THE STRUCTURE AND PROFITABILITY OF WHOLESALE MARKETING OF COCOYAM IN SOUTHEAST, NIGERIA

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Abstract

Wholesale marketing plays an important role in improving agricultural marketing efficiency, developing rural economy and promoting the process of agricultural modernization. To this extent, wholesaling tries to close the gap in supply chain between surplus (production site) and deficit areas (urban areas). Using cocoyam wholesale marketing, the study tends to examine how structure and profitability of the market contribute to the product availability, price formation and rural economic growth. The study employed multistage, purposive and random sampling techniques to generate relevant data using a structured questionnaire administered to 216 cocoyam wholesale marketers in eighteen markets in three states of the southeast (Anambra, Enugu and Imo). Herfindahl Index (HI) and Gini Coefficient (GC) were used to determine the market concentration or nature of competition in the market i.e. market structure; descriptive statistics was used to determine market conduct and enterprise budgeting analysis was used to analyse the profitability . Gini Coefficient value of 0.5642 indicated an oligopolistic market structure, implying that greater portion of market revenue is concentrated in the hands of few wholesale marketers and HHI with the value of 0.14, implied a low degree of inequality among the wholesale marketers. Findings on the market conduct revealed that prices of cocoyam in the market were mostly fixed based on bargaining power of the marketers (61.1%). The variance in the selling price among the marketers also suggested that the marketers have some level of control over the price of their products though associations influence the price determination in some areas. Net return on investment indicated that wholesale cocoyam marketing returned 35 kobo for every ₦1.00 invested which is an indication of a profitable business venture.

Keywords: *Structure, Profitability, Wholesale, Marketing*

INTRODUCTION

Agriculture encompasses production, processing and marketing of agricultural products including livestock, fisheries, forestry and wildlife, and crops` products. Cocoyam belongs to the crop sub-sector. Cocoyam is an important staple food across many developing countries in Africa, Asia and the Pacific. It is particularly important in sub-Saharan Africa where the two most commonly cultivated species (*Colocasia esculenta* and *Xanthosoma sagittifolium*) which are commonly known as Taro and Tannia respectively are grown extensively (Onyeka, 2014) It is a well-known food security crop due to its better storability compared to the other root and tuber crops (Stanley et al, 2017).The root crop plays an important role in the livelihood of rural and urban dwellers because it is a major source of dietary calories and income, especially in times of food shortage and economic stress (Onyeka, 2014). In South East of Nigeria, cocoyam is grown and consumed widely. The warm temperature of the area, its humidity with long wet season and high annual rainfall is favourable ecological conditions for cocoyam (Taylor *et al.,* 2019). As a result it is also widely sold in the area and represents a prime mover of socioeconomic development and activities in most rural households, where it is produced for food and/or market. Nigeria is the largest producer of cocoyam in the world according to statistics of NRCRI (*The Tide,*February 4, 2011).

Although there is a dearth of information on the international trade of cocoyam from Africa, globally, McGregor *et al* (2011), based on an estimate from available FAO data, concluded that less than 1% of the total output of cocoyam grown and consumed worldwide enters the international trade. Ironically, this world number one producer, Nigeria, and indeed the entire sub-Saharan Africa, which accounts for over 70% of global cocoyam production, does not contribute even to the 1% that enters the international market. Rather, China with the least global production record is the world's number one exporter of cocoyam, followed by Fiji (Table 1).

Table 1: Top five cocoyam exporting countries/territories

Rank	Area	Quantity (tones)	Unit value (US$/ton)	Value (US$1,000)
1	China	70,235	569	39,937
2	Fiji	12,661	1,255	15,885
3	USA	6,307	1,086	6,850
4	Dominica	500	1,388	694
5	Tonga	852	475	405

Source: McGregor *et al1*, 2011 (as cited in Onyeka, 2014)

Marketing of agricultural products, like cocoyam, involves everything that happens between the farm gate and the consumer such as buying, selling, processing, storing, transporting, grading and advertising (Nze, Akogwu, Ugwu and Nzeh, 2014). It takes place in homes, road sides, and local periodic market centres in the area. It encompasses wholesale and retail types in both rural and urban markets (Nwauwa, 2011). Wholesale as a marketing channel plays critical role in the commercial status of the produce. As an intermediary, it serves as the focal point for supply and demand. It not only creates place utility by transferring cocoyam from surplus to deficit regions but, also, enhances the value of cocoyam in terms of form, time and possession utilities for consumers (Opata, 2012). Yet profitability is central in engaging in such business venture. It is against this background that this work seeks to analyse the profitability of wholesale marketing of cocoyam. While international trade of cocoyam is not part of this work, its existence would contribute in the wholesale marketing discourse of the product. Indeed, a good study of wholesale marketing of cocoyam and its potentials, will contribute in launching Nigeria into international marketing of the product, even if alone to the West African sub-region.

