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Gross Margin Analysis of Trade in Non-Timber Forest Products (NTFPs) in Ogun State, Nigeria

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Abstract
There is an increasing rate of deforestation and what are left in the forests are the NTFPs which have increasingly caught the attention of more people because of their earnings from it. This study examined gross margin analysis of trade in non-timber forest-products among respondents in Ogun State. A multistage Sampling technique was used in sample selection. Structured questionnaires were used to obtain cross sectional data on the socio-economic characteristics, the different types of NTFPs in the study area, and the returns from NTFPs trade to households in the study area. The study revealed that the level of literacy is high (67.96) and there are more women in the trading activities (73.79 %) than men. The predominant age group was in the range of 31-40 years and they were mostly married (96.11 %). Similarly, snail, mushroom and bush meat had highest average gross margin returns to household in the study area with ₦21, 700 per month followed by bamboo with ₦17,000 per month. The Benefit Cost Ratio, Gross Ratio, Rate of Returns on Investments, and Expenses Structure Ratio were 3.23, 0.31, 2.30, 0.03 and 1.12, 0.89, 0.22, 0.03 respectively. On the basis of these findings, NTFPs can be said to be highly profitable as indicated by these indicators. It is a good point of entry into business for young school leavers and holds good prospect as alternative income generation and poverty alleviation. Government should therefore maximize the NTFP dealer production potential by making more commitment to ensuring access to productive assets.
Keywords: Trade, Non-Timber Forest Products, Gross Margin.

Introduction

The products from forests are classified into two; timber, which constitutes the bulk of forests based materials used for economic purposes, and the bye products of the forest environment and the exploitation of timber. Various terms have been used to describe product that come from the forest that are not timber-based. USDA (2001) defines them as special forest products. The more common and widespread term is "NTFP" viz non- timber forest products. These are plants, parts of plants, fungi and other biological materials harvested from within and on the edges of natural manipulated or disturbed forests. Campbell, (1995) state that the contributions of non-timber forest products (NTFPs) to the forestry sector in most countries is significant. Thus, the contributions in Nigeria are pertinent requiring critical evaluation to ensure sustainable utilization and management of forest resources. Apart from the facts that the majority of rural households in Nigerian and a large proportion of urban household depend on forest products to meet some part of their nutritional needs, very large number of households generate part of their income from the sales of tree products. Hence, Egunjobi (1996) while reporting on the potentials of Non-timber forest products of Omo Forest reserve observed that the contributions of non-timber forest products to the rural economy in Nigeria is as much if not more than that of timber. Harvesting and processing of NTFPs in many places have graduated from the subsistence level of household dietary needs alone and sales at local market to international cross-boundary trades. There are a lot of forest products involved in cross boarder trading between Nigeria, Cameroon, Ghana and Benin Republic. It is very crucial that the potentials of NTFPs in rural poverty reduction be appreciated and recognized. Although they have been undervalued in the past, the demand for NTFPs is increasing thus a greater number of people increase their income by harvesting non- timber forest products from the wild. This activity is receiving increasing attention and making significant contribution to local economies. Adinya (2009) reported that households in the lowest income group in the Cross Rivers state of Nigeria derive about 20% of their income from forests crop, farming and collection activities, while the middle and the upper income household groups earn about 16% and 12% of their income from sales of forests products respectively while Idowu, (2012) reported that 44 per cent of respondent traded on forest plant leaves as source of income from forest Industry. Thus, this study was conducted in Ijebu East LGAs of Ogun state and the objectives of the study are to determine the gross margin of marketing NTFPs in the study area.

Material and methods

The Study Area

The empirical setting for this study is Ogun State. Ogun State is a fast developing State created in 13th February 1976. The state has its administrative headquarters in Abeokuta in Egba division of the State. The state is located in the southwestern part of Nigeria. It lies within latitude 6°N and 8°N and longitude 2° E and 15° E and is bounded on the west by the Republic of Benin, on the east by Ondo State. It is bounded in the north by Oyo State and on the south by Lagos State and the Atlantic Ocean. It covers a total area of land of 16,409.26 sq. km out of which 22.62% is government forest reserve. The climatic condition is the usual tropical pattern with rain between March and November followed by the dry season. The average annual rainfall is about 110cm. The rains are heavier in the riverine areas of the state. Temperature ranges between 22°C and 30°C all around the year and relative humidity is between 60-80%. The vegetation is thick and deciduous forest in the south and savannah in the north. Topographically, Ogun State lies within interior lowlands relief with tertiary, cresceous and basement geological rock formation full of various mineral deposits. There are four administrative divisions in Ogun State and these are: Ijebu, Remo, Egba and Yewa (formerly Egbado). There are a total of twenty (20) local government areas.

