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EVALUATION OF REVENUE CHANNELS AND CHALLENGES IN OSUN STATE FORESTRY SERVICE, NIGERIA

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ABSTRACT

Forest revenue system is a tool for obtaining maximum benefits from the management of forest resources, meanwhile its collection has been inadequate and lack proper coordination of achieving sustainable production of forest resources in Osun State. Therefore, various tapped and untapped revenue channels, challenges associated with effective collection and remittance were investigated. A total of 113 forest officials were identified and reached (100%) in all the forestry administrative zones in Osun State, including the headquarters through a set of questionnaire: Ilesa (21), Ile-ife (26), Ikirun (14), Ikire/ Iwo (28) and Headquarters in Osogbo (24). Secondary data were also collected. Data were analyzed using descriptive statistics and logit regression at $\alpha_{0.05}$. The average age of the respondents was 35±8.4 years, mostly male (67%) and had tertiary education (44%). Identified tapped revenue channels included timber tariff and firewood permit, while untapped revenue channels identified were gravel/sand's evacuation and harvesting of Non-Timber Forest Products. Challenges confronting effective collection included improper law enforcement, location of resources and executive fiat with odds-ratio of 8.60, 3.52 and 1.70 respectively. Problems facing adequate revenue remittance included printing of fake receipts, improper remittance by the account staff, and inadequate mobility of field staff and lack of incentives for field officers with odds-ratio of 13.10, 3.30, 3.13 and 2.62 respectively. The study revealed various untapped revenue channels; it is therefore necessary for the State forestry service to utilize these sources to improving the revenue inclination in the State and also address the identified challenges facing collection and remittance.

Keywords: Revenue channels, Revenue Collection, Revenue remittance, untapped sources, Tapped sources

INTRODUCTION

A Variety of resources abound in the forests and they include soil and its mineral deposits, water sources, rocky outcrops, rare landscapes and in the biological sense, plant and animals in all their various forms. The forest is therefore an important component of man's environment and if properly managed, can provide myriad benefits like sources of foreign exchange earnings, employment, housing materials etc. (Arifalo, 1990). These resources are important because of the value that society attaches to them.

Timber, for example, is universally enjoyed for its varying and various functions. Although fruits, fungi, herbs, bees and other non- timber do not enjoy the universality and the versality of Timber but they are also important. There is therefore, a wide range of demand for these resources and consequently, differences in the sales level and the charges attached to them. The sale of forest resources is one of the major ways in which government interacts closely with the people through the generation of economic, social and cultural activities. These activities become the source of employment for timber contractors, tree takers, saw millers, timber lorry drivers, machine operators, log rolling crew, timber clerks and gatherers of non-wood forest products (Ajayi and Omoluabi, 1993).

The forest revenue system is an instrument used by government to achieve various goals and objectives in forest management. The objectives of the forest revenue system play a significant role in the choice of models for fixing charges on forest products and services (FAO, 2001). FAO, (2001) also stated that the first forest charges were introduced into Nigeria during the colonial era, with the aim of discouraging farmers from destroying trees as part of their shifting cultivation activities. The various states in Nigeria operate different types of charges, the main ones of which are; stumpage fees; out-turn volume fees and unit area charges. There are also charges levied on different types of machinery used in the forest industry and charge on the production of non-wood and minor forest products. The level of these charges varies from state to state and from species to species.

Other charges on forestry sector include; development levies, contractors' registration fees, application fees, ground rent and property hammer (pass hammer/registration fees, charge on pole production, non-wood fuel wood charges, license fees and forest recreation fees and penalty for -food offences. Some revenue is also derived from fines and auctioning of confiscated products and minor forest product charges. The administration of forest charges is the responsibility of the state forestry services, while the government has the power for approval.

In Nigeria, Osun State can be considered as one of the States endowed with large quantum of forest resources which when harnessed could support a wide range of economic activities in the state in particular and Nigeria in general; hence the importance of forestry in the state is extensive. The historic Shasha forest reserve in the State has made valuable contributions to the development of the economy of the State. Therefore, this paper revealed both the tapped and untapped promising revenue channels in Osun State forestry service, identified challenges confronting effective revenue collection and problems facing adequate remittance, with a view to suggesting mitigations' strategy towards adequate revenue generation in the state.

