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ASSESSMENT OF TRAINING NEEDS OF FOREST OFFICERS ON FOREST CONSERVATION IN OYO AND OSUN STATES, NIGERIA

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ABSTRACT:

Forest plays an essential role in environmental sustainability and human livelihoods, yet they are increasingly threatened by deforestation, biodiversity loss, and unsustainable practices. This study assessed the training needs of forest officers in Oyo and Osun States, Nigeria, with a focus on their socio-economic characteristics, training priorities, perceptions of conservation, and related constraints. A multistage sampling technique was employed to select 103 forest officers, and data were collected through structured questionnaires. Descriptive statistics and Pearson Product Moment Correlation (PPMC) were used for analysis.

The results showed that most forest officers are middle-aged (mean age = 46 years), married, and possess tertiary education, with training needs concentrated in sustainable forest management (WMS = 1.51 in Oyo; 1.91 in Osun) and afforestation practices. Perceptions of conservation challenges revealed concerns about indiscriminate logging (WMS = 4.73 in Osun) and resource depletion. Significant relationships were observed between socio-economic characteristics and training needs, such as educational level ($r = 0.847^{**}$, $p \leq 0.000$) and household size ($r = -0.721^{**}$, $p \leq 0.000$), indicating the influence of personal attributes on training requirements.

The study concluded that targeted training programs, supportive policies, and community engagement are essential to equip forest officers with the skills necessary for effective forest conservation. The study recommended capacity-building initiatives, gender inclusion, and resource optimization to achieve sustainable forest management in Nigeria.

KEYWORDS:

TRAINING NEEDS, FOREST OFFICERS, FOREST CONSERVATION.

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INTRODUCTION

Forests play a vital role in human life by providing a wide range of resources and ecosystem services, including carbon storage, oxygen production, hydrological cycle regulation, water purification, wildlife habitat, and climate moderation (Saka-rasaq, 2019). Forests also help mitigate global warming, conserve soil fertility, and support livelihoods. Globally, forests are indispensable, with approximately one billion extremely poor people in developing countries relying on them for sustenance and security (World Bank, 2006). Forest products contribute significantly to livelihoods, with approximately 1.3 billion people relying on forest resources for shelter and over 2.4 billion cooking with wood fuel (FAO, 2018). Additionally, forests support industries employing 13.2 million people globally (FAO, 2014).

Despite their importance, forests face increasing threats from deforestation, degradation, and unsustainable exploitation. Nigeria, with one of the highest deforestation rates worldwide, loses between 450,000 and 600,000 hectares of forest annually due to infrastructural development, fuelwood harvesting, uncontrolled fires, and overgrazing (Adekunle, 2019). This alarming trend exacerbates challenges like biodiversity loss, flooding, soil erosion, and climate change (Vihi*et al.,* 2020). In Oyo and Osun States, similar pressures exist, with human activities like uncontrolled lumbering, bush burning, and charcoal production depleting forest resources and disrupting ecological balance (Olagunju, 2015).

Forest conservation practices are crucial for mitigating these challenges and ensuring sustainable resource use. Conservation efforts aim to promote the sustainable use of natural resources, maintain biodiversity, and address issues like deforestation and environmental degradation (Agube*et al.,* 2021). However, the success of these efforts

depends heavily on the expertise of forest extension officers. These professionals serve as intermediaries between policymakers and forest users, educating and guiding communities on sustainable forest management practices. Effective forest extension services require that officers possess advanced skills, knowledge, and competencies to address challenges and implement conservation strategies effectively (Okwoche*et al.,* 2011).

Training is a critical component in equipping forest officers with the necessary competencies. According to Saleh *et al.,* (2016), training helps individuals acquire specific skills to perform their roles more effectively. Agbamu (2006) emphasized that training of extension personnel is essential for effective service delivery, particularly in areas such as sustainable forest management practices, plantation establishment, forest encroachment prevention, and environmental law enforcement (Agube*et al.,* 2021). However, forest officers often face barriers such as inadequate incentives, poor logistics, and inconsistent government policies, limiting their effectiveness (Tafida*et al.,* 2021).