The state consists mainly of the Yoruba ethnic group predominantly the Egbas, Remos, Ijebus, Yewas and Awori-Eguns. Farming is the major occupation of the people, particularly those in the rural areas. The climate as well as other environmental factors has favoured the production of agricultural produce such as tree crops, tuber crops and

cereals. Trading and light commercial merchandizing are the other major economic activities in the state.

Sampling Procedure

Multistage sampling techniques were used in sample selection. In the first stage, Ijebu Division was purposively chosen because it has the largest forest coverage area in the state. Ijebu Division of the state is made up of six (6) Local Government Areas namely: Ijebu-Ode, Ijebu North, Ijebu East, Ijebu North-East, Ogun Waterside and Odogbolu Local Governments. Ijebu East Local Government was purposely chosen due to the fact that it has the largest area of government forest reserve land (36.86%) out of a total 3711.62km2 of government forest reserve in the state. These reserves are divided into Area J3, J4, and J6 (Akilla plantation) forest reserves. The local government has its headquarters in Ogbere with other towns such as Ijebu-Ife, Ijebu Mushin, Esure, Ilese, Itele also located in the local government area.

Method of Data Collection

Primary data were collected using structured questionnaires. These were administered personally to the NTFP dealers in various towns such as Ijebu Ife, Ijebu Mushin, Ogbere, J4 and Ilese, located in Ijebu East Local Government Area.

Analytical Techniques

Data collected were analyzed using descriptive statistics and cost and returns technique. The descriptive statistics involves the use of frequency tables. Such socio-economics characteristic such as age, sex, education qualification, marital status, and marketing years of experience and the relative incidence of the many problems encountered in the cause of NTFP extraction were obtained and presented in a table. Cost and returns was used to calculate gross margin and other financial estimates. The gross margin analysis is given as:

GM = TR –TVC ……..……..... (1)

NP = GM – TFC ……..……...……..... (2)

Where: GM = Gross margin, TR= Total Revenue, TVC = Total Variable Cost, NP = Net Profit, TFC = Total Fixed Cost. The performance and economic viability of the business were determined by the use of the following profitability ratios:

Benefit Cost Ratio (BCR) = TR/TC ……..…….…… (3)

Gross Ratio (GR) = TC/TR ……..……..…….. (4)

Rate of Returns on Investments (RORI) = NP/TC ….……(5)

Expenses Structure Ratio (ESR) = TFC/TVC ……..……... (6)

Results

Socioeconomic Characteristics of the Survey Respondents

Table 1, shows the distribution of respondents by level of education in years. From the results 32.04 % of the respondents on full time basis do not had any formal education, 49.52 % had only primary education while 12.62 % had secondary education and only 5.82 % had tertiary education. This shows that larger percentages of NTFP dealers have little or no formal education while only few learned people are engaged in it. This might probably be due to their inability to secure a white collar job. It was found out in Table 1, that 26.1 % of all NTFP dealers operating on full time basis are male and 73.79 % are females, while 29.4% of male and 70.6 % of female are operating on part time basis. Thus, females are much more into the business. This is due to the fact that NTFP resemble petty trading in nature which female are mostly engaged in. The age of the NTFP dealers is an important factor that affects their level of involvement, productivity and overall coping ability. As can be seen from the table, the modal age group is 31-40 and 41-50 with 59.22 % and 30.10 % respectively on full time basis. It can be deduced thus that active age group is engaged in the business. Even on part time basis, most active age groups are involved because they are endowed with strength to carry out the tedious exercise of extraction. In addition, 96.11 % of NTFP dealers on full time basis are married, while 76.47 % of those involved in the business on part time basis are married. The high percentage shows that high numbers of people are feeding their family through NTFP means. The experience of the NTFP dealers were measured in years based on the period they have been involved in the business. This is in line with the socio-economics characteristic of chewing sticks (NTFP) marketers in the study of Olawumi, et al., (2012). Table 1, shows that 25.24 % of the NTFP dealers in the study area have been on the job for less than 6 years, 59.22% had between 6-10 years of experience on the job, 7.77 % had between 11-15 years of experience on the job, 5.83 % had between 16-20 years of experience on the job while 1.9 % had more than 20 years of experience on the job on full-time basis. This shows how long NTFP business has been sustaining the dealers and most of them had taken to the business as their livelihood vocations. Also, In Table 1 different types of NTFPs dealer specialization were revealed in the study area. Bamboo has the largest percentage dealership with 42.7 % engaging in it on full-time basis and 58.83 % on part-time basis followed by snail, mushroom and bush meat dealership with 23.30 % on full-time and 59.41 % on part-time basis. This is in line with the apriori expectation that snail and other aquatic organism should be in abundance in a highly vegetated area. About 74 % of NTFPs come from government forest reserves followed by local forest reserves of 17.5 % and 8.74 % from private forest reserves. The most common problems encountered by the respondents are price variation due to seasonality and storage problem and wastage with 21.72 % and 16.82 % occurrence on full-time basis and 20.51% and 17.95% occurrence on part-time basis. The change in price (variation) explains instability and elasticity in the price of the agricultural commodity. Other major problems encountered are dry weather and transportation/road-related problems with 13.12% and 12.71% occurrence for full time respondents and 15.39% and 12.82% occurrence for part time respondents.

