

## STRUCTURE AND PROFITABILITY ANALYSIS OF HONEY MARKET IN OYO STATE, NIGERIA

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### Abstract

*Honey is a natural unrefined sweet food produced by bees from nectar of flowering plants which apart from being delicious and nutritious, has been found useful in many industries especially for pharmaceutical purposes. The focus of the study therefore was to analyze profitability of honey marketing and investigate its market structure. Primary data was used for the study. The study employed descriptive statistics, Gini-coefficient and the Lorenz curve analyses to describe socioeconomic characteristic of the respondents and ascertain the market structure. Budgetary analysis was used to estimate the cost and returns. A total of 244 respondents were interviewed with the aid of structured questionnaire and interviewed guide. The result showed that average age of the respondents was 46.5 years. Majority (84%) were married with average household size of 6 members. The Gini-coefficient value of 0.80 obtained indicated that honey market inclined towards imperfect market structure. The budgetary analysis revealed that on the average, honey marketers generated gross margin of ₦986.67k and profit of ₦716.65k per litre of honey sold. The benefit cost ratio was 1.73, revealing that honey marketing is a very profitable enterprise in the study area. Adulteration of honey and lack of access to finance were the major constraints faced by honey marketers. The study concluded that although honey marketing was found to be a profitable enterprise in the study area, there is evidence of imperfect competition in the market structure.*

**Key Words:** Forest, Marketing, Medicine, Profitability, Honey, Structure

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### Introduction

The importance of Non timber forest products (NTFPs) and their contributions to rural livelihood in many developing countries cannot be over emphasized. (Shackleton and Shena, 2004). Timber was considered the prevalent reason for forest management and hence little

attention was given to NTFPs by foresters, policy makers and economic planners. (Nwaihu *et al.*, 2015). However, there was common deficiency of appreciation in the value and functions of NTFPs in the subsistence of rural dwellers (Oyun, 2009). Such products include honey, produced by the honey bees. Bees (*Induce*

*apis*) generally called honey bees belong to the genus *Apis*, Tribe Apini, sub-family Apinae, Order Hymenoptera, Class Insecta, Phylum Arthropoda and Kingdom Animalia (Okeme *et al.*, 2014). As reported by USDA (2007) honey is a combination of different compounds which include; sugars mainly fructose and glucose, other carbohydrates, water, little content of vitamins and minerals, and other compounds. According to Folayan and Bifarin (2013) honey bee workers produces honey mainly from flowers nectar, and also from honey dew, leaves, bark of trees etc. Thus, honey can be defined as “the nectar and saccharine discharge of plants, collected, modified and accumulated as honey in the comb by honey bees *Apismellifera*” (Famuyide *et al.*, 2014). Beekeeping enjoy many advantages such as the availability of beekeeping market both locally and internationally, recent technologies, employment, income generation and above all, ability of the insect to source for their own food all year round (Folayan and Bifarin, 2013). According to Animene (2007), honey is referred to as a money spinner because it is so much in use and consequently in demand. Aside from being delicious and nutritious, it has been found useful in many industries especially for pharmaceutical purpose. Honey is an important commodity. It has long been used as one of man’s most highly desired foods (Peterson, 2006). It is used in baking, as a medicine, as addition in various beverages and as a substitute for sugar in some commercial beverages. As an antimicrobial agent, honey may have the ability for curing variety of ailments (Knox, 2004). Beekeeping has been found to improve poverty in Nigeria (Adedeji and Omoba, 2016). It also increases income in the rural communities and

benefit the country’s economic situation. Beekeeping provides an excellent service for farmers by crops pollination as honey bees are the main pollinator for most plants. The most recent yearly estimation of honey production and marketing was more than 2000 tones, yet Nigeria’s productions seems not to be significant as it was not acknowledged by the Food and Agriculture Organization (FAO, 1996). This work therefore looked into the structure and profitability of honey market in Oyo State Nigeria with a view to assisting policy makers in the inclusion of the product as a major resource that can boost the country’s internally generated revenue if it is well harnessed.

