# Profitability Analysis of Yam Marketers in Benue State, Nigeria

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**Abstract**
*The study assessed the profitability analysis of yam marketers in Benue State, Nigeria using cross-sectional research design. Data were collected through the administration of structured questionnaire on a sample of 389 respondents drawn from the study population of 14,760 yam marketers in Benue state. Profitability ndices such as Gross Profit Margin (GPM), Net Profit Margin (NPM) and Rate of Return (RR) were used for data analysis. Study findings revealed that there is significant difference between the market margins of wholesalers and retailers in yam marketing in Benue State. The study therefore recommended that Benue State Internal Revenue Service should grant tax relies to yam marketers in Benue State to enable them derive positive returns from their businesses. Also, yam marketers' association in Benue Sate should monitor the activities of commissioned agents who contribute to price hike in the marketing chain, by spelling out punitive measures for defaulters, including blacklisting defaulting agents to allow the market forces of demand and supply to operate.*

**Key Words:** Profitability Analysis, Market Margins and Yam Marketers

## 1.0 Introduction

Yam belongs to the family *Dioscoreaceal* and to the genus, *Dioscorea.* It is an important annual tuber crop of the tropics, It is a crop with many species, which originated from South East Asia and was brought to West Africa in the 16th century (Toluwase & Sekumade 2017). Some of the yam species are water yam (*Dioscorea alata*), White yam *(Dioscorea rotundata),* yellow yam (*Dioscorea Cayaniensis*), Chinese yam (*Diosacorea esculent*) and three-leaf yam. (Zaknayiba & Tanko, 2013).Yam is an important food crop especially in the yam zone of West Africa comprising Nigeria, Cameroon, Benin, Togo, Ghana and Cote de 'voire, the zone produces more than 90% of the total World production estimated at 20-30 million metric tons per year (Adeniji *et al* 2019). Yam is also grown in Latin America and Caribbean Countries like Colombia, Brazil, Haiti, Cuba and Jamaica, Yams are mostly marketed as fresh tubers or processed flour and prepared for consumption (FAO, 2015).

Nigeria is noted to be a leading world producer of yam with over 25 million metric tons per annum out of the total world production of 30 million tons per annum, (FAO, 2015). It is one of the principal tuber crops in the Nigerian economy in terms of cultivation and in the volume and value of marketing. (Banire &Amujoyegbe 2015).Yam is the fifth most harvested crop in Nigeria, following cassava, maize, guinea corn, and beans/cowpea. More so, after cassava, yam is the most commonly harvested tuber crop in the country, (National Bureau of Statistics, 2012).

The largest yam market in the world is located in Zaki Biam, a small town in Benue State in North Central part of Nigeria, (FAO, 2015). A huge chunk of two million tubers of yam sold weekly in Benue State are transported through Zaki Biam market in Ukum Local government area of Benue State. Between 120 and 200 trucks loads of yams depart this market on daily basis; the yam comes from various farm lands and smaller markets around Ukum, Logo, Katsina Ala and other Local Government Areas in Benue State (Akura, 2022).

Unfortunately, as observed by Akura (2022), the yam market does not have a well-organized marketing system in Benue State Nigeria. Moreover there are no standard and uniform scales for

measuring the size of the yam tubers among marketers. Worst still, most government policies and programs aimed at achieving food security in Nigeria have focused on food production with little regards for food marketing. Worst of all, there is a paucity of data on yam marketing in yam producing areas in Nigeria. The yam market in Benue State is organized in such a way that there is no or little control from the government. It is therefore, obvious that yam wholesalers and retailers are bound to face social and economic challenges that will impact negatively on their market margins. The study is therefore, undertaken to assess the profitability analysis of yam marketers in Benue State, Nigeria.

## 2.0    Review of Related Literature

## 2.1    Conceptual Review

Key concepts elucidated in this section are yam, market margin, wholesalers and retailers.