Table 1 - Socioeconomic Characteristics of the Respondents

Socio-economics Variables N = 103	Full –Time		Part –Time		Socio-economics Variables N = 103	Full –Time		Part –Time	
Level of Education	**No**	**%**	**No**	**%**	**Distribution of Respondents by Specializations**	**No**	**%**	**No**	**%**
No formal education	33	32.04	2	11.75	Snail, mushroom and bush meat	24	23.30	5	29.41
Primary Education	51	49.52	12	70.59	Leaves (teak)	8	7.80	-	-
Secondary Education	13	12.62	3	17.66	ROOT AND TUBER	10	9.70	-	-
Tertiary Education	6	5.82	-	-	PLANTAIN AND BANANA	6	5.80	-	-
SEX OF RESPONDENTS					CLIMBERS	9	8.70	1	5.88
MALE	27	26.21	0.5	29.4	BAMBOO	44	42.70	10	58.80
FEMALE	76	73.79	12	70.6	FRUIT *	2	1.90	1	5.88
Age Group					**Source of NTFPs**				
21-30	7	6.80	9	52.94	Government Forest Reserve	76	73.77	8	47.05
31-40	61	59.22	6	35.29	Private Forest Reserve	9	8.74	2	11.77
41-50	31	30.10	2	11.77	LOCAL FOREST RESERVE	18	17.5	7	41.13
51 and above	4	3.88	-	-	**Distribution of Respondents Based on Problem Encountered**				
Marital Status					Harvest technique	7	2.87	2	5.13
Married	99	96.11	13	76.47	Price variation due to Seasonality	53	21.72	8	20.51
Single	4	3.89	4	23.53	DRYNESS (WEATHER)	32	13.12	6	15.39
YEARS OF EXPERIENCE					INADEQUATE CAPITAL & FUNDS	14	5.74	1	2.56
< 6	26	25.24	9	52.94	TRANSPORTATION AND ROAD PROBLEMS	31	12.71	5	12.82
6 – 10	61	59.22	5	29.41	LABOUR AVAILABILITY AND COST	7	2.87	0	0
11 – 15	8	7.77	1	5.88	STORAGE PROBLEMS AND WASTAGE	41	16.80	7	17.95
16 – 20	6	5.83	2	11.77	TEDIOUSNESS	20	8.20	2	5.13
21 AND ABOVE	2	1.94	-	-	SCARCITY	29	11.89	7	17.95
					RIPENING PROBLEM	10	4.1	1	2.56

* Spondias mombin, Coula edulis, Treculia Africana, Magnifera indica Citrus spp., Cola nitida

Returns of NTFPs Trade to Households in the Study Area: Costs and Returns of NTFPs Trade in the Study Area

The average gross margin of NTFP dealers varies for various reasons as it is possible for some to be in the market throughout the month but not for others. In Table 2, it can be seen that snail, mushroom and bush meat have the highest gross margin, due to daily consumption of the item. It is followed by bamboo, which is due to its high demand for building construction purposes. Invariably, the remaining items have appreciable gross margin monthly which the dealers take as their earnings for the month. However, each products has varying total revenue, total cost which comprises of the total fixed cost and total variable cost. The highest component of the variable cost is the running cost. The fixed cost is ridiculously low because it excludes the cost of land. It represents depreciation on simple tools and implements such as knifes and baskets. This cost structure reveals the ease of establishment of this business especially for novel entrepreneur looking for a good starting point. It is such a business that can provide the needed experience for a larger business formation (Longenecker *et al.*, 2008). Adegeye and Dittoh (1982) asserted that Gross margin is a good measure of profitability. A business is profitable and viable if and only if revenue is greater than the total variable cost which makes positive the gross margin. The varying average gross margin obtained is very high considering the amount of investment exclude bamboo products. Although smaller, this compares favourably with gross margin of ₦52,333.10 and ₦59,717.28 for users of organic manures and inorganic fertilizers respectively, who produce vegetables in the city (Akinola *et al.*, 2011). The smaller gross margin is revealing the fact that NTFPS items are seasonally constrained due to unavailability of the product all the time and general perishability nature of agricultural products. This cannot be compared with other industrial product. The positive gross margin value revealed that the enterprise is highly profitable in the study area. Both the gross margin and the net profit values of the NTFPs corroborate with the findings of Adekunle (2001) who reported profitability of micro-enterprise based on five year data (2001-2005) in the area. In addition, the result of the profitability and the financial efficiency estimates shown in the table revealed various values of Benefit Cost Ratio, Gross Ratio, Rate of Returns on Investments, and Expenses Structure Ratio for the various NTFPs items. Benefit Cost Ratio was 3.23 for snail; mushroom and bush meat which implies that for ₦1 invested yielded a benefit of ₦3.23. This ratio is one of the concepts of discount method of project evaluation. Project with benefit cost ratio greater than one, equal to one or less than one indicate profit, break-even or loss respectively. (Olagunju *et al.*, 2007). Since the ratio is greater than one, it shows profit and indicates that all the NTFPs enterprise is profitable. Similarly, the gross ratio value of 0.31 for snail; mushroom and bush meat implies that every 31k spent would yield a benefit of ₦1.00 and this implies that the enterprise is viable which cut across other NTFPs items considered in this study. The rate of returns on investments value of 2.30 for snail; mushroom and bush meat implies that there is return of 230 % on ₦1.00 every invested in snail; mushroom and bush meat enterprise as well as all other NTFPs items. This will be of interest to credit providers who may want to support the enterprise. Even with the traditional money lenders who charge 100 % interest on loans, NTFPs enterprise would conveniently repay the loan and still break-even. Also, the expenses structure ratio value of 0.03 for snail; mushroom and bush meat implies that about 3 % of the total cost of marketing is made up of fixed cost component. It shows that NTFPs enterprise is such that will not tie down the equity of the investor in fixed asset. Such an enterprise is good for an entrepreneur with low capital base who is just entering the business world.

