different from other public jobs. There are a lot of risks associated with the job, it is time-consuming and skills are required to carry out management activities. Therefore, it is good to consider staff motivation for better performance of the managers.

Maslow (1954) emphasized that human needs such as shelter, self-esteem, and safety should be met to enable the person to carry out his duties effectively; thereby adding that, depriving human needs for a long period of time can lead to regression. An aspect of motivation, particularly motivating rangers during the course of conducting their primary responsibility of management can contribute significantly to improving their performance at work. While neglecting staff motivation can subsequently result to connivance with those carrying out illegal activities, thereby leaving the protected areas at the threatened end, as well expose ineffectiveness in the management of the areas. Lack of staff motivation can lower managers' performance and is a major setback towards the achievement of effective management of protected areas.

The IUCN framework has been the model for protected area management (Hockings *et al*, 2006; Leverington *et al*, 2008; 2010). However, it lacks two fundamental elements namely: collaboration between protected area managers/rangers and members of local communities surrounding the protected areas, and motivation of protected area managers/rangers. In addition, the framework may not be suitable for all locations across the globe due to disparities in local setting and nature of protected areas. Therefore, the purpose of this study is to extend the IUCN framework by incorporating concepts of collaboration and motivation which

are going to be suitable for effective management of protected areas management in Nigeria.

A concept from the theory of collaboration was used to estimate the extent of collaboration between protected area managers with local communities, international organisations and NGOs, the involvement of local communities in decision-making, the ability of the local communities to influence management decision. A concept from the theory of motivation was equally used to estimate the extent to which protected area managers are motivated with respect to earnings, self-esteem, incentives and safety of working environments for better performance. Finally, a concept from IUCN framework was used to determine protected area context, planning, input, process, output and outcome of protected area management. The proposed model intends to estimate the inter-relationships between elements of the IUCN framework, the influence of collaboration and motivation on protected area management effectiveness.

1.3 Aim of the Research

The aim of this research is to integrate the concepts of collaboration and motivation into the IUCN management framework for effective management of protected areas in Nigeria.

1.4 Research Objectives

- i. To explore the effectiveness of protected area management using IUCN framework
- ii. To examine the influence of collaboration between protected area managers and local communities on effectiveness of protected area management
- iii. To examine the influence of protected area managers'/rangers' motivation on effectiveness of protected area management
- iv. To propose a model for effective management of protected areas in Nigeria

1.5 Research Question

- i. How is the effectiveness of protected area management in Nigeria?
- ii. What is the influence of collaboration between protected area managers and local communities on the effectiveness of management?
- iii. What is the influence of protected area managers' motivation on the effectiveness of management?
- iv. What is the suitable model for effective management of protected areas in Nigeria?

1.6 Research Methodology

The study used questionnaire which is a quantitative research instrument to collect data from managers/rangers of protected areas and members of local communities surrounding the protected areas; interview and site observation which are qualitative research instruments were used to collect data from managers heading the three respective protected areas as well as those in charge of the protected areas from the public agencies, and site visit respectively. The use of both qualitative and quantitative research instruments in collecting data relevant for the study in order to get in-depth information about protected area management in Nigeria, and qualifies the methodology as mixed method research design. Specifically, the convergent parallel design of the mixed method was used, which allows collection of data using the instruments of both quantitative and qualitative research concurrently, and also allows analysis and comparison of findings from both techniques. Multi-stage comprising of purposive sampling, cluster sampling, and simple random sampling techniques were used to collect samples from protected area managers and also from the side of local communities. A pilot study was conducted to test whether the respondents can be able to answer the questions well, later, a full survey was conducted. The study surveyed rangers/managers of protected areas and members of communities surrounding the protected areas. The quantitative data collected from the side of rangers/managers were analysed using Structural Equation Modelling

(SEM) for the purpose of model development, which is a multivariate analysis technique that simultaneously used multiple regression, correlation, Chi-Square and confirmatory factor analysis (CFA). SEM was used due to its ability to estimate unobserved latent variables, and use multiple regression to analyse multiple dependent variables with multiple independent variables simultaneously. The CFA was used to test the hypothesized model proposed by the researcher (Hair *et al* 2006; 2010). While the quantitative data collected from members of the local communities was analysed using Chi-Square statistics.