MATERIALS AND METHODS

Study Area

The study area is Osun State, located in the Southwestern geo-political zone (Figure 1). The state had eleven legacy forest reserves which fell within her boundaries, after she was carved out of the then Oyo state. Only eight of these reserves are still in existence. It borders to Kwara state to the North and Ogun state to the south, Oyo to the West and Ekiti to the East. Osogbo is the capital of the state. Osun State lies within Latitude $7^{o}\ 0^{'}\ 0^{''}$ N and $8^{o}\ 0^{'}\ 0^{''}$ N, and Longitude $4^{o}\ 10^{'}\ 0^{''}$ E and $5^{o}\ 10^{'}\ 0^{''}$ E. The State has population of about three million, four hundred and twenty-three thousand, five hundred and twenty-five people (3,423,525) (NPC, 2006). The climate of the area is a tropical type with two prominent seasons, the rainy and dry seasons. The dry season is short, usually lasting 4 months from November to March and the longer rainy season prevails during the remaining months. The annual rainfall averages 1413 mm in a 5-year survey.

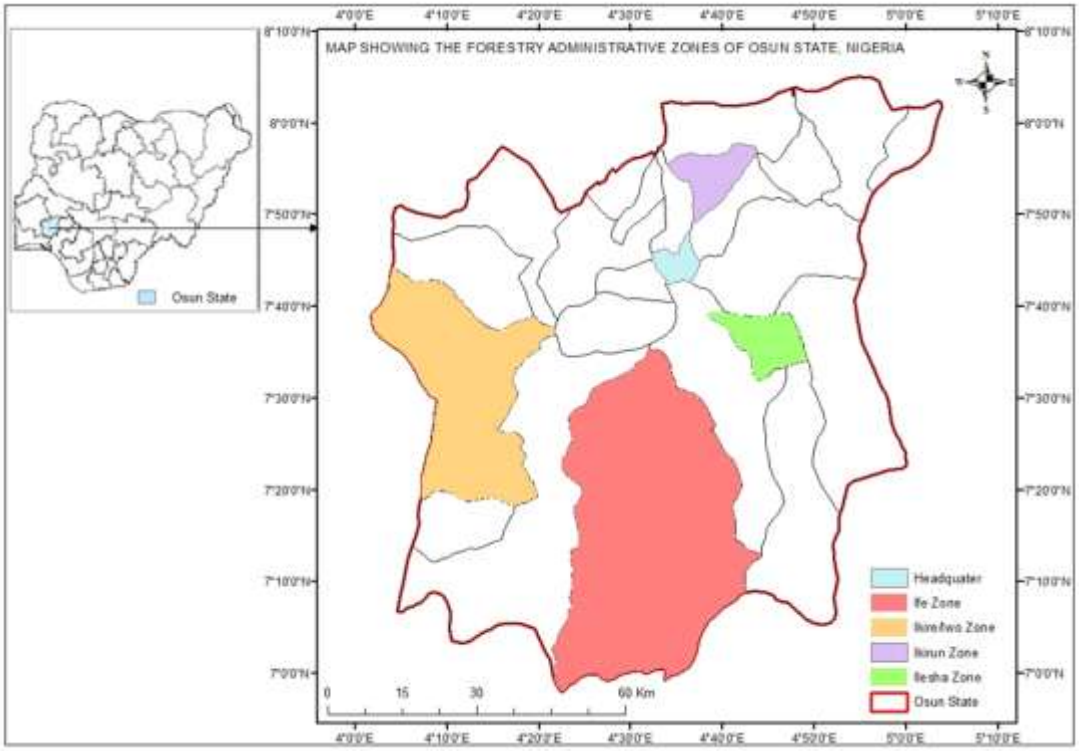

Figure 1: Map Showing the Forestry Administrative Zones of Osun State, Nigeria

Sampling Procedure

The target population for the study was core forestry officials in the Headquarters and all the forestry administrative zones in Osun State forestry service. This included the uniform, technical and professional staff.

A total of 113 forest officials were identified in all the forestry administrative zones and headquarters in Osun State: Ilesa (21), Ile-ife (26), Ikirun (14), Ikire/ Iwo (28) and Headquarters in Osogbo (24). A complete enumeration (100%) was done in which a total of 113 structured questionnaire were administered to the respondents in the study area. However, 110 copies questionnaire were retrieved from the field which represents 97.3% returns. Secondary data were also collected where necessary. Precisely, data on tapped forest revenue channels in the state.

Data Analysis

Data collected were subjected to descriptive statistics and Logit regression analysis (Inferential statistics).