The development of reliable and stable market structure has been a relevant element in commercialization and specialization in the agricultural sector. In order to study the functioning of markets many researchers have applied the structure-conduct-performance paradigm. Subsequently, it was applied in the functioning of markets in agricultural sector, and served as a tool to evaluate the performance of the commercial system. The framework distinguishes between three related level; the structure of the market, the conduct of the market, and the performance of the market. A market is the set of actual and potential buyers of a product. These buyers have distinct needs or wants that can be quenched through exchange. Consequently, market size is dependent on the number of people who show the lack, have capabilities useable for exchange, and are inclined towards offering these capabilities in exchange for their want. Primarily, the term market represents the place where buyers and sellers meet together for exchange of their goods, such as a village square. Economists use the term to denote an

aggregation of buyers and sellers who conduct business in a specific product category, as in the housing market or the grain market (Philip *et al.*, 1999).

Structure of the market, is the degree of product differentiation and barriers to entry/exit are assessed. Product differentiation refers to the process of distinguishing of a products or service from others in the market in order to make it more attractive to a particular target market (Michail, 2011). Policies are often confused through enforcement problem such as tariffs and outright ban on importation .Indigenous mechanism such as season, ability of buyers to bargain and the concept of demand and supply characterized the Nigerian honey market.

To close-up the demand and supply gap, the sustainable honey production depends largely on its market structure and performance. Against this backdrop, the study examined the structure, and performance of honey marketing Oyo State, Nigeria, with a view to ascertaining its challenges and unfolding techniques to enhance its efficiency. The specific objectives of this study are to describe the socioeconomic characteristics of honey marketers, to investigate pattern of sellers' concentration, estimate the cost and returns associated with honey marketing enterprise and identify the challenges to honey marketing activities in the study area.

## Materials and Method

### Study Area



Fig. 1: Map of Nigeria with Oyo State highlighted in gray. (Source: Ndianaefo, 2016)

The study was conducted in Oyo State Nigeria. Oyo State is situated in the South-Western part of Nigeria. It is located between latitudes 7° 3' and 9° 12' North of the equator and longitudes 2°47' and 4° 23'

East of the Meridian. It is bounded on the West by Republic of Benin, on the North by Kwara State, on the East by Osun State and on the South by Ogun State. The population of Oyo State as at 2006 was

5,591,589 million by National Population Commission (NPC). It is made up of 33 local government areas, and the state capital is Ibadan. Oyo state covers a land area of 27, 000 square kilometres. The state do experience two different seasons in a year, namely; wet season and dry season. The pattern of rainfall is noticeably steady ranging between 1,211 mm in the far North and 1,264 mm in the south at Ibadan in the last two decades. They early rainfall at average is calculated to be between 1,194 mm in the North and 1,278 mm in the South. The average temperature is 27° C. The cultivation of tree crops such as cocoa, kola, oil palm and citrus as well as arable crops like maize, yam, cassava and rice is favoured in parts of the state with high relative humidity. The State was divided into four agricultural zones and twenty eight blocks for convenience of administration by Oyo State Agricultural Development Project (OYSADEP). The agricultural zones are Ibadan/Ibarapa (9 blocks), Ogbomosho (5 blocks), Oyo (5 blocks) and Saki (9 blocks).

#### ***Population of the Study, Sampling Technique and Sample Size***

Population of the study includes all honey marketers in Oyo State. The study made use of all the 4 Agricultural Zones in Oyo State because honey marketers are found in all the zones. These include Ibadan/Ibarapa, Saki, Oyo and Ogbomosho zones. Preliminary findings revealed that there are well established honey marketers' associations in each of the agricultural zones. Therefore the comprehensive list was collected from honey marketers' association secretariat of each zone for the purpose of this study.