Research efforts on cocoyam such as those by Adepoju and Awodunmuyila,(2008); Ogunniyi, (2008); Baruwa and Oke, (2012) have been limited mainly to production research. The few studies on cocoyam marketing were by Opata and Adeosun (2016) on the performance of cocoyam market chain in South East Nigeria; Fadipe, Adenuga, and Raji (2015) on marketing of cocoyam in Shagamu LGA; Ajie and Onoja (2014), on distribution of cocoyam in Rivers State of Nigeria;. Nze, Akogwu, Ugwu and Nzeh (2014) on the marketing of cocoyam in Nsukka agricultural zone, Enugu State, Nigeria and Opata (2012) on economic study of cocoyam marketing in Southeast Nigeria. Opata's work which encompassed the whole gamut of production, processing and marketing of cocoyam in the study area compared the net income of the producers, retailers and wholesalers. It specifically ranked market participants' preference for cocoyam cultivars and the reasons for such preferences and generally highlighted the conditions under which cocoyam marketers in the Southeast operate. For all its contributions, the all-encompassing nature of Opata's work only permitted a glossary view of wholesale marketing, even though it acknowledged the critical role it plays in the commercial status of the produce. Opata and Adeosum (2016), applied a random sampling approach, and selected producers, wholesalers and retailers as respondents drawn from two of the five states that make up Southeast. This focus on the structure, conduct and profitability of wholesale marketing of cocoyam in the Southeast using more states and respondents than the mentioned studies with the broad objective of examining the profitability of its wholesale marketing in the area. Specifically, this study examined the structure, conduct and the profitability of wholesale marketing of cocoyam in the Southeast, Nigeria

Concept and Empirical Evidence

The term market has been defined by various authors. To some, it is a place where exchange of goods and services take place. According to *Business Dictionary* (2015), it is actual or normal place where forces of demand and supply operate; and where buyers and suppliers interact (directly or through intermediaries) to trade goods, services or contracts or instruments for money or barter. Oloidi (2014) is of the opinion that a market is convocation of people with different

social, political, religious and economic backgrounds whose main mission or objective is to either buy or sell products. Thus while a market should be seen more as an avenue for commercial transactions, other social, cultural, political, and religious activities among others are integral to market functions. In rural areas where foodstuffs are produced, agricultural markets can be grouped according to products such as cocoyam market, okro market, and yam market. For such specialized markets, which are usually periodic, there are major and subsidiary market days. To many in these areas, market is seen as an economic "place" where agricultural producers sell the products from their farms with degree of form, place, and time related utilities required by the buyers (Opata, 2012; Ugwumba and Onwuemeodo, 2014).

Marketing on the other hand is an organisational function and a set of processes for creating, communicating and delivering value to consumers and for managing customer relationships in ways that benefit the organisation and its stakeholders (American Marketing Association, 2007) Similar to the above, Kotler and Armstrong (1991) defined marketing as a process by which individuals and groups obtain what they need and want by creating and exchanging products and values with others. Okeke (2015) noted that marketing is a very general term that refers to the commercial functions involved in the transferring of goods and services from producers to consumer. Exchange is just one of the functions of marketing. Other functions include physical and facilitating functions. Ugwumba (2012) opines that marketing in any economic system is to make sure that consumers get the products they desire in the right form and at the right place and price. Thus finding out what customers want, and supplying them at a profit is a defining element of marketing (Dixie, 2005). This definition stresses customers' satisfaction. It is apparent, therefore, that in marketing, consumer is the 'King'and all efforts in marketing of products is geared towards consumer satisfaction (Agbonifoh, Ogwo, Nnolim&Nkamnebe, 2007).