Logistic regression

The binary logistic models are very useful in a situation whereby the dependent or response variable is binary in nature. This implies that they can have only two possible values. The models therefore describe the relationship between one or more continuous independent variable(s) to the binary dependent variable. The two common binary models are the logit and probit. The logistic model is particularly preferred because of the unique information it provides. Distinct information provided by logit is the odds ratio. It is defined as the ratio of the odds of an event occurring in the group to the odds ratio of it occurring in another group (Deeks, 1996 and Davies, 1998). The logistic model of a response p between 0 and 1 is given as:

Logit (p) =log〖(p/(1-p)〗) = log (p)- log (1-p)---1

The simplest form of logistic model is expressed as:

Logit (pi) =a+bx1+…… + bx8 ---------- 2

Challenges Confronting Effective Revenue Collection

Where:

Pi = Probability of an effect on challenges confronting effective revenue collections in Osun State (Dependent variable)

xi = vector of predictor or independent variables

a and b = regression parameters

The independent variables are:
X1= dummy variable indicating whether payment of cash (PC) has been a challenge responsible for ineffective revenue collection in the study area or not.
X2= dummy variable indicating whether insincerity of field staff (IFS) has been a challenge responsible for ineffective revenue collection or not.
X3= dummy variable indicating whether transportation of field officers (TFO) has been a challenge responsible for ineffective revenue collection or not.
X4= dummy variable indicating whether inadequate communication networks (ICN) has been a challenge responsible for ineffective revenue collection or not.
X5= dummy variable indicating whether inability of field officers to withstand armed illegal fellers (AIF) has been a challenge responsible for ineffective revenue collection or not.
X6= dummy variable indicating whether the location of resources (LR) has been a challenge responsible for ineffective revenue collection or not.
X7= dummy variable indicating whether executive fiat (EF) has been a challenge responsible for ineffective revenue collection or not.
X8= dummy variable indicating whether lack of proper law enforcement (LPLE) has been a challenge responsible for ineffective revenue collection or not.

Problems Facing Adequate Revenue Remittance
Pi = Probability of an effect on problems facing adequate revenue remittance in Osun State (Dependent variable). The independent variables are:
X1= dummy variable indicating whether remittance by field staff (RFS) has been a problem responsible for inadequate revenue remittance or not.
X2= dummy variable indicating whether remittance by account staff in the headquarters (RAS) has been a problem responsible for inadequate revenue remittance or not.
X3= dummy variable indicating whether involvement of field officers in printing of fake receipts (PFR) has been a problem responsible for inadequate revenue remittance or not.
X4= dummy variable indicating whether lack of provision of incentives for running cost by the government (LPI) has been a problem responsible for inadequate revenue remittance or not.
X5= dummy variable indicating whether lack of provisions for mobility of field staff (revenue collector) so as to remit collected revenue on time (MFS) or not.
X6= dummy variable indicating whether inaccessibility of banks by field officers (BEA) has been a problem responsible for inadequate revenue remittance.

RESULTS

Table 1 showed the demographic characteristics of the respondents. Information on gender revealed that 67% of the respondents were male, while 43% were female. The average age of the respondents was 35± 8.4 years. The study on marital status of the respondents revealed that more than half of the population of the respondents were married (51.8%) while 43.6% were single. Information on the respondents' educational status revealed that 44% of them had tertiary education, while 40% had primary education. Lastly, it was gathered that majority of the respondents had worked for a period of 1-5 years (48.2%) and 6-10 years (48.2%).

Table 1: Demographic Characteristics of Respondents

Demographic Characteristics	Frequency	Percentage (%)
Sex		
Male	67	60.9
Female	43	39.1
Total	**110**	**100**
Age		
21-30	36	32.7
31-40	50	45.5
41-50	18	16.4
51-60	6	5.5
Total	**110**	**100**
Marital Status		
Single	48	43.6
Married	57	51.8
Divorced	3	2.7
Widowed	2	1.8
Total	**110**	**100**
Educational Distribution		
No Formal Education	7	6.4
Primary Education	40	36.4
Secondary Education	19	17.3
Tertiary Education	44	40.0
Total	**110**	**100**
Work Experience (Years)		
1-5	53	48.2
6-10	53	48.2
>10	4	3.6
Total	**110**	**100**

Source: Field Survey, 2019.

Tapped Revenue Channels

Below is the list of tapped revenue channels in Osun State Forestry Service.