Since complete list was available in each zone, random sampling technique was used to select respondents. Fifty

percent (50%) honey marketers on each list were selected. Going by this, sample size consists 98 of the respondents from Ibadan/Ibarapa zone, 67 of the respondents from Saki, 45 of the respondents in Ogbomosho and 34 of the respondents in Oyo zone. This makes a total of two hundred and forty four (244) respondents used for the study. The data collected for this study were basically from primary source.

#### ***Analytical Techniques***

A combination of analytical tools was employed for this study. These include descriptive statistics, Gini-coefficient and budgetary analyses.

### **Results and Discussion**

#### ***Socio-economic Characteristic***

Table 1 shows that many of the respondents (34.4%) are within the age bracket 41-50 years, 27.9% are within the range of 31-40 years, 20.5% are within the range of 51-60 years, 6.2% are less than the 30 years, while the remaining 11% are above 60 years. This indicates that majority of the honey marketers are in their active age. The means age was 46.5 years. This can impact business aggressiveness of the respondents positively. This result is in agreement with the findings of Mshelia *et al.* (2013) where he found that about 66% of the respondents were between 30-49 years of age. The result on gender showed that 72.5% of the respondents were male while 27.5% were female. This implies that more males were involved in honey production/sales/marketing enterprise. This indicated that male gender is more involved in Non-timber forest products (NTFPs) in the study area. This could be as a result of primitive system of honey production which predisposes mostly the men to practice. This conformed to

findings of Afees *et al.* (2013) in which men were 82% of the respondents in their research work on economic analysis of modern honey production.

Marital status revealed that majority of the respondents (84.0%) in the study area were married, 5.7% were single, 3.7% claimed to be divorced, 2.5% were widowed and 4.1% of the respondents were separated. It indicated that married individuals were actively involved in different activities of honey business contributing to improve welfare to the household. The result is strongly in line with the findings of Afeez *et al.* (2012) where 90% of respondents were reported to be married. Religion distribution revealed that 54.5% of the respondents were practicing Christianity, 43.4% practices Islam and 2.1% were traditional worshipers. This implied that religious affiliation does not pose a threat to the demand for NTFPs. This echoes Famuyide *et al.* (2013) who found 52.7% of their respondents were Christians. In their research on assessment and sustainable management of NTFPs used as food and medicine among dwellers in the urban area of Oyo state, Nigeria. The trade is not a religions-biased. Table presented the finding that honey marketers in the area of study had one form of formal education or the other ranging from primary, secondary or tertiary education as against 8.6% that claimed not to have any form of formal education. This implied that majority of honey marketers in Oyo are educated. This result is supported by the findings of Musa *et al.* (2014) where 75% of the respondents were educated.

Primary occupation revealed that 42.2% of the respondents were farmers. This gives an indication that majority of the respondents spend more time in

farming activities alongside with gathering and collection of NTFPs in order to boost the welfare of the households. This corroborates with findings of Mshelia *et al.* (2013) in their work on profitability analysis of honey marketing in Ganye and Toungo Local Government Area of Adamawa State, where 74% respondents were farmers. The mean household size was 6.1 members. This implied that the respondents had relatively large household size; the size of the household is expected to affect the amount of farm labour, determines the food and nutritional requirements of household and often affects household's food security. The result shows that most of the population explosion occurs in rural areas. However, they are important in the supply of family labour after schooling hours particularly in bee production, harvesting, processing and marketing. This corroborates with findings of Moses (2015) in study on "Value Chain and Economic Analysis of Honey Production in Nkwanta North and South Districts of the Volta Region" where 5.6 was reported as the mean household size of their respondents. Result as presented in Table revealed that many of the respondents (54.5%) had been in honey business for 6-15 years while 42.2% of the respondents claimed less than or equal to 5 years. The mean marketing experience was 7.5 years. It is expected that the higher the years of experience the more knowledgeable in the marketing techniques as well as rational in information utilization the respondents will be. The mean income earned monthly was ₦42,860. This shows that the respondents were low-income earners. This conformed to the findings of Famuyide *et al.* (2013) where 61.8% of their respondents earned between ₦10000-30000 monthly.