### 2.1.1  Yam Marketing

Phillips, Ogonna, Etudaiye, Mignouna and Siwoku (2013) explained that yam tubers are sold on cash and carry basis and prices based on perceived size and quality of tubers. There is normally low grading system in place and a lack of formal contacts and arrangements between farmers and traders. From district markets yam tubers are transported to major urban centres such a `Lagos, port- Harcourt and Kano for sale at larger urban markets. The yam marketing channels are summarized as shown in figure 1.
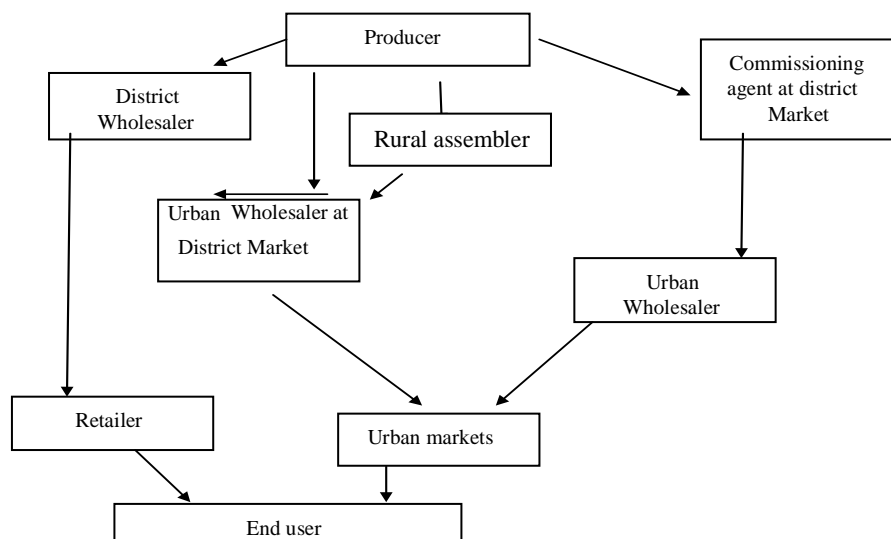


**Figure 1: Summary of the Yam Marketing Channels**
**Source:** *Phillips, D.,et al,. (2013), Yam marketing channel Analysis: Yam Improvement for Income and Food Security on West Africa (YIIFSWA).*

According to Phillips *et al.,* (2013), there are a number of different types of traders involved in the purchase and sale of yam tubers. Rural assemblers and local wholesalers (also known as shed owners in some states) purchase yam from local farmers to sell on to individual consumers but principally to larger urban traders (wholesalers) who visit district markets. The local wholesalers serve as collection centres for farmers.

## Wholesaler

A wholesaler is an intermediary entity (person or enterprise) in the distribution channel whose role is to buy in bulk and sell to resellers (also known as retailers) rather than to consumers. Wholesalers obtain large quantities of products from producers, may store them, and may break them down into cases or sets and other smaller units more convenient for retailers to buy; this process is best described as "breaking bulk".

Wholesale marketing involves buying in large quantities from the farmers and selling in small quantities to the retailers and final consumers (Kotler 2011) asserted that the retailer's sales volume comes primarily from wholesalers. to improve on the wholesale marketing of yam would demand the understanding, marketing function and cost. (Okoedo_Okojie & Okwuokenye, 2016) asserted that whatever affects marketing functions and cost will ultimately affect the agricultural development process and socio-economic wellbeing of the citizenry, this is because too high a cost will limit customers' ability to buy and this will eventually limit agricultural production (yam inclusive).

## Retailer

A retailer is an intermediary entity (person or enterprise) in the distribution channel that buys products from wholesalers, agents, or and producers and then sell them to consumers. Retailers obtain certain quantities of products from producers, agents, or wholesalers with the intent of reselling them to end users even in smaller quantities. They may store them, and may further break them down into cases or sets and other smaller units more convenient for consumers to buy (Okoedo_Okojie & Okwuokenye, 2016).

### 2.1.2 Profitability

Margins represent the price charged for one or a collection of marketing services. For example, the difference between producer and consumer prices is the amount charged for all the marketing services rendered between production and consumption, including buying, bulking, transports, storage, processing, among others. In this context, the market margins are the difference between prices at two market levels.

Marketing margin for a particular commodity is the difference between what the consumer pays for the final product and the amount the producer receives (Arene, 2013). At each intermediary level, it is the difference between price received on re-sale and the purchase price. Marketing margin reflects the costs and profit of middlemen. The costs are incurred mainly in adding utilities of time, form, place and possession. Costs, according to Achike and Anzaku (2010), include payment for all initial assemblage, storage, processing, transporting, warehousing and retailing charges. The profit range accruable to the market participants gives an indication of market performance. Margins can be calculated all along the market chain and each margin reflects the value added at that level of the market chain, Famine Early Warning System Network (FEWS NET, 2019).