List of Tapped Revenue Channels in Osun State Forestry Service

1. Tarriff on timber exploitation (Both in free areas and forest reserves).
2. Payment for tariff on plot allocation basis.
3. Tariff on bamboo extraction
4. Issuance of permit for firewood collection.
5. Tariff on Taungya farming.
6. Issuance of hunting permit.
7. Sales of application form for property hammer (Timber mark)- For log and flitching
8. Registration and Renewal of property hammer.
9. Registration and renewal of sawmill license of operation (Yearly renewal fee).
10. Registration and renewal of planing/ circular machine (Yearly renewal fee).
11. Registration and renewal of power saw.
12. Evacuation schedule- It varies from one place to another, depending on quantity loaded.
13. Revenue made from interstate wood transportation.
14. Payment of fines by the offenders (Penalties for breaking of laws).
15. Revenue generated through Central Log Control (CLC) unit- A monitoring unit for evacuated logs charged with the responsibility of seizure and imposition of fine on certified logs.
16. Revenue generated through State Task Force (STF) - A general monitoring unit for law enforcement empowered to seize illegally evacuated forest products and imposition of fine accordingly.

17. Control post (checking) within the State and Inter-state.
18. Sales of seedlings.

Source: Osun State Forestry Service, 2019.

Untapped Revenue Channels

The responses of the respondents towards untapped revenue channels in Osun State Forestry Service were indicated in Table 2. The table showed that harvesting of Non-Timber Forest Products (60%), Timber extraction, processing and marketing (30%) and conversion of wood charcoal (10%) were the prominent ones among them.

Table 2: Untapped Revenue Channels in Osun State Forestry Service

Untapped Revenue Channels	Frequency	Percentage (%)
1. Evacuation of gravel and sand in the reserves.	5	4.54
2. Conversion of wood to charcoal.	10	9.10
3. Harvesting of Non-Timber Forest Products (NTFPs).	60	54.55
4. Timber extraction, processing and marketing	30	27.27
5. Effective monitoring of fishing activities in the water bodies in forest reserves.	5	4.54
Total	**110**	**100**

Source: Field Survey, 2019.

Challenges Confronting Effective Revenue Collection

Logit Regression Model for Challenges Confronting Effective Revenue Collection in Osun State Forestry Service

The binary models

Binary regression models obtained for the challenges confronting effective revenue collection in Osun State Forestry Service (Table 3).

$$CCERC = 3.07 - 3.13PC - 2.07IFS + 0.17TFO - 0.79ICN - 0.43AIF + 1.26LR + 0.50EF + 2.15LPLE \text{---------- } 3$$

Model presented above for Osun State Forestry Service gave overall significant fit to the data judging from χ^2 value that was significant at $p<0.05$. Lack of Proper Law Enforcement (LPLE) had the highest odd-ratio of 8.60 followed by Location of Resources (LR) with the odd-ratio of 3.52 and Executive Fiat (EF) with the odd-ratio of 1.70 respectively. Therefore, the factors identified to be responsible for ineffective revenue collection in Osun State were Lack of Proper Law Enforcement (LPLE), Location of Resources (LR) and Executive Fiat (EF) i.e undue political influence.

Table 3: Logit Binary Nature of Challenges Confronting Effective Revenue collection in Osun State Forestry Service

Dependent variable	Coefficient	Odds-ratio
PC	-3.13	0.04
IFS	-2.07	0.13
TFO	0.17	1.20
ICN	-0.80	0.45
AIF	0.43	0.65
LR.	1.30	3.52*
EF	0.50	1.70*
LPLE	2.15	8.60*
Model χ^2 (df, 8) = 79.72, Final loss= 36.31; P<0.05		

*Significant at $p<0.05$; ns= Not significant; Dependent variable (CCERC) = Challenges Confronting Effective Revenue Collection in Osun State Forestry Service (Yes= 1), (No= 0)

Problems Facing Adequate Revenue Remittance

Logit Regression Model for Revenue Remittance Adequacy in Osun State Forestry Service

The binary models

Binary regression models obtained for the Revenue Remittance Adequacy in Osun State Forestry Service (Table 4)

ARRP= -3.17- 1.80RFS+ 1.18RAS+ 2.60PFR+ 1.00LPI+ 1.14MFS- 0.80BEA ---------- 4

Model presented above for Osun State Forestry Service gave overall significant fit to the data judging from χ^2 Value that was significant at $p<0.05$. Printing of Fake Receipt (PFR) by field officers had the highest odd-ratio of 13.10 followed by Remittance by the Account Staff (RAS) with odd-ratio of 3.30, Mobility of Field Staff (MFS) with the odd-ratio of 3.13 and lastly, Lack of Provision for Incentives (LPI) for field officers with the odd-ratio of 2.62 respectively.