In light of these challenges, this study aims to assess the training needs of forest officers in Oyo and Osun States, focusing on factors influencing their training requirements and effectiveness. The study is guided by the following research questions:

1. What are the socio-economic characteristics of forest officers in the study area?
2. What are the training needs of forest officers?
3. What are the perceptions of forest officers regarding forest conservation?
4. What are the methods/strategies to acquire training on forest conservation?

METHODOLOGY

The study was conducted in Oyo and Osun States, located in the south-western region of Nigeria. Oyo State, situated between latitude 8°00N and longitude 4°00E, lies in the tropical rainforest zone and covers an area of approximately 28,454 square kilometers. It is bordered by Kwara State to the north, Osun State to the east, and Ogun State to the west. The state's population was estimated at 5,580,894 during the 2006 National Population Census. Agriculture is the predominant occupation, practiced both commercially and subsistently. Forest reserves in Oyo State include Gambari, Igangan, Ijaiye, Lanlate, Okoo/Iro, Olasenide, Olokemeji, Opara, and Osho (Alo, 2017).Osun State, with an area of approximately 8,882.55 square kilometers, is situated between longitude 4° to the west and 5°4' to the east. The state's vegetation includes secondary forests and derived savannahs, with an average annual rainfall of 152 mm. Osun State is divided into three administrative zones: Iwo, Osogbo, and Ife/Ijesa. Forest reserves in Osun include Ago-Owu, Ede, Ejigbo, Ife Native Authority, Oba Hills, and Shasha (Janet *et al.,* 2019).

The study population comprised forest officers across all agricultural zones in Oyo and Osun States. These officers play a critical role in disseminating knowledge and implementing sustainable forest management practices.

A multistage sampling technique was employed to select respondents for the study. The first stage involved the purposive selection of Oyo and Osun States. The second stage involved the inclusion of all Agricultural Development Program (ADP) zones in both states: Ibadan/Ibarapa, Oyo, Ogbomoso, and Saki zones in Oyo State, and Iwo, Ife-Ijesa, and Osogbo zones in Osun State. The third stage involved proportionate sampling of forest officers from each zone, resulting in a sample size of 103 respondents: 59 from Oyo State and 44 from Osun State.

Primary data were collected using structured and semi-structured questionnaires. These instruments were designed to gather information on socio-economic characteristics, training needs, perceptions, and constraints related to forest conservation.

The variables measured in this study comprised both independent and dependent variables. The independent variables included socio-economic characteristics such as age, sex, marital status, education level, household size, and years of working experience. The dependent variables encompassed the level of training needs, which was measured on a 3-point scale ranging from Highly Needed (2) to Not Needed (0). Perceptions of forest conservation were assessed using a 5-point Likert scale, with responses ranging from Strongly Agree (5) to Strongly Disagree (1).

To ensure validity and reliability, the research instrument underwent a thorough review by experts in agricultural extension to confirm its content and face validity. Reliability was established through a test-retest method, and data were analyzed using SPSS to confirm the instrument's consistency in measuring the intended variables.

Data were analyzed using both descriptive and inferential statistics. Descriptive tools such as frequency distributions, percentages, means, and weighted mean scores were used to summarize data. Inferential statistics, specifically Pearson Product Moment Correlation (PPMC), was employed to determine relationships between dependent and independent variables.

RESULTS AND DISCUSSION

SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

Table 1 highlighted the socio-economic characteristics of forest officers in Oyo and Osun States. The majority of respondents in both states were within the 41-50 age group (50.85% in Oyo and 52.27% in Osun), with an overall mean age of 46 years. This suggests that forest officers were predominantly middle-aged, a demographic that balances experience and the physical vigor needed for field activities. Vihi*et al.,* (2020) reported similar findings that the respondents were young and energetic. Regarding gender, males dominated the workforce in both states, comprising 72.90% in Oyo and 70.45% in Osun. This indicated a gender disparity, which may necessitate

gender-inclusive policies in forest conservation roles.This finding is similar to the findings of Vihi*et al.,* (2020) and Nelson *et al.,* (2021) who also reported the dominance of male forest officers in Plateau and AkwaIbom State respectively, Nigeria. This could be due to the socio-cultural milieu of the area which gives males more influence than females.