Marketing margin has remained an important tool in analyzing the performance of marketing systems. Marketing costs and profit margins which make up marketing margins can be both indicators of efficiency or inefficiency of marketing systems. The benefits that accrue to the individual participants may be incentives or disincentives to continue in the business. Proper computation, understanding and interpretation of marketing margin value in relation to prevailing circumstances can reveal a lot about performance in the marketing channels (Achike & Anzaku, 2010).

The aim of the marketing margin analysis is to show the relative importance of the marketing costs in order to reveal real differences between and among markets (inter-market variations) to allow further market integration. The target remains the producers' share that revolves and gears up the production and marketing mechanisms for the achievement of food security and social welfare objectives.

Marketing costs according to Okoedo_Okojie and Okwuokenye (2016) are the actual expenditures incurred in the performance of the marketing functions as a commodity moves from the

farm to the final consumers. He further emphasized that by performing certain functions and services, various marketing organizations and agencies make it possible for agricultural produce to move to the consumers. However, these functions incur cost of often considerable magnitude. These costs are mainly incurred by the marketing intermediaries and they include but not limited to the cost of transportation, offloading and loading cost, marketing charges and cost of assembling. Others include processing, distribution and packaging costs; sales promotion and advertisement cost; and other miscellaneous charges such as taxes, levies and excise duties.

Marketing costs are often erroneously assumed to be synonymous with marketing margin (Agbugba, 2014). However, the true relationship is that marketing margin includes marketing costs plus the normal profit (or loss) earned by the market intermediaries as the commodity passes through the marketing system.  Marketing costs consist of fixed cost (depreciation) and variable costs. However, depreciation expenses related to marketing activities are very low at about 2% of total marketing expenses (Agbugba, 2014). Most of the depreciation related to equipment used in the marketing activities (Kainga, 2013).

The marketing process of yam involves several costs incurred by the marketers in the process of performing their functions as middlemen who direct the flow of yam from producers to ultimate consumers. The major costs incurred by marketers are depreciation costs of equipment used, marketing costs such as transportation and handling costs, cost of produce, market levies and other marketing charges. These contribute to the overall costs of the traders in adding values or creating form, time, place and possession utilities to yam (Onyemauwa, 2010). The revenue component shows the marketing output or returns both in physical terms and the corresponding monetary equivalent. It consists of total revenues derived from carrying out marketing functions or total amount derived from marketing of yam.

**2.2 Theoretical Framework**

The theoretical framework used in this study revolved around the Agricultural Marketing System Efficiency Theory and Transaction Cost Economic Theory. These theories are all relevant to the study but the study was anchored on Transaction Cost Theory as it affected the level of market participation which is capable of unveiling the profitability of yam marketing in the study area.

**2.1.1 Agricultural Marketing System Efficiency Theory**

Agricultural marketing system efficiency theory was propounded by Crawford in 1997. The theory states that, the performance of certain functions and services by various marketing organizations and agencies always ensure that commodities and products move from producers to consumers. However, these functions attract costs, often at a considerable magnitude, affecting both marketing and marketing efficiency. Crawford noted that an efficient marketing system is one capable of moving goods from the producer to the customer at the lowest cost consistent with the provision of the services that customers demand.

The tenets of the theory are as follows: once the costs involved in marketing have been identified, then means can be devised to make the system more efficient; increases in efficiency can be achieved in a variety of ways: by increasing the volume of business using improved handling methods; investing in modern technology; locating the business in the most appropriate place; implementing better layouts and working practices in production; improving managerial planning and control and/or by making changes in marketing arrangements through horizontal or vertical integration (Agbo & Usoro, 2014).

The theory is relevant to the present study because of its emphasis on marketing efficiency which is consistent with the aim of the study. As applied to the present study, what yam marketers need to maximize profit is their ability to move their yams from the point of production to the customer at the lowest cost consistent with the provision of the services that customers demand.

### 2.2.2 Transactions Cost Theory

The transaction costs theory, formally proposed by Ronald Coase in 1937 to explain the existence of firms and later developed by Oliver Williamson in 1975 states that transaction costs increase with distance, market concentration and decline with relational contracts with standardizing quality and quantity. It is part of corporate governance and agency theory and based on the principles that cost will arise when you get someone else to do something for you.