With specific reference to agriculture, marketing involves all those legal, physical and economic services that make it possible for products from producers to get to consumers in form desired by consumers, at the place desired by consumers, and at the price agreeable to producers and consumers for affecting a change of ownership/possession (Arene, 1998). According to Dixie (2005), it involves producing, processing, storing, advertising, grading, and proper handling as well as identifying buyers and understanding what they want in terms of form, place and time and making enough profit in order to continue to operate (Dixie, 2005). It is not just the movement of agricultural products from point of production to the final consumers, it involves all the interconnecting activities such as planning production, growing and harvesting, grading, packaging, transportation, storage, agro and food processing, distribution, advertising and sale (Shepherd, 2007). Marketing channels as sets of inter-dependent organizations participating in the process of making product or service available for use or consumption (Kotler & Keller, 2012), comes in here. As sequence of companies from producer to final consumer that perform marketing functions in order to fit market supply to the needs, marketing channels are routes through which products move from producers to consumers. As distributive channels, they work closely together towards a common goal of profitably marketing products to the consumers. The actors within the marketing channel are the wholesalers, the retailers, agents or resellers. In the case of Cocoyam marketing in Nigeria, for instance, Njoku and Obiechina, (1987, as cited in Opata, 2012), identified three levels as follow
(i) Farmer → consumer;
(ii) Farmer → retailer → consumer; and
(iii)Farmer→ruralwholesalers→urbanwholesalers→urbanretailers→urbanconsumers,

While producers, in this case farmers, perform marketing functions in addition to the production function, other entities in the marketing channel, according to Muelenberg and Kool (n.d.), like wholesalers and retailers have specialized on marketing functions only, in particular distribution functions. The producer sells the goods or provides the service/s to the consumers through these intermediaries.

Wholesale marketing is the buying of a product from a producer or manufacturer of the product or good and selling it, possibly even under the brand name of the company, to those who will, in turn, sell it to the end consumer (Kam, 2013). It is thus usually a case where traders sell to other traders for profit and the volumes per transaction tend to be large. It also includes selling directly to restaurants, grocery stores and other food retailers (such as natural food stores), produce marketing companies, and institutional and food service buyers/ distributors (Nova, 2012). This is against cases where commodities are largely sold to end users, especially consumers. In the latter case which is retail, volumes per transaction tend to be small. The job of the wholesaler is thus to efficiently assemble various products in reasonable quantities from various producing and processing units and sell them in smaller quantities to retailers (Kohls and Uhl, 2002). This is a valuable service. Retailer stock is relatively small amounts of literally thousands of very different items. As such, retailers could not have possibly identified and dealt with all of the producer and processor sources of their products.

Kobayashi and Vining (1995) identified three types of wholesalers. The first are merchant wholesalers. They are the largest single group of wholesalers, accounting for roughly 50% of all wholesaling. Merchant wholesalers buy, sell and store grocery products and perform numerous other marketing functions. These firms may be either full-service or limited function wholesalers. Full service merchant provides a wide array of services to their retail clients such as inventory, control, pricing, financial management and analysis, merchandizing and advertising support for private label programmes, credit and financing of new stores and store site selection (Greg, Katinka and Meihuey, 2008). The others, brokers and agents, differ from merchant wholesalers. They do not take title to goods and perform fewer functions like merchant

wholesalers. A broker brings buyers and sellers together and assists in negotiations. Agents represent buyers and sellers on a permanent basis. Andrew (2005), and Neil (2016) noted the benefits and roles of wholesalers as:

• **storage**:
wholesalers add time utility to a product in form of storage. A warehouse is the physical location where a distributor organizes products and holds them until purchase by a retailer;

• **product acquisition**:
wholesalers are experts in the process of taking finished goods and getting them on store shelves. Wholesalers take the decision of which products to purchase and distribute, and in doing this, a distributor looks for products that have strong consumer appeal that retailers will want to acquire; and

transportation and logistics:
A central activity for a wholesaler is the physical distribution of goods and related logistics. Distributors commonly use trucks and boats to transport products, depending on the retailer's location.

Wholesale marketing is often hidden but still a critical step in food marketing. It is an important intermediary in agricultural circulation system. The consumption and production of marketed food are spatially separated. Production is primarily in rural areas while consumption is in the urban areas. Agricultural wholesaling is the process that overcomes this separation, allowing produce to be moved from areas of surplus to one of need. Food reaches the retailers or final consumers through the network of wholesaling involving assembling, storing, packaging, sorting, reassembling and distribution. Even in developing countries like Nigeria, wholesale traders are the principal actors in rural-urban and inter-regional movement of agricultural produce. Being in the centre of agricultural circulation system, it links not only urban and rural, agricultural and commerce, but also domestic and foreign trade together effectively.