Marital status revealed that almost all respondents are married (98.30% in Oyo and 100% in Osun), reflecting stability that might influence their dedication to conservation efforts.This result is in agreement with the findings of Nelson *et al.,* (2021) that most of the forest officers were married and this was an indication that the majority of the respondents had families and a burden to cater for them, thus placing a huge demand on them to be serious with their job.Educationally, all respondents possessed tertiary education, demonstrating high qualifications and the potential for effective knowledge dissemination. The mean years of working experience were 16.88 in Oyo and 16.16 in Osun, indicating seasoned personnel who likely understand local forest dynamics. Household size varies, with a mean of 6 members in Oyo and 5 in Osun, suggesting slight differences in domestic responsibilities that may impact work-life balance.

TABLE 1: DISTRIBUTION OF RESPONDENTS BY SOCIO-ECONOMIC CHARACTERISTICS

Socio-economic Characteristics	Oyo State n = 59		Osun State n = 44	
	Frequency	Percentage	Frequency	Percentage
Age (Years)				
30 - 40	13	22.03	10	22.73
41- 50	30	50.85	23	52.27
Above 50	16	25.42	11	25.00
Mean	46		46	
Gender				
Male	43	72.90	31	70.45
Female	16	27.10	13	29.55
Marital Status				
Married	58	98.30	44	100.00
Single	1	1.70	0	0.00
Level of Education				
Tertiary education	59	100.00	44	100.00
Working Experience (Years)				
≤10	14	23.73	20	45.45
11-20	29	49.15	12	27.27
Above 20	16	27.12	12	27.27
Mean	16.88		16.16	
Household Size				
≤5	19	32.20	28	63.64
6-10	40	67.80	16	36.36
Mean	6		5	

Source: Field survey, 2024

TRAINING NEEDS OF FOREST OFFICERS

Table 2 revealed the training needs of forest officers, with variations between Oyo and Osun States. In Oyo, "Tree plantation establishment" was ranked as the most highly needed training (WMS = 1.56), followed by "Sustainable forest management practices" (WMS = 1.51). This highlights the officers' focus on afforestation and

sustainable practices to combat deforestation. Conversely, "Regeneration of grassland" (WMS = 0.64) was deemed not needed, reflecting limited emphasis on grassland ecosystems in Oyo. This finding is in consonance with the findings of Agube*et al.,* (2021) who reported similar findings of sustainable forest management, forest inventory being major training needs of forest officers.

In Osun, "Sustainable Forest management practices" ranked highest (WMS = 1.91), underscoring a priority for long-term sustainability. This was closely followed by "Forest establishment through afforestation" (WMS = 1.89), showing a shared emphasis on afforestation. However, "Regeneration of grassland" (WMS = 1.70) remained the least needed, similar to Oyo, indicating alignment in ecological priorities between the two states. This finding corroborates the findings of Agube*et al.,* (2021) who also reported similar findings of sustainable forest management, forest inventory being major training needs of forest officers.

TABLE 2: TRAINING NEEDS OF FOREST OFFICERS IN OYO AND OSUN STATES.

Types of Training Needs	Oyo State n = 59			Osun State n = 44		
	WMS	Rank	Remark	WMS	Rank	Remark
Sustainable forest management practices	1.51	2nd	Highly Needed	1.91	1st	Highly Needed
Forest establishment through afforestation	1.37	3rd	Needed	1.89	2nd	Highly Needed
Regeneration of grassland	0.64	6th	Not Needed	1.70	6th	Not Needed
Tree plantation establishment	1.56	1st	Highly Needed	1.86	3rd	Needed
Exploitation of forest resources	1.14	5th	Needed	1.75	4th	Needed
Forest inventory	1.27	4th	Needed	1.86	3rd	Needed

Source: Field Survey, 2024 **Weighted Mean Score (WMS)**

Perception of Forest Officers on Forest Conservation

Table 3 outlines the perceptions of forest officers, revealing both similarities and differences between Oyo and Osun States. In Oyo, the highest-ranked perception is that "Extension service in forest conservation would reduce the rate of forest destruction" (WMS = 4.32). This highlights a strong belief among forest officers that effective extension services play a pivotal role in addressing deforestation. Closely following this is the perception that "There is extinction of many forest resources" (WMS = 4.15), reflecting a heightened awareness of biodiversity loss and the urgent need for conservation efforts. Additionally, "Inadequate forest resources to supplement rural livelihood" (WMS = 4.08) ranks third, underscoring concerns about resource scarcity and its implications for rural communities.