On the other hand, interview and observation were conducted to support the quantitative aspect. The findings of the interview were analysed concurrently with that of the quantitative aspect as required by the research design. While the findings of the observation are photographs which were presented where necessary during the course of the analysis.

1.7 Scope of the Study

The study is on management effectiveness of protected areas that are managed by Bauchi state government in Nigeria. The scope of the research is three protected areas in Bauchi, Nigeria namely: Yankari Game Reserve, Lame-Burra Game Reserve, and Sumu Wildlife Park. Facts about the protected areas are presented in Table 1.1, their maps are presented in Appendix I. These protected areas were selected based on two criteria: having a management plan that guides management activities of the protected areas, and having managers/rangers at the site (protected areas). They are the only protected areas which are equipped with rangers at the protected areas who conduct patrol and monitoring activities; provided with infrastructure and equipment that support management of the protected areas, and have a management plan that guides management activities of the protected areas.

Similarly, six communities surrounding the three respective protected areas were also studied to determine the extent to which the managers collaborate with them. Facts about the six sampled communities are presented in Table 1.2. The

criteria for selecting the communities is that: they should be within 0.1-5km radius from the boundary of the protected areas.

Table 1.1: Basic Facts About the Protected Areas

	Protected Areas Selected		
	Yankari Game Reserve	Lame-Burra Game Reserve	Sumu Wildlife Park
Managing agency	Ministry of Culture and Tourism	State Department of Forestry	Ministry of culture and tourism
Year of gazettelement	1957	1972	1962
Area	224,410 hectares	205,767 hectares	8,000 hectares
IUCN Management Category	Category II	Category IV	Not designated
Staff population	281	47	53
Management zones	Intensive use zone, Cultural zone and Special use zone	Peripheral use zone, Temporary use zone and Wilderness zone	Intensive use zone, Recreation zone and Wildlife management zone
Objectives	(i) To sustainably co-manage the natural resources of the protected area and its Support Zone Communities through properly sound environmental conservation practices (ii) To develop wildlife-based ecotourism/recreation and its SZC as well as undertake bio-monitoring, education and research activities in the area	(i) To sustainably co-manage the natural resources of the protected area and its Support Zone Communities through properly sound environmental conservation practices (ii) To develop wildlife-based ecotourism/recreation and its SZC as well as undertake bio-monitoring, education and research activities in the area	(i) To use modern techniques of wildlife management to ensure protection, conservation, and propagation of the fauna, flora, ecosystem and habitats (ii) To manage the park for tourism, recreation, education, research, and commerce
Tourism facilities	Chalets, game viewing, sporting facilities, historic/cultural features	None	Game viewing
Vegetation zone	Sudan savanna vegetation zone	Guinea savannah vegetation zone	Guinea savannah vegetation zone
Connectivity	Isolated	Connected to Falgore game reserve in Kano	Isolated
Current Management Plan	Prepared in 2007 to guide management activities between the period of 2007 to 2012	Prepared in 2007 to guide management activities between the period of 2007 to 2012	Prepared in 2005 to guide management activities between the period 2005 to 2010

Table 1.2: Basic Facts About the Communities

	Communities around Yankari Game Reserve		Communities around Lama-Burra Game Reserve		Communities around Sumu Wildlife Park	
	Mainamaji	Duguri	Yuga	Kwange	Sumu	Tafazuwa
Projected Population by 2015	4,218	12,108	4,983	4,081	2,724	2,317
Distance to protected area boundary	2.5km	1.5km	0.2km	0.5km	0.5km	1.5km
Socio-economic activities	Retailing, public service, crop production and animal rearing	cultivation of crops and rearing of animals	cultivation of crops and rearing of animals	cultivation of crops and rearing of animals	cultivation of crops and rearing of animals	cultivation of crops and rearing of animals
Benefits from protected area establishment or management	access road, electricity, schools, empowerment programme and support for educational projects and scholarships	access road, electricity, schools, empowerment programme	None	None		