As noted by Muelenberg and Kool (1994) in the agricultural products wholesale market, a wholesaler typically acts as an intermediary between producers and retailers in a distribution system. This is particularly evident for small individual producers who do not have a direct access to retail chains. In doing so, the wholesaler provides an intermediary role, but at the same time this also increases considerably the price of agricultural products. Due to the lack of linkages between agricultural producers and the inability to access directly to end buyers, producers may be in an unfavourable position by comparison with the wholesaler. However, because cocoyam has poor shelf-life as corms and cormels are prone to pest and disease attack, the wholesaler takes up greater liability. They minimise for the producer post-harvest losses. They often finance the movement of goods themselves and consequently bear the cost of marketing risks. Thus small producers often have to accept the offered price and payment terms required by the wholesaler. According to Tang (2011), wholesale marketing plays an important role in improving agricultural marketing efficiency, developing rural economy and promoting the process of agricultural modernization. They help to overcome critical time, place and possession gaps that separate goods and services from those who would use them and have great influence on marketing costs margins.

With specific reference to cocoyam, wholesale marketer is an important, if not the most important stakeholder in the supply chain. They are the links between cocoyam production and its consumption. In the Southeast, the bulk market for cocoyam product takes place at the farm gate and rural market. These are surplus areas and close to the production site, from where they move to urban and distant markets as deficit areas. Species of cocoyam which come from various production areas are gathered together in wholesale market, and are distributed to retailers and finally purchased by consumers. Wholesale, thus, supplies varieties of cocoyam to the lower stream of cocoyam supply chain. Farm prices differ with region or location, depending on whether the production area is near or far from the principal market areas and also storage operations, transportation etc. Wholesale market can deliver important market information to the farmers and retailers, such as demand price information. These activities contribute to price formation.

Price formation is also a function of the market structure. Market structure usually refers to the organisational and other characteristics of a market which affect the nature of competition and pricing through determining how buyers and sellers interact in a market, how prices change, and how different levels of the production and selling processes. It is equally defined by Olukosi and Isitor (1990) as the characteristics of organization of a market which seems to influence strategically the nature of competition and pricing within the market. Similarly, Chand (2016) has it that market structure is the nature and degree of competition in the market for goods and services. Thus, the structure of market for both food goods market and service (factor) market are determined by the nature of competition prevailing in a particular market. It is the characteristics of the organization of a market, which influence strategically the nature of competition and price behaviour within the market (Bain, 2013). Arene (2011) stated that market structure is often analyzed with theoretical model to determine the number and size of the producers and consumers in the market, the quantity of goods and services being traded, and the degree to which information can flow freely

Based on the above definitions Yada (2012) identified three major structural classifications of a market to include perfect competition, oligopolistic competition and monopolistic competition. Market structure for agricultural products can be said to be perfectly competitive, oligopolistic or a monopolistic. Perfect competition is characterised by many different buyers and sellers (Beggs, 1984).With so many market players, it is impossible for any one participant to alter the prevailing price in the market. If they attempt to do so, buyers and sellers have infinite alternatives to pursue. The second

is monopolistic market. Oligopoly is a market structure characterized by the presence of a few large firms in such a way that the actions and policies of one firm will have a noticeable effect on other firms in the market. It is characterised by the presence of a handful of producers, or at least a handful of producers that make up a dominant majority of the production in the market system. According to Severová, Kopecká, Svoboda, and Brčák (2011) it is a market model of the imperfect competition type, assuming the existence of only a few companies in a sector or industry, from which at least some have a significant market share and can therefore affect the production prices in the market.

A monopoly arises when there is only a single producer or seller of a good that has no close substitutes (Oji, 2002). In such a market, therefore, there is only one producer (or a group of producers acting in concert) of a particular good or service, and generally no close substitute. In such a situation where supply of a good or service can be controlled, and the entry of new producers is prevented or highly restricted (*business dictionary,* 2018), the monopolist is able to charge whatever price they wish. Firms in monopolistic competition sell differentiated products. While oligopolists do not have the same pricing power as monopolists, it is possible, without diligent government regulation that oligopolists will collude with one another to set prices in the same way a monopolist would.