Table 1: Socio-economic characteristics of the respondents

Variable	Frequency	Percentage	Mean
<b>Age</b>			
< 30	15	6.2	46.5
31-40	68	27.9	
41-50	84	34.4	
51-60	50	20.5	
Above 60	27	11.1	
<b>Gender</b>			
Male	177	72.5	
Female	67	27.5	
<b>Marital Status</b>			
Single	14	5.7	
Married	205	84.0	
Separated	10	4.1	
Divorced	9	3.7	
Widow	6	2.5	
<b>Religion</b>			
Christianity	133	54.5	
Islam	106	43.4	
Traditional	5	2.1	
<b>Educational Level</b>			
Non formal educational	21	8.6	
Primary education	20	8.2	
Secondary education	128	52.5	
Tertiary education	75	30.7	
<b>Primary Occupation</b>			
Trading	51	20.9	
Farming	103	42.2	
Civil servant	57	23.4	
Artisan	25	10.3	
Private business	8	3.4	
<b>Household size</b>			
≤5	97	39.8	6.1
6-10	136	55.7	
Above 10	11	4.5	
<b>Marketing Experience</b>			
≤5	103	42.2	
6-15	133	54.5	
16-25	8	3.5	
<b>Monthly Income</b>			
≤20000	63	25.8	42,860
20001-40000	101	41.4	
40001-60000	47	19.3	
60001-80000	17	7.0	
Above 80000	16	6.6	
Budgetary analysis			

### **Gross Margin Analysis**

Gross Margin (GM) is used in the estimation of honey marketing profitability. It is calculated as the difference between Total Revenue (TR) and Total variable cost (TVC). The mean (average values were used for cost and revenue.

TR is quantified as: Quantity of honey sold  $\times$  price per unit

TVC is quantified as total cost of all variable inputs like purchase/ production, transportation, labour, hired labour, paper label (branding), advertisement etc.

TFC include cost associated with marketing tools and equipment's like; rent, tax, Jerry can, drum, Plastic Bucket, Plastic bowl, bottle, weighing scale etc.

Gross margin = Total Revenue – Total variable cost

$$GM = TR - TVC$$

$$TVC = \text{₹}33,348.03\text{k}$$

$$TR = \text{₹}79,327.05\text{k}$$

Therefore:

$$GM = TR - TVC$$

$$GM = \text{₹}79,327.05 - \text{₹}33,348.03$$

$$GM = \text{₹}45,979.02\text{k}$$

Recall that on the average 11.66 litres of honey was sold per week by the respondents, making it an average of 46.6 litres per month.

Therefore:

GM per litre of honey sold

$$= \frac{45,979.02}{46.6} = \text{₹}986.67$$

### **Profit Analysis**

$$\text{Profit } (\pi) = GM - TFC$$

$$\pi = \text{₹}45,979.02 - \text{₹}12,583.25$$

$$\text{Profit} = \text{₹}33,395.77\text{k}$$

$$\text{Averagely} = \text{₹}33,395.77$$

On the averagely per honey marketers, they realize ₹33,395.77k per month which shows that the honey marketing in the study area was a lucrative and profitable agriculture business.

Profit per litre of honey sold

$$= \frac{33,395.77}{46.6} = \text{₹}716.65$$

### **Benefit Cost Ratio Analysis**

Benefit cost ratio (BCR) is a ratio to determine the profitability of the honey.

$$BCR = TR/TC$$

$$TR = \text{₹}79,327.05\text{k}$$

$$TC = \text{₹}45,931.28$$

$$BCR = 79,327.05/45,931.28$$

$$BCR = 1.73$$

Considering the benefit cost ratio it revealed that for every ₹ 1 invested, the honey marketers made returns of 73k. Since BCR is greater than 1. It indicates that honey marketing is profitable in the study area.