These costs are categorized as follows: produce preparation, handling cost, cost of transportation, storage cost, packaging costs, product losses, fees, commission and unofficial payments. It affects the level of market participation of the yam marketers, who might be commission agents, wholesalers or retailers as the case may be (Marion, 1986).

For the present study, these costs are referred to as marketing costs which involve all the costs incurred after the yam product has moved from the producer before reaching the final consumer. For instance, the farmers' decision to sell to consumers or retailers than direct sales to wholesalers may be influenced by the desire to avoid transaction costs

This study will be anchored mostly on this theory because its affects the level of market participation by increased marketing cost of transaction and subsequently decrease revenue.

### 2.3 Empirical Review

A number of studies have been conducted to assess the market margins of agricultural produce. Amegbeto, Manyong, Coulibaly and Asiedu (2021) studied the determinants of market value for fresh yam (Dioscorea species) tubers in two consumption centers in Togo. The study examined the dynamics of fresh yam tuber prices and applied a hedonic pricing model to estimate the market values of tuber characteristics in two consumption centers in Togo. Real prices were modeled as a function of variables measuring yam species, physical attributes of tuber, origin of production, market location, and time of the year as well as damage from pests, diseases, and handling. Estimations were based on a sample of 9958 tubers described, calibrated, and priced at six markets between August 2001 and July 2002.

Results show that real prices of yam were erratic. Dioscorea rotundata (white yam) prices exhibited a steady decline from August to September which corresponds to its milking time, a slight increase in weeks preceding Christmas, an apparent stability from late December through January in Lomé (March in Sokodé), and a steady increase from February in Lomé (March in Sokodé) into late July. Dioscoreaalata (water yam) tubers appeared on the markets in December and their prices remained more or less stable throughout January, declined to their lowest level in February, and increased steadily thereafter. Results also suggest the existence of price premium to producers and retailers for growing /selling early maturing D. rodundata compared to late maturing varieties. In contrast, D. alata varieties were substantially discounted on the markets. Characteristics of tuber size, tuber shape, yellowish flesh color, and few supply sources had statistically significant and positive market values. Among symptoms of damage caused by diseases, pests, and handling, only rotting and mealy bugs inflicted a discount on tuber value in Lomé and Sokodé respectively.

Time factors were the most important variables affecting real prices. The period from April to July when time premiums are highest represents a market window for yam commercialization. Results can be used by yam producers in making appropriate decisions regarding cultivar selection, time of planting, harvesting, and marketing in order to increase farm incomes effectively.

The study of Amegbeto, Manyong, Coulibaly and Asiedu (2021) is closely related to the present study since both of the border on yam marketing. However, while the former was conducted in Togo, the present study was domesticated in Nigeria.

Low and Lamb (2020) conducted a study on the effect of pricing on the sale of yam in Brazil (2000 – 2015). The ex-post facto design was adopted. Secondary data were sourced from the Ministry of Agriculture. The data were analyzed using descriptive statistics, regression and independent samples t-test. Findings showed that pricing has a significant negative effect on sale of yam in Brazil within the

study period. The study recommended that the Ministry of Agriculture should focus on yam processing to add value to the product and enhance its profitability to marketers.

Although Low and Lamb's (2020) study is related to the present study through consensus on yam marketing, the former focused on pricing while the present study is concerned with profitability. Also, while the former was conducted in Brazil, the present study is domesticated in Nigeria.

Tuffour and Dokuruga (2015) reported in a study of yam marketing in Ghana that the enterprise was profitable. The study adopted cross-sectional research design. Structured questionnaire was used for data collection. Profitability indices such as gross margin analysis and return on investment were used for data analysis. The study showed profit margins of 79.93% and 89.3% for wholesalers and retailers respectively.

The relationship between Tuffour and Dokuruga's (2015) study and the present study is that they border on yam marketing. However, while the former was conducted in Ghana, the present study is conducted in Nigeria to bridge the study area gap.

In a similar study in Anambra State, Nigeria, Ugwumba and Isibor (2014) reported that wholesaler and retailers spent 87.88% and 94.90% of their total cost of marketing on purchasing of yam tubers. The study further showed that the enterprise was profitable with net marketing income of ₦43,320,000 and ₦3,057, 700 for the wholesalers and retailers respectively.