Ajie (2014), in the study of cocoyam marketing in Rivers State, reported that the proportion of wholesalers and retailers were higher than those who combine retailing with wholesaling. Their proportions were respectively, 36, 34 and 30 percent. In terms of barriers to entry, an indication of how perfect the market could be, it was found that there were no major barriers (2%) against entrants into the cocoyam marketing business in the area. An overwhelming percentage (98%) indicated that traders entered easily into the market. Thus this is an indication of competition in the market. About 99% of marketers did not belong to trader's association. This 99% suggested that the cocoyam market was monopoly free.

Nzeh, Akogwu and Ugwu (2014) in their study of cost-return analysis of cocoyam marketing in Nsukka, reported that majority, 56.67%, of the marketers belonged to the union while 43.33% did not belong. According to them, 56.67% of the respondents belonged to the Cocoyam Marketing Union while 43.33% did not. The majority of people that belonged to the union fixed the price of the product that suited them and made more gain than the producers. They noted that both wholesalers and retailers constituted a union and that no individual could stand without the other in the union. The members of the union got information on marketing situation more than the non-members. It also revealed that 67% of members got information while 33.33% did not get any information. About 66.67% of the respondents identified their fellow marketers as sources of their information but only 33.33% got their information from agents. From the findings, there was indication of non-perfect competitive cocoyam market in the study area.

Reuben and Mshelia (2011) examined market structure of yam markets in Southern part of Taraba State. The study revealed a Gini Coeficient value of 0.56 and 0.52 for wholesaling and retailing respectively indicating a high level of concentration with high income inequality in yam wholesaling than retailing in the area. The markets thus exhibit features of imperfect markets of monopolistic competition. Ismail *et al* (2014) studied market structure based on the degree of concentration, product differentiation, market knowledge and ease of/or barrier to entry or exit. The findings indicated that 16.7% of the wholesalers had weekly sales, between ₦451, 000 - ₦500, 000 representing 19.67% of the total volume of weekly sales. About 12.50% of those with average weekly sales ranging from ₦401, 000 - ₦450,000 accounted for 8.82% of total weekly sale. The mean value of weekly sales was ₦603, 312.5. The study further revealed that the wholesaler of dried fish were concentrated with Gini coefficient of 0.5478, indicating the possible non-competitive behaviour with monopolistic nature. Also, they reported that about 28.85% of the retailers had sales ranging from ₦151,000 - ₦200,000 representing 31.74% of the total weekly sales. This was the highest, followed by retailers with sales range of ₦101,000 - ₦150,000, constituting 19.23% of the total retailers and handling 15.13% of the total sales. The mean weekly sale was ₦159,500. The empirical findings also revealed that market was non-competitive with Gini coefficient of 0.5252. This indicates that the market was concentrated with monopolistic nature.

Fadipe *et. al.* (2015) studied cocoyam marketing in Sagamu Local Government Area of Ogun State and reported that the study area is competitive and that there is a relatively high level of inequality among the traders. They reported, with Gini coefficient of 0.43 and 0.51 for the wholesalers and retailers respectively, that cocoyam trade in the study area was competitive such that the action of a single participant does not affect the price of the crop. There are peculiar purchase characteristics for commodities just as there are unique behaviours of middlemen with regard to their pricing and product policies that illustrate the features of the market under focus. This implies analysis of human behavioural patterns that are not readily identifiable, obtainable, or quantifiable.

In their study with focus on the Southeast Nigeria, Opata, Adeosun, and Ozor (2016) observed consistency in the nature of concentration as well as competition for farmers, wholesalers and retailers market shares in cocoyam industry. Using Herfindahl Hirschman index calculated for farmers, wholesalers, and retailers which were 119.49, 193.98 and 196.69 respectively they did not confirm oligopolistic market behaviour although the market conduct is characterized by unethical practices of cheating and information collusion that led to uncompetitive market behaviour. Also in the Frozen fish market structure conducted in Calabar Metropolis of Cross River State by Agom, Etim and Etuk (2012), the HHI index value was 0.211(21%). The low index number signified low concentration of market shares amongst the firms, thus perfectly competitive market.