1.8 Significance of the Study

The study has a number of significances. Significance to the general body of knowledge is three-fold. It has contributed in providing provides an in-depth understanding of protected area management; evidence of the influence of collaboration with local communities in achieving effective management of protected areas; and evidence of managers'/rangers' motivation in the effective management of protected areas. From the theoretical point of view, the research has contributed by extending the framework for protected area management effectiveness through the incorporation of collaboration with local communities and managers'/rangers' motivation on protected area management effectiveness. It has also contributed methodologically through the use of both quantitative and qualitative approaches in assessing management effectiveness of protected areas, and from both managers and local communities' perspectives. The study deemed necessary due to increasing demand by both national governments and international organizations for evidence

on management effectiveness of protected areas. The study also contributes to the current debate in the literature on the collaboration with local communities as a means of achieving effective management of protected areas.

The study provides relevant information to governments, international organizations particularly the International Union for Conservation of Nature (IUCN), policy and decision-makers concerned about protected area management to understand factors that lead to management effectiveness of protected areas, and to effectively undertake evidence-based policy design and decision-making for successful management, particularly in developing countries. With a special focus on collaboration with local communities in management, and motivation of managers/rangers.

The practical significance of the study to real life situation is through the application of the model by managers heading the protected areas to enhance the performance of their rangers by motivating them and improve management effectiveness of protected areas through incorporating local communities surrounding the protected areas in management processes. Similarly, the outcome of the study can also guide donor agencies interested in effective management of the protected areas particularly the World Conservation Society (WCS) in identifying areas of weakness that need special intervention. The findings of the study can also be of utmost importance to natural resource managers, natural and social scientist, a conservationist in future planning and management of the environment.

1.9 Operational Definition of Key Terms

Assessment: the term ‘assessment’ and ‘evaluation’ are used interchangeably in this research. It is defined as the process of collecting and analysing information from multiple sources so as to have an in-depth understanding of a phenomena or situation, which can be used for the purpose of improvement or modification.

Collaboration: is defined as “a joint decision-making approach to problem resolution where power is shared, and stakeholders take collective responsibility for their actions and subsequent outcomes from those actions” (Selin and Chavez, 1995).

Community: this refers to settlements/villages surrounding protected areas under study.

Confirmatory Factor Analysis: is a procedure for validating measurement model of a latent construct (Awang, 2015). It also assesses the unidimensionality, validity, and reliability of a latent construct.

Construct: refers to a variable that cannot be measured directly, rather through the use of a set of items on the questionnaire.

Context: refers to the significance of the protected areas as well as threats affecting the areas.

Dependent Variable: refers to the variable that can be influenced by another independent variable.

Endogenous Latent Construct/Variable: refers to a variable where the single-headed arrow is pointing to. This variable is also known as the dependent variable in Amos graphics.

Exogenous Latent Construct/Variable: refers to a variable where single-headed arrow originates from. This variable is also called independent variable in Amos graphics.

First Order: this refers to a measurement model which is made up of a single latent construct and set of items on a questionnaire measuring the construct.

Independent Variable: this refers to a variable that influences or determines a dependent variable.

Input: refers to investments in terms of staff, funds, infrastructure and equipment that can be used to achieve protected area management goal and objectives.

Latent Variable: these are unobserved variables, and cannot be measured directly. Instead, it can only be measured indirectly by some items in the questionnaire. This is sometimes referred to as construct. It is represented with a sphere in Amos graphics.

Manager: are staff (ranger) employed by government agencies, carrying out management activities in the protected areas. In this study, managers and rangers are used interchangeably.