The relevance of Ugwumba and Isibor's (2014) study to the present study cannot be over-emphasized. This is because the two study border on the profitability of yam marketing in Nigeria. However, while the former was conducted in Anambra State, the present study is conducted in Benue State.

Ashiko (2014) conducted a study on analysis of inter-state marketing of sweet orange from Benue to Kano States. The study used both time series and cross-section data. The study sample was 104 wholesalers and 45 retailers. Profitability indices and Hedonic regression were among the techniques of data analyses employed. The study found among others, that an average monthly return to the wholesalers of orange was N10, 891. 70 per bag. The transportation cost constituted the largest and the most significant portion (42.44%) of the total expenses while the purchase value was second with 26.12%. other expenses summed to N3059.97. monthly gross margin was N7, 828.73 per bag while the return per naira was N3.56.

It is clear that Ashiko's (2014) study is related to the present study since both of them border on the marketing of agricultural produce in Benue State. The gap between the two studies is that the former was conducted on marketing of sweet orange while the present study is concerned with the profitability of yam marketing.

## 3.1 Methodology

The research employed the cross-sectional survey research design approach because observation will be done all at once. This entails the administration of copies of research questionnaire to selected respondents. The population of this study comprised 14,760 yam marketers selected from membership of National Association of yam Farmers, Processors and Marketers from the Local Government Areas in Benue State (Benue State Ministry of trade and Investment, 2021). A sample of 389 yam marketers was selected from the study population using Taro Yamane Formula.

Data were collected mainly from primary and secondary sources. The primary source involved administration of structured questionnaire to the respondents, while secondary sources were obtained from works done by other researchers on yam marketing and marketing of other agriculture crops. The data collected were subjected to profitability analysis such as Gross Profit Margin (GPM), Net Profit Margin (NPM) and Rate of Return (RR)

The GPM model is specified as follows:

$$GPM = \frac{Net\ Sales - COGS}{Net\ Sales} \qquad .... \qquad .... \qquad (1)$$

Where; COGS = Cost of goods sold

The NPM model is specified as follows:

$$NPM = \frac{R-COGS-E-I-T}{R} X\ 100 \qquad .... \qquad .... \qquad .... \qquad (2)$$

Where: R= Revenue;
COGS = Cost of goods; E = Operating and other expenses; I = Interest; T = Taxes

The RR model is specified as follows:

RR = GM /TVC          ...        ...        ...        ....        (3)

Where: RR = Rate of return;
GM = Gross margin; TVC = Total variable Cost

RR = GM /TVC ...          ... ......        ...          ...        (4)

## 4.0  Results and Discussion

This section focuses on the profitability analysis of yam wholesalers and in Benue State.

### 4.1 Profitability Analysis of Yam Wholesalers and in Benue State

The profitability analysis of yam wholesalers and in Benue State is presented in this section using expenses and market margin analysis.

**Table 1: Expenses incurred by Yam Wholesalers in Benue State**

| S/N | Description | Cost (N) |
|---|---|---|
| 1. | Departmental Receipt | |
| | a.   4 wheels vehicle (J5) | 2000 |
| | b.   6 wheels vehicle (911) | 2500 |
| | c.   10 – 12 wheels vehicle | 3000 |
| | d.   16 – 22 wheels vehicle | 4,500 |
| 2. | Charter Receipt | |
| | a.   Each vehicle | 1000 |
| 3. | National Union Receipt | |
| | a.   Each vehicle | 1000 |
| 4. | Development levy receipt | |
| | a.   Each vehicle | 1000 |
| 5. | Check Point Expenses | |
| | a.   Drivers pass | 1000 |
| | b.   Produce/Police Checkpoint | |
| | c.   Loading/100 | 2000 |
| | d.   LGA Levy | 1000 |
| | e.   Association Levy | 5000 |
| | f.   Offloading/100 | 200 |
| | | 1000 |
| 6. | Agents Commission | 100 |

**Source:** *Field Survey, 2023*

Results of Table 1 show the expenses incurred by wholesalers in Benue State. The table revealed that the expenses cut across departmental receipts, charter receipts, national union receipts, development levy, check-point expenses and agents' commission.