The type of market structure influences profitability (Gladys and Nabieu, 2013). Therefore it becomes imperative to consider the structural component of a business during enterprise budgeting. This is very useful as all income, expenses and profitability of an enterprise is considered for business to function smoothly and achieve desired profits. The various factors built into marketing cost can be captured under fixed cost and variable costs. Product losses, purchases for resale, interest on borrowed capital, promotion, taxes/levies, marketing fees, commission, tips and travel expenses for traders and other expenses involved in the flow of products from farms to ultimate consumers are part of marketing costs (Gabremadhin, 2001; Yakubu, Idumah and Anamayi, 2005). With increase in urbanization and industrialization, marketing costs tend to increase relative to the farm gate price received by the farmer that is, as the product moves greater distance through more intermediaries and is more sophisticated in its packaging (FAO, 2014).). Profitability is ability of a business to earn a profit. A profit is what is left of the revenue a business generates after it pays all expenses directly related to the generation of the revenue. With specific reference to cocoyam, Nzeh *et. al.* (2014), in their study on costs-returns analysis of cocoyam marketing in Nsukka agricultural zone of Enugu State, Nigeria, reported that gross margin of N280 and N220, respectively for wholesalers and retailers and benefit-cost ratio of 1.14 and 1.03, respectively. These statistics show the average profit of cocoyam marketing in the study area. Based on their criterion that if the ratio were greater than one, the venture was considered viable and profitable, then cocoyam in the study area was a profitable venture and reliable to embark on. Adeosun and Opata (2016) in their profitability analysis reported that their average operating marketing costs were ₦16193($80), ₦770($38.50) and ₦896($4.48) while the average net income of producers, wholesalers and retailers per year were ₦204,246 ($1021.21) ₦3,650,000 ($18,250)₦474,000 ($2370) each respectively (at an exchange rate of 1$ = ₦200). Their average return on investment from producer to wholesalers to retailers were 0.70, 1.09 and 2.41 for every 1$ invested in the business. In a study of Enibe *et al* (2019) shows that wholesalers and retailers made a gross margin of N2, 000,000.00 and N1, 571,200.00 respectively. The wholesalers and the retailers made a mean net marketing income of N94, 700.00 and N38.480.00 respectively. The net return on investment (NRI) of the wholesalers and retailers were 0.33 and 0.62. This indicates that for every one naira, the wholesalers and retailers made 33 kobo and 62 kobo respectively. This reveals that the business is profitable.

Methodology

The study was made up of all the wholesale marketers of cocoyam in the South Eastern States (Abia, Anambra, Ebonyi, Enugu and Imo) of Nigeria. Multi-stage, involving purposive and random sampling methods were used to select respondents. There were three stages. In stage one, three States (Anambra, Enugu and Imo) were purposively selected from the five States in the Southeast geopolitical zone. The selection was based on the States majorly known for cocoyam marketing and consumption evidence from pre-survey study. The familiarity of the researcher with the terrains of the selected states was also considered. In stage two six (ie 3 urban and 3 rural) spatially separated markets were purposively selected from each of the selected States to arrive at a total of 18 marketers. The selection was based on the concentration of the cocoyam wholesalers as observed from pre-survey study. In stage 3, 12 wholesalers were randomly selected from each of the markets. This gave a total 216 respondents for the study. Primary data collection was carried out using trained enumerators. A well-structured and pre-tested questionnaire was administered to selected 216 respondents to obtain information on market structure and marketing costs and revenue variables. Relevant instruments and models were used as follows: Market structure and conduct for cocoyam were achieved using Herfindahl Index (HI) and Gini Coefficient (GC) which expresses the degree to which the market is concentrated. Market conduct was achieved using descriptive statistics such as frequency, percentage and mean. For the profitability of wholesale marketing of cocoyam, enterprise budgeting analysis was used. While net marketing income is the difference between gross margin and total fixed cost. Total revenue was the quantity of cocoyam in 100kg multiply by the selling price; hence total variable costs equal other additional costs such as price of cocoyam, transportation, markets levies etc. All marketing costs for wholesalers in this study were calculated in this way. These are mathematically represented as:

GM = TR- TVC

NMI = GM – TFC or TR – TC

NROI = NM/TC

Where,

GM = Gross margin

TR = Total revenue

TVC = Total variable cost

TC = Total cost (TVC + TFC)

NMI = Net Marketing Income

ROI = TR/TC

NROI = Net Return on Investment.