Therefore, the factors identified to be responsible for inadequate revenue remittance in Osun State forestry service were Printing of Fake receipt (PFR) by field officers in-charge of revenue collection, improper Remittance by the Account Staff (RAS), Lack of adequate Mobility for Field Staff (MFS) and Lack of Incentives (LRI) for field officers.

Table 4: Logit Binary Nature for Revenue Remittance Adequacy in Osun State Forestry Service

Dependent variables	Coefficient	Odds-ratio
RFS	-1.80	0.02
RAS	1.18	3.30*
PFR	2.60	13.10*
LPI	1.00	2.62*
MFS	1.14	3.13*
BEA	-0.80	0.50
Model χ^2 (df, 6) = 16.11, Final loss= 22.56; P<0.05		

***Significant at p<0.05; ns= Not significant;* Dependent variable (ARRP) = Problems Facing Adequate Revenue Remittance (Yes= 1), (No=0).**

DISCUSSION

Most of the studies conducted in the past on manpower in forestry service in the South-West Nigeria had reported lower percentage of female participation in forestry jobs than male. For instance, Adejumo *et al*., (2018) reported the low involvement of female in Ogun State forestry service to be 8.5% and attributed it to risk associated with women working in difficult terrain. With respect to age, it could be inferred that most of the respondents were in their economic active age. This conforms to the report of NSSC, (2011) which observed that economic active age is anticipated within the age bracket 35-50.It can be inferred from the information gathered on marital status that most of the respondents were people of high responsibilities in which their level of commitment is expected to be high. Hence, it is expected that they should guide their jobs jealously considering the fact that they have numerous family obligations to meet. Taphone, (2009) had earlier identified that married people have more responsibilities (provision of foods, education, health, well-being of their spouse and children) than singles and this may be reason why this occupation is dominated by them so as to be able to meet these responsibilities. The percentage of single is also quite encouraging because their agility is guaranteed and this is a pointer to the fact that one could easily inferred that the Osun State government might have recruited new hands in the recent years to ensuring anticipated good succession of the old ones. In terms of educational level, it is understandable that in most cases uniformed men are being recruited with minimum of primary 6 Certificate. Yet, high level of education has been identified by ILO, (2000) to be leading to more skilled and productive workforce, producing more efficiently a higher standard of goods and services, which in turn forms

the basis for faster economic growth and rising living standards.

The years of experience of the respondents counts a lot on the information provided. Therefore, it is presumed that reliable information must have been gotten from them. The study revealed the diverse ways in which revenues are being generated into the government account through the state forestry department. It is interesting to note that certain percentage of revenue are gotten from payment of fine by the offenders, this is a pointer to the fact that enforcement of forest laws is being given top priority in the State. The seriousness of the state forestry department is evident in her mechanisms put in place to ensure total compliance. For instance, the inauguration of Central Log Control (CLC) unit, State Task Force (STF) and Control post checking would go a long way in checkmating the movement of uncertified logs and planks, and at the same time secure lost revenues through imposition of appropriate fines. Other mechanisms put in place to checkmate the activities of the stakeholders in timber trade and other products extraction included issuance of various permits, registration and renewal of sawmill licence, registration and renewal of planning/ circular machine, registration and renewal of power saw and issuance of property hammer (Timber mark). According to Adejumo *et al*., (2018), the use of Timber mark is a common system used in regulating timber exploitation in Nigeria, especially in the South-Western Nigeria. This is popularly referred to as property hammer. Timber contractors are thereby charged with a lump sum of money to get the hammer after proper application and documentation. The hammer is iron made with the inscription of number at both ends. Therefore, the surfaces of the harvested logs are hammered so that the number could appear as a mark indicating that the logs are duly certified by appropriate authority. Of course, it is also mandatory for the timber contractors to renew the hammer yearly. This would in turn serve as another means of revenue generation apart from the money paid for its application. It is also observed that Osun State still generates revenue from the Taungya system. This system has been used as a method of establishing forestry plantation.