Pattern of sellers' concentration (structure of the market)

Sales volume and market share

The honey market structure in the study area was analyzed using Gini – Coefficient model. Table 2 revealed the variation in revenue generated among the sellers revealed that a total of ₹592218.18 were generated among the 244 honey marketers. Thirty respondents sold between 1-50liters of honey at ₹75820 contributing 0.128% of the total sales volume. Furthermore, 21 marketers had sales ranges of 300 litres and above, and contributed ₹111547.62 to the total revenue generated (18.8%). On the average 11.66 litres of honey was sold per week by respondents, making it an average of 46.6 litres per month.

Table 2: Quantity of Honey Sold per –week in litres

Quantity sold (litre per week)	Frequency	Percentage (%)
≤50	30	12.30
51-100	67	27.46
101-150	88	36.07
151-200	21	8.61
201-250	10	4.10
251-300	7	2.87
Above 300	21	8.61
<b>Total</b>	<b>244</b>	<b>100</b>

### Analysis of Honey Market Structure using Gini-coefficient

The Gini-coefficient calculated was 0.865, which is close to unity (1). Mathematically, it implies that there were very high variation of sales and revenue generated among the respondents as 0.865 is close to 1 (value of unequal

distribution). This is a demonstration that the market is tending towards imperfection, characterized by large number of buyers and comparatively very few sellers such that the action of a seller would not have significant influence on the marketers.

Table 3: Result of Gini coefficient analysis

No of litre sold	No of sellers	Prop of sellers (X)	Cum prop of sellers	Average Annual sales	Prop of sales (Y)	Cum prop of sales	XY
≤ 50	30	0.123	0.123	75820.00	0.128	0.128	0.016
51-100	67	0.275	0.398	711152.24	0.120	0.248	0.033
101-150	88	0.360	0.758	78596.59	0.133	0.381	0.048
151-200	21	0.086	0.844	73166.67	0.124	0.505	0.011
201-250	10	0.041	0.885	81650.00	0.138	0.643	0.006
251-300	7	0.0029	0.914	100285.71	0.169	0.812	0.005
Above 300	21	0.086	1.000	111547.62	0.188	1.000	0.016
<b>Total</b>	<b>244</b>			<b>592218.83</b>			<b>0.135</b>

$$\begin{aligned}
 GC &= 1 - \sum XY \\
 &= 1 - 0.135 \\
 &= 0.865
 \end{aligned}$$

### Market Participants on Lorenz Curve

The results presented in figure 2 shows the Lorenz curves which graphically depict the nature of seller concentration that was quantitatively analyzed using Gini coefficient. As shown on the graph, the cumulative market share was plotted

on the x axis while the cumulative proportion of the total number of traders was plotted on the y axis. A perfectly equalized degree of concentration is depicted by the straight diagonal line  $y=x$  called the line of perfect equality or the 45° line. The degrees of inequalities in



market share among the marketers are shown by the curves which form an arc with the 45° line (line of equality). The extent of deviation of these curves from the line reveals the level of seller concentration among the marketers and the nature of market competitiveness in the study area. The value of Gini coefficient (0.86) for honey marketers in Oyo State is tending towards unity indicating that there is inequality or high

level of seller concentration at this level. Furthermore, from the Lorenz curve (Figure 2) the extent of deviation of the curve from the line of equality shows an imperfect market competition (86% gini), such that no particular honey market participant is large enough to have the market power to set the price of honey, but only a few of the marketers handle the major share of the quantity transacted at the market.