Management: refers to “the combination of actions with a legal, political, administrative, research, planning, protective, co-ordinating, interpretative or educational character, that results in the better use and performance of a protected areas, and the accomplishment of its objectives (Cifuentes *et al*, 2000).

Management Plan: is a working document that guides and facilitate all development activities and management actions to be implemented in a given area. It also guides and controls the management of the protected area resources, use of the area, and development of facilities required to support the said use and management.

Measurement Error: this measures/estimates error that may occur in measuring an item/variable or construct. Every item should carry the error measurement since it is measuring respondents’ perception (Awang, 2015).

Measurement Model: this refers to a graphical representation of the relationship between a set of items measuring a construct and the underlying construct itself.

Motivation: means and offers in form of reward or appreciation which can boost staff morale and increase his commitment toward carrying out his duties.

Observed Variable: refers to the variable that is measured directly by the questionnaire. They are sometimes referred to as variable, item or indicator. It is represented by a rectangle in Amos graphics.

Outcome: refers to the goal, objectives, and outcomes expected to be achieved.

Output: refers to the level of service delivery and extent to which management plan/work plan, strategies actions are implemented

Planning: refers to the development of vision, goal, objectives and conservation strategies. It also includes protected area legislation and policy; design of protected area system; design of individual reserves which takes into consideration the size, shape, location and boundaries of a given protected area; and management planning

Process: refers to the process by which best systems and management standards are achieved through agreed policies, procedures and guidelines

Protected Area: refers to a geographic area that holds valuable flora, fauna, natural landscape or cultural resources under protection against illegal and unsustainable use; and at the same time providing a range of environmental/ecological, social and economic benefits.

Ranger: this is the same with manager

Second Order Construct: is a construct that is made up of two or more sub-constructs, where each of the sub-constructs is measured with set of items on the questionnaire

Structural Model: this refers to a representation of inter-relationships (causal effect) between constructs and underlying items measuring each construct; which should be based on the theory.

1.10 Structure of Thesis

Chapter one introduces the research topic, explained the problem statement, stated the aim of the research, objectives of the research, research questions, scope of the study, the significance of study as well as brief about the methodology used for the study.

Chapter two reviews relevant literature on the concept of protected areas, reasons for establishment of protected areas, threats to protected areas, protected area management, milestone in protected area management, management planning, protected areas as a strategy for achieving sustainable development, protected areas in Nigeria, protected area management in Nigeria, The chapter also presents the theoretical underpinnings which is based the IUCN framework, theory of collaboration and theory of motivation.

Chapter three is made up of the methodology for the research. Research design, the population of the study, sample size and sampling technique, instruments used for collecting data for research, pilot survey, validity and reliability of the instruments, as well as Exploratory Factor Analysis (EFA). The chapter also presents data analysis techniques, where quantitative data analysis technique consists of descriptive analysis, correlation, chi-square and Structural Equation Modelling (SEM) using Analysis of Moment Structures (AMOS). Quantitative data analysis techniques include verbatim reporting, discussion of interviews conducted, and presentation of photographs taken during the site observation.

Chapter four consist of the analysis of the data collected from protected area managers. The analysis consists of both descriptive and inferential. Descriptive analysis conducted include simple frequency, percentages (%), mean, standard deviation, charts, minimum and maximum. Exploratory Factor Analysis (EFA) to determine the number of factors to be retained was discussed. Confirmatory Factor Analysis (CFA) using Structural Equation Modelling to confirm and test goodness of model fit with the data, and to test the hypothesized structural model were discussed. Finally, the hypothesis generated was tested.

Chapter five presents the analysis of data collected from members of the local communities surrounding the three respective protected areas under study. The data was analysed both descriptively and inferentially. The descriptive aspect includes simple frequencies, percentage (%), mean, standard deviation, charts, minimum and maximum. The inferential include Chi-Square and correlation.

Chapter six comprises of the implications, contributions, recommendation. Figure 1.1 presents the research flow chart for this study.