Depreciation on capital items (Shop rent, wheelbarrow, pan etc) was obtained from the initial costs and useful lives of such fixed items. Straight line method of depreciation was used and the method is given as AD = CF-SV/ ULS

Where:

AD= Annual depreciation (N)

CF=Cost of fixed Assets (N)

SV=Scrap/ salvage value (N)

ULS= Useful lifespan (years)

RESULTS AND DISCUSSION

Market structure

The result of the analysis of market structure, using Gini coefficient and Hirschman Herfindhl Index (HHI) are shown in Table 2. It could be observed from the table that the concentration ratio had coefficient value of 0.5642 which is greater than 0.35 bench mark suggested by Nkasiobi (2013). This indicated an oligopolistic market structure, implying that greater portion of market revenue is concentrated in the hands of few wholesale marketers and it is an indication of available business opportunity with high expected revenue. The findings disagrees with Anzaku (2013) in the case of Sesame marketing in Nasarawa State, Nigeria where Gini coefficient value for wholesale was 0.331, but agrees with Ismail (2014) who reported a Gini coefficient of 0.5256, indicating an oligopolistic nature. Opata (2016) also reported a higher concentration value of 0.52 for cocoyam market chain in Southeast Nigeria. This was attributed to high volume of sales in the cities of Enugu and Onitsha markets.

Lorenz Curve (Figure 1) was obtained by plotting the cumulative proportion of wholesalers of cocoyam from the smallest to the largest against the cumulative proportion of their sales earnings. The curve is a bit farther away from the equality line indicating some degree of inequality in the market structure of cocoyam. This is consistent with the value of Gin coefficient 0.5642, indicating that wholesale marketing of cocoyam is oligopolistic in nature. On the other hand, the result of HHI gave indices of 0.14. This implied a low degree of inequality among the wholesale marketers such that none of them had control over the largest portion of total sales volume hence a fairly competitive market structure. This agrees with Opata (2016), Adeosun and Ozor (2014), who observed a consistency in low concentration of cocoyam marketer, hence fairly competition among marketers.
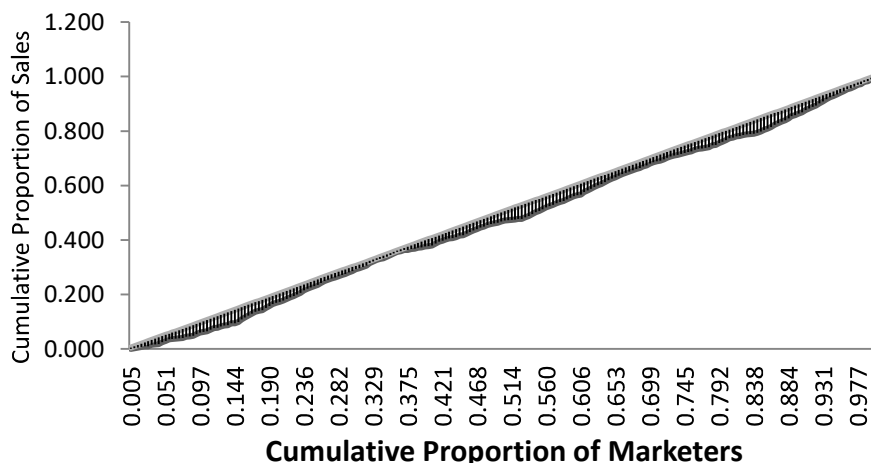
Figure 1: Lorenz Curve