Table 2 - Costs and Returns Analysis of NTFPs Extraction in the Study Area per Month

Items	NTFPs Extracted in the Study Area						
	Snail, Mushroom and bush meat	BAMBOO	CLIMBERS	**Leaves (*Tectonia grandis* -Teak Tree)**	PLANTAIN AND BANANA	ROOT AND TUBER	FRUIT *
Total Revenue (₦)	30,000.00	65,000.0	18,000.00	18,000.0	17,000.0	17,000.00	12,000.00
Variable Cost (₦)							
Labour Cost (₦)	1,800.00	2,700.00	900.00	900.00	1,800.00	1,800.00	450.00
Transport Cost (₦)	6,000.00	50,000.0	3,000.00	4,500.00	1,500.00	4,500.00	2,400.00
Other Costs (₦)	1,200.00	1,300.00	600.00	600.00	1,200.00	1,200.00	150.00
Total Variable Cost (₦)	9,000.00	54,000.0	4,500.00	6,000.00	4,500.00	7,500.00	3,000.00
Fixed Costs (₦)	300.00	4,000.00	300.00	300.00	3,000.00	300.00	100.00
Total Cost (₦)	9,300.00	58,000.0	4,800.00	6,300.00	7,500.00	7,800.00	3,100.00
Gross Margin (₦)	21,700.00	17,000.0	13,200.00	11,700.0	9,500.00	9,200.00	8,900.00
Net Profit (₦)	21,400.00	13,000.0	12,900.00	11,400.00	6,500.00	8,900.00	8,800.00
Benefit Cost Ratio	3.23	1.12	3.75	2.86	2.27	2.18	3.87
Gross Ratio	0.31	0.89	0.27	0.35	0.44	0.46	0.26
Rate of Returns on Investments	2.30	0.22	2.69	1.81	0.87	1.14	2.84
Expenses Structure Ratio	0.03	0.07	0.07	0.05	0.67	0.04	0.03

** Spondias mombin, Coula edulis, Treculia Africana, Magnifera indica Citrus spp., Cola nitida*

Conclusion and recommendation

From the findings of this study it could be concluded that NTFPs marketing is a profitable enterprise in the study area. This is because NTFPs marketers realized a net profit of USD 109 (N 21,700. 00) for snail, mushroom and bush meat, USD 85 (N17,000.00) for bamboo, USD 66 (N13,200.00) for climbers plant, USD 59 (N11,700.00) for leaves (Tectonia grandis -Teak Tree), USD 48 (N9,500.00) for plantain and banana, USD 46 (N9,200.00) for root and tuber, USD 45 (N8,900.00) for fruit and return per naira invested on NTFPs item on each items were 2.30, 0.22, 2.69, 1.81, 0.87, 1.14, and 2.84 respectively. NTFPs marketing in the study area encountered different problems such as price variation due to seasonality storage, wastage, dryness (weather) and transportation/road problems respectively.

Based on these findings, the study recommends that government should maximize the NTFP dealer's production potential by making more commitment to ensuring access to productive resources such as land, capital and planted materials at highly subsidized rates. This encourages afforestation programmes with particular reference to climber plants and bamboo production. Storage means should be looked into, which will curb wastage and ensures scarcity as well as ripening problem of the fruits. Stakeholders should be educated on sustainable methods of harvesting to forestall extinction of the highly valuable products.

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