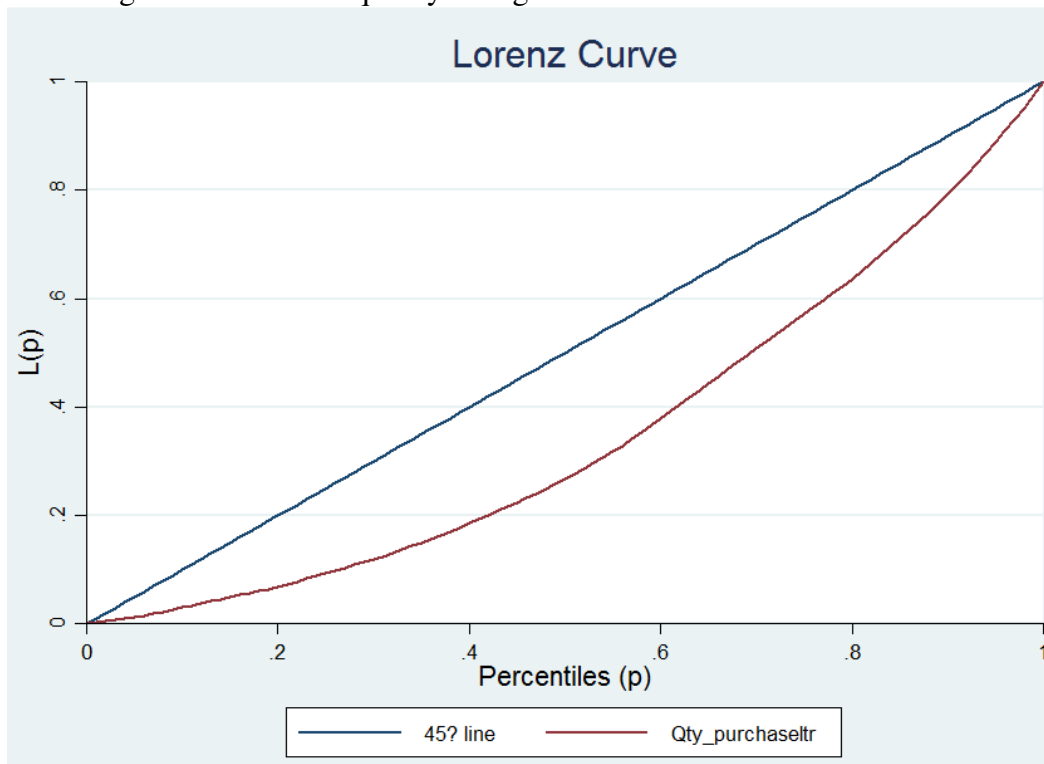


Fig. 2: Presentation of Lorenz curve analysis

### ***Challenges of Honey Marketing Enterprise in the Study Area***

Result of the data analysis revealed that the major challenge faced by the marketers of honey include adulteration of product as claimed by 90.9% of the respondents in the study area. Other challenges include transportation (35.3%), non-accessibility to credit (29.5%), low demand (27.1%), financial constraint (25.4%), lack of market coordination

(18.9%), lack of market information (18.9%), unstable market price (11.1%) and inadequate storage facility (8.2%). This finding reveals that a lot of marketers sell adulterated honey which can be harmful for human consumption. This is in line with the findings of Onwumere (2012); where 31.25% of respondents indicated adulterated in honey as challenge. This is an indication that the problem getting worse by the years.

Table 4: Frequency distribution of the respondent based on their challenges

Problem	Frequency	Percentage (%)
Adulteration	222	90.9
Transportation	86	35.3
Non- access to credit facility	72	29.5
Low demand	66	27.1
Financial constraint	62	25.4
Lack of information	46	18. 9
Lack of coordination	46	18.9
Unstable market price	27	11.1
Inadequate /Storage	20	8.2
Total	647*	

(\*) Multiple responses

## Conclusion

This study concludes that honey market structure in the study area tends towards imperfect competition. Honey marketing is a profitable enterprise in the area of study. The prominent marketing challenge faced by the respondents is adulteration of product. Since finding of this study revealed that honey marketing is not only profitable but also sustainable, it is therefore recommended that young school leavers should engage in honey marketing as a reliable source of job opportunity, in order to reduce the rate of unemployment in the country.

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