Lower-ranked perceptions in Oyo include "Rate of deforestation is high" (WMS = 4.03), which, despite its lower rank, still demonstrates considerable agreement among officers regarding the pressing issue of deforestation. The statement "There is no replacement of felled trees after cutting the old one" (WMS = 3.71) ranks eighth, suggesting that while officers recognize the need for afforestation initiatives, it is not perceived as the most critical issue. Similarly, "Maintain a healthy ecosystem" (WMS = 3.75) ranks seventh, emphasizing the need for strategies that balance ecosystem preservation with human activities.

In Osun, the perception that "There is indiscriminate felling of trees and exploitation of other forest resources" ranks highest (WMS = 4.73), indicating that officers are acutely aware of unsustainable harvesting practices as a major challenge to forest conservation. The same WMS (4.73) applies to the perception that "Inadequate forest resources to supplement rural livelihood" is a significant concern, emphasizing the dual challenge of resource depletion and its impact on rural communities. "There is extinction of many forest resources" (WMS = 4.68) follows closely, reflecting a similar concern about biodiversity loss as observed in Oyo.

Other notable perceptions in Osun include "Rate of deforestation is high" (WMS = 4.55), which ranks fifth, highlighting deforestation as a significant challenge. The statement "Landowners would appreciate the implementation of forest conservation practices" ranks sixth (WMS = 4.52), suggesting that officers perceive landowners as potential allies in conservation efforts. At the lower end, "Maintain a healthy ecosystem" ranks eighth (WMS = 4.41), though this value still indicates broad agreement among respondents about the importance of ecosystem health.

TABLE 3: PERCEPTION OF FOREST OFFICERS ON FOREST CONSERVATION IN OYO AND OSUN STATES

Statements	Oyo State n = 59		Osun State n = 44	
	WMS	Rank	WMS	Rank

Extension service in forest conversation would reduce the rate of forest destruction	4.32	1st	4.64	4th
Maintain a healthy ecosystem	3.75	7th	4.41	8th
Land owners would appreciate the implementation of forest conservation practices	3.81	5th	4.52	6th
There is no replacement of felled trees after cutting the old one	3.71	8th	4.45	7th
There is extinction of many forest resources	4.15	2nd	4.68	3rd
There is indiscriminate felling of trees and exploitation of other forest resources	3.78	6th	4.73	1st
Inadequate forest resources to supplement rural livelihood	4.08	3rd	4.73	1st
Rate of deforestation is high	4.03	4th	4.55	5th

Source: Field Survey, 2024 **Weighted Means Score (WMS)**

METHODS/STRATEGIES TO ACQUIRE TRAINING

Table 4 highlights methods used by forest officers to acquire training. In both states, attending conferences is universal (100% in Oyo and Osun), followed by high participation in seminars and workshops (93.22% in Oyo and 100% in Osun). Accessing information online is another prominent method (86.44% in Oyo and 90.90% in Osun), reflecting growing reliance on digital tools.

Notable differences include higher engagement with reading bulletins in Osun (95.45%) compared to Oyo (45.76%), suggesting a preference for traditional media in Osun. Additionally, reading books and interacting with experts is more common in Osun (93.18%) than in Oyo (66.10%), highlighting varying strategies across the states. Listening to radio programs also featured prominently in both states, indicating its effectiveness as a medium for disseminating forest conservation knowledge.

TABLE 4: METHODS/STRATEGIES USED TO ACQUIRE TRAINING ON FOREST CONVERSATION IN OYO AND OSUN STATES

Methods/Strategies	Oyo State n = 59		Osun State n = 44	
	Frequency	Percentage	Frequency	Percentage
Attending Conference	59	100.00	44	100.00
Attending Seminars and Workshop or Training	55	93.22	44	100.00
Apply for part time programme on forestry	45	76.27	38	86.36
Access information on internet about forest conservation	51	86.44	40	90.90
Read of bulletins	27	45.76	42	95.45
Read books and interact with experts on forest conservation	39	66.10	41	93.18
Watch television programme on forest conservation	45	76.27	40	90.90
Listening to Radio programme on forest conservation	56	94.92	44	100.00
Read News Letters and Magazine	40	67.80	37	84.09

Source: Field Survey, 2024

TEST OF HYPOTHESIS

The result of the Pearson Product Moment Correlation (PPMC) in the Table 5 revealed that significant relationship exists between the selected socio-economic characteristics of the respondents and the effects of good agricultural practices technologies.