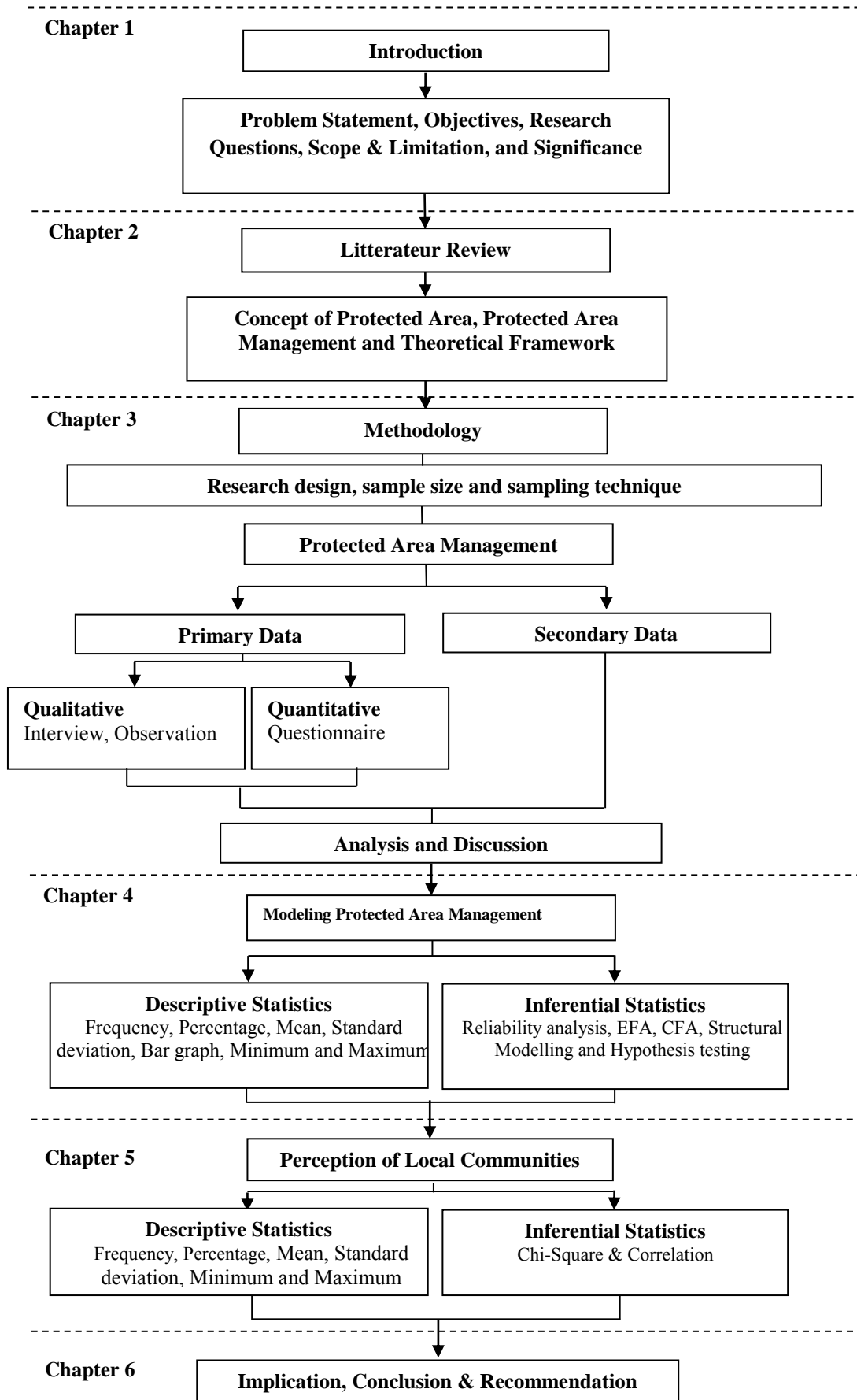


Figure 1.1: Research Flow Chart

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