**Table 2: Profitability of Wholesalers of Grade One Yams in Benue State**

| Cost/Return | N/100 Tubers |
|---|---|
| Return | 150, 000 |
| Total Variable Cost | 108, 000 |
| Gross Margin | 49, 200 |

**Marginal Return per Naira invested: 1.59**
**Source:** *Field Survey, 2023.*

As shown in Table 2, the monthly average return of wholesalers of Grade 1 yams was N130, 000 which yielded gross margin of N49, 200. The return per naira spent in the wholesale trade was N1.59. This means that for every N1.00 spent by the wholesalers of Grade 1 yams, a profit of 59 kobo was made.

**Table 3: Profitability of Wholesalers of Grade Two Yams in Benue State**

| Cost/Return | N/100 Tubers |
|---|---|
| Return | 65 000 |
| Total Variable Cost | 56, 500 |
| Gross Margin | 37, 200 |

**Marginal Return per Naira invested: 1.83.**
**Source:** *Field Survey, 2023.*

Results of Table 3 show that the monthly average return of wholesalers of Grade 2 yams was N65, 000 which yielded gross margin of N37, 000. The return per naira spent in the wholesale trade was N1.83. This means that for every N1.00 spent by the wholesalers of Grade 2 yams, a profit of 83 kobo was made.

**Table 4: Profitability of Wholesalers of Grade Three Yams in Benue State**

| Cost/Return | N/100 Tubers |
|---|---|
| Return | 45, 000 |
| Total Variable Cost | 37, 500 |
| Gross Margin | 32, 800 |

**Marginal Return per Naira invested: 0.37**
**Source:** *Field Survey, 2023.*

An examination of Table 4 revealed that the monthly average return of wholesalers of Grade 3 yams was N45, 000 which yielded gross margin of N32, 800. The return per naira spent in the wholesale trade was N0.37. This means that the wholesalers of Grade 3 yams returns on investment is negative.

**Table 5: Profitability of Retailers of Grade Two Yams in Benue State**

| Cost/Return | N/100 Tubers |
|---|---|
| Return | 80, 000 |
| Total Variable Cost | 34, 000 |
| Gross Margin | 14, 950 |

**Marginal Return per Naira invested: 0.28**
**Source:** *Field Survey, 2023.*

Results of Table 5 show that the average monthly return of retailers of Grade 2 yams was N80, 000 which yielded gross margin of N14, 950. The return per naira spent in the retail trade was N0.23. This means that the retailers of Grade 2 yams returns on investment was negative.

**Table 6: Profitability of Retailers of Grade Three Yams in Benue State**

| Cost/Return | N/100 Tubers |
|---|---|
| Return | 55, 000 |
| Total Variable Cost | 22, 000 |
| Gross Margin | 9, 950 |

**Marginal Return per Naira invested: 0.22**
**Source:** *Field Survey, 2023.*

Results of Table 6 show that the monthly average return of retailers of Grade 3 yams was N55, 000 which yielded gross margin of N9, 950. The return per naira spent in the retail trade was N0.22. This means that the retailers of Grade 3 yams returns on investment was negative.

**4.3.2 Discussion of Findings**
The study finding revealed that there is significant difference between the market margins of wholesalers and retailers in yam marketing in Benue State. While wholesalers of Grade 1 and Grade 2 yams attained high level of profitability, they tended to achieve negative returns dealing in Grade 3 yams. Retailers on the other hand, could not raise enough money to meaningfully involve in Grade 1 yam transacting instead, with Grades 2 and 3 yams with negative returns on investment. This finding in congruence with the disparity in costs of purchase and profitability of yam retailers and wholesalers reported by Ugwumba and Isibor (2014) that wholesalers and retailers spent 87.88% and 94.90% of their total cost of marketing on purchasing of yam tubers, with return of ₦43,320,000 and ₦3,057, 700, respectively.

**5.0  Conclusion and Recommendations**
The study analyzed yam marketing in Benue State, Nigeria focusing on the market margins of wholesalers and retailers. Findings revealed significant differences existing between the market margins of wholesalers and retailers in Benue State. The study therefore recommended as follows:
1. Benue State Internal Revenue Service should grant tax relies to yam marketers in Benue State to enable them derive positive returns from their businesses.
2. Yam Marketers Association in Benue Sate should monitor the activities of commissioned agents who contribute to price hike in the marketing chain by spelling out punitive measures for defaulters, including blacklisting defaulting agents to allow the real market forces of demand and supply to operate.

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