The results shown on the Table 4.8.1 revealed that some selected socio-economic variables which are; Age of Forest officer ($r = -0.766^{**}$, $p \leq 0.000$) has a negative and significant relationship with the level of training needs on forest conservation in the study area. This result implies that younger respondents may perceive a higher need for training on forest conservation compared to older respondents. Marital status ($r = 0.760^{**}$, $p \leq 0.000$) also has a positive and significant relationship with level of training needs of Forest officers on forest conservation in the study area. This implies that married respondents may perceive a greater need for training on forest conservation compared to unmarried respondents. This could be because married individuals often have greater responsibilities and long-term considerations for their families and communities. Household-size ($r = -0.721^{**}$, $p \leq 0.000$) has a negative and significant relationship with the level of training needs on forest conservation in the

study area. This implies that respondents that had small households may perceive a higher need for training on forest conservation compared to those from large households.

Also, Educational level (r = 0.847**, p ≤0.000) has a positive and significant relationship with level of training needs of Forest officers on forest conservation in the study area. This implies that Forest officers with higher levels of education may perceive a greater need for training on forest conservation. This indicates that education plays a crucial role in raising awareness and understanding of environmental issues and their implications. Years of working experience (r = -0.509**, p ≤0.000) implies that respondents with few years of working experience may perceive need for training on forest conservation compared to those with more years of working experience. This could be because experienced individuals have accumulated knowledge and skills over time, leading to a perceived lower need for additional training.

Hence, there is significant relationship between selected socio-economic characteristics of the respondents and the level of training needs of Forest officers of forest conservation. Therefore, the null hypothesis is rejected; hence the alternative hypothesis is accepted. This result is in alignment with the findings of Ayandiji and Adekunle (2014) who also reported that there is significant relationship between selected socio-economic characteristics of the respondents and the training needs of Forest officers.

H_a: There is significant relationship between some selected personal characteristics of forest officers and level of training needs on forest conservation

TABLE 5: PEARSON CORRELATION ANALYSIS OF RELATIONSHIP BETWEEN SELECTED SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS AND LEVEL OF TRAINING NEEDS ON FOREST CONSERVATION.

Socio-economic Characteristics	r- Value	P - Value	Remarks	Decision
Age	-0.766**	0.000	Significant	Accept H_a
Marital status	0.760**	0.000	Significant	Accept H_a
Household-size	-0.721**	0.000	Significant	Accept H_a
Educational level	0.847**	0.000	Significant	Accept H_a
Years of working experience	-0.509**	0.000	Significant	Accept H_a

Source: Field survey, 2024

**Correlation is significant at 0.01 level (2-tailed)

CONCLUSION AND RECOMMENDATIONS

This study assessed the training needs of forest officers in Oyo and Osun States, focusing on their socio-economic characteristics, training priorities, and perceptions of forest conservation. The findings revealed that forest officers are predominantly middle-aged, highly experienced, and possess tertiary education, attributes that position them effectively for conservation work. Despite these strengths, significant training needs were identified, particularly in sustainable forest management, afforestation practices, and forest inventory. These training gaps are critical to addressing the challenges of deforestation, biodiversity loss, and resource depletion that threaten ecological sustainability and livelihoods.Additionally, forest officers demonstrated acute awareness of conservation challenges, including indiscriminate logging, extinction of forest resources, and inadequate resources to support rural livelihoods. Perceptions and training needs were found to be significantly influenced by socio-economic factors such as age, marital status, and educational level, underscoring the need for targeted interventions. The study highlights that community engagement, and resource allocation are necessary to enhance the capacity of forest officers, thereby strengthening their contributions to sustainable forest management and environmental conservation.

In order to address the identified challenges, the study recommended that targeted training programs should be developed to enhance forest officers' skills in sustainable forest management, afforestation, and biodiversity conservation. Stable and supportive policy frameworks should be established to prioritize forest conservation and strengthen institutional backing. Collaboration with local communities is essential to encourage the adoption of sustainable practices and raise awareness about conservation challenges.

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