Taungya farming involves the growing of annual agricultural crops alongside tree species during the early years of establishment of forest plantation. Usually, the land belongs to the forestry department or large scale leases who allow subsistence farmers to raise arable crops on their land for the mutual benefit of helping raise tree seedlings. The farmers are required to tend the tree seedlings and in return, retain a part or all of the arable crops. It is an agreement that would last for two or three years, during which time the tree species would have grown and expanded its canopy (Adekunle and Bakare, 2004). It was described as a way of complete utilization of forest is an avenue for farmers to participate in tree planting and be directly involved in government afforestation projects nations. It was revealed that after allocating portion of land to the farmers, they are being expected to pay some tokens in appreciation of the gestures. It could also be inferred from the study that the age long practice of plantation establishment (Taungya) is still in use in the study area up till now despite the introduction of agroforestry which afforded the farmers better advantages than Taungya system. Adejumo *et al*., (2018), reported that collection of NTFPs as a means of revenue generation is just being given attention recently, although a lot have been said on its revenue potentials in the past. Therefore, categorizing NTFPs as promising untapped revenue channels in Osun State may be traced to the fact that a lot of them are yet to be harnessed to the fullest. The use of charcoal as energy source is recently gaining popularity in Nigeria and it has been observed that private people venturing to its production and sales illegally are making a lot of money from it. So, it is very important that government pay attention to this area so as to improve on her forest revenue. Also, Agbeja, (2016) observed that state forestry services have very little to do with extraction, conversion, processing and marketing. Essentially, state forestry services have been concerned largely with the growing of wood and protection of forest estate.

In considering revenue generation potentials of processing and marketing, it would be a good idea if forestry service equally be involved beyond growing and protection of forest resources i.e. they should embark on extraction, haulage, conversion

and marketing. It is also important to note that because forestry services have regarded the protection and afforestation scheme as their preserve, there has been little or no effective private forestry in Nigeria. In the light of this, the two categories of functions i.e. protection and growing of forest produce at one hand, and haulage, exploitation, processing and marketing by private on the other hand should not be regarded as sacrosanct. Indeed, this set of activities by public forestry services i.e. creation and protection of resources should not deter forestry services from engaging in exploitation, transportation, processing, marketing, etc. There is no reason why government should only create resources and leave the profit oriented aspect to the private sector in an era of privatization and commercialization, it seems urgent that forestry service should examine the possibility of competing with the private sector in the traditional area of exploitation, haulage and marketing so as to improve on her revenue propensity.

There was sufficient evidence that the estimated coefficients for the factors identified to be responsible for ineffective revenue collection were not zero. This implies that the regression parameters in the model were statistically significant. In other words the higher the value of odds-ratio, the more likelihood the factors responsible for ineffective revenue collection in Osun State Forestry Service. Hence, it clearly indicated the variable (s) i.e factors that mostly influence effective revenue collection in the study area. The implication was corroborated by Deeks, (1996); Bland and Altman, (2000) that the logit model provides information on the consequences of one variable on the other. Therefore, existence of these factors poses serious challenges to effective revenue collection in the study area.

There was also sufficient evidence that the estimated coefficients for the factors responsible for inadequate revenue remittance were not zero. This implies that the regression parameters in the model were statistically significant. In other words the higher the value of odd-ratio, the more likelihood the factors responsible for inadequate revenue remittance in Osun State forestry service. Hence, it clearly indicated the variable (s) i.e. factors that mostly influence adequate revenue remittance in the study area. Therefore, existence of these factors poses serious challenges to adequate revenue remittance in the study area.

CONCLUSION

The study established the various kinds of revenue channels in the study area in which timber exploitation and its movement feature prominently among other sources. Various untapped revenue channels that could improve the revenue propensity of the forestry department in the state were also identified. However, identified factors responsible for ineffective revenue collection in the study area were lack of proper law enforcement, location of resources and executive fiat (undue influence) while the identified factors responsible for inadequate revenue remittance were indulgent of field officers in printing of fake receipts, improper remittance by the account staff, lack of adequate mobility for field staff to facilitate prompt remittance and lack of incentives for field officers.

Therefore, identified untapped revenue channels should be looked into urgently by the state forestry service so as to boost the revenue inclination of the state forestry department. It is also important that efforts should be intensified by the government to enforce forest laws generally while special attention should be paid to those laws that would highly prevent loss of forest revenue in the state. Undue influence by the political office holders should be curtailed as that poses serious challenges to effective revenue generation. Field staff indulging in printing of fake receipts to defraud the government should be identified and brought to book while the fraudulent activities of account staff should be checked. Field staff must be properly remunerated and mobilized appropriately so as to encourage them and ease their movement as well as facilitating their prompt remittance.

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