Table 2: Summary of Estimated Market Concentration Indices

Total Sales Bracket (₦)	Number of Marketers	Proportion of Marketers (P_i)	Cumulative Proportion of Marketers	Total Sales (₦)	Proportion of Sales (X_i)	Cumulative Proportion of Sales (C_i)	P_iC_i	X_i^2
1,000 – 100,000	1	0.0046	0.0046	40,000	0.0003	0.0003	0.0000	**0.0000**
101,000 – 200,000	18	0.0833	0.0880	2,488,700	0.0193	0.0196	0.0016	**0.0004**
201,000 – 300,000	17	0.0787	0.1667	4,162,900	0.0324	0.0520	0.0041	**0.0010**
301,000 – 400,000	22	0.1019	0.2685	7,694,500	0.0598	0.1118	0.0114	**0.0036**
401,000 – 500,000	10	0.0463	0.3148	4,295,700	0.0334	0.1452	0.0067	**0.0011**
501,000 – 600,000	32	0.1481	0.4630	17,570,550	0.1366	0.2818	0.0418	**0.0187**
601,000 – 700,000	34	0.1574	0.6204	22,328,400	0.1736	0.4554	0.0717	**0.0301**
701,000 – 800,000	34	0.1574	0.7778	25,656,000	0.1995	0.6549	0.1031	**0.0398**
801,000 – 900,000	25	0.1157	0.8935	21,193,300	0.1648	0.8196	0.0949	**0.0271**
901,000 – 1,000,000	14	0.0648	0.9583	13,187,800	0.1025	0.9222	0.0598	**0.0105**
1,001,000 – 1,100,00	4	0.0185	0.9769	4,229,000	0.0329	0.9550	0.0177	**0.0011**
1,101,000 – 1,200,000	5	0.0231	1	5,782,600	0.0450	1	0.0231	**0.0020**
Total	**216**			**128,629,450**			∑(P_iC_i)=**0.43 58**	HI=∑(X_i^2)=0. 1354

Gini Coefficient (GC) = 1 - ∑(P_iC_i) = 1 - 0.4358 = 0.5642

Source: Field Survey 2022

Market Conduct

Table 3 presents the distribution of respondents according to indicators of market conduct for cocoyam in the study area. The indicators were criteria for quality assessment adopted in the business, unit of measurement used by the respondents, and methods of arriving at selling prices for the product between the buyers and sellers. On criteria used for quality assessment by buyers, a greater proportion (45.3%) of them primarily considered the variety of cocoyam that produced the corms/cornels; 36.1% of the respondents looked at absence of harvest wounds; 13.9% preferred suitability of the corms/cornels for use in thickening of soup, flakes, foofoo and eaten boiled; 4.6% considered shape and size of the corms while the least (1.4%) preferred absence of decay in the corms as criterion for purchasing/selling the product. Rivers State

Agricultural Development Programme (RSADP) (2009) reported that damage cornels were separated from sound ones to avoid price distortion and better revenue from sales. The unit of measurement adopted by majority (50%) of the respondents in marketing the product was 100kg bag, followed by 26.8% that used 25kg bag, 18.5% who used 10kg bag as their unit of measurement, and finally 2.8% and 1.8% of the marketers, probably wholesalers cum retailers, who adopted small bowls (2kg) and heaps (1kg) respectively as units of measurement in transacting the business. Majority (61.1%) of the marketers decided on the product price through bargaining. This agrees with the findings of Benjamin, Chijioke, and Victoria (2017) that 70% of price fixing of Sorghum by marketers in Benue State, Nigeria was by. While 76 respondents constituting 35.2% considered the cost of sourcing and bargaining purchasing (i.e marketing cost) of the stock before fixing final market price. The rest 3.7% of the respondents sold the product at prices fixed arbiterally.

Table 3: Nature of market Conduct by wholesalers of cocoyam

Variable	Frequency	Percentage
Criteria used for quality Assessment by buyers		
Varieties of cocoyam	98	45.3
Absence of decay	3	1.4
Corms or Cornels shape and size	10	4.6
Absence of harvest wound	78	36.1
Use or value for soup, flakes etc	30	13.9
Unit of measurement adopted		
Bags (100kg type)	108	50
Bags (25kg)	58	26.8
Baskets (10kg)	40	18.5
Small bowls(2kg)	6	2.8
Heaps (1kg)	4	1.8
Weighing scale	-	-
How selling price arrived at:		
Fix price arbitrarily	6	2.8
Price based on purchase price and expenses	76	35.2
Price based on bargaining	132	61.1
By association	-	-
Others	2	0.93

Source: Field survey, 2022

Profitability of wholesale marketing of cocoyam
The results of data analysis on costs and returns of wholesale marketing of cocoyam indicated that total cost (TC), total revenue (TR), total variable cost (TVC), total fixed cost (TFC), gross margin (GM), net marketing income (NMI) and net return on investment (NROI), are presented in Table 4. The study showed that, out of the total cost of ₦108,283,162.57 spent by the marketers, purchases constituted 83.77% while the least was land fee (0.02%). By this result, the cost of purchases appeared to be the most important cost in wholesale marketing of cocoyam. This agrees with Ozor (2017) who reported that cost of stock/purchases constituted 99.75% of the total cost of marketing and thus become the most important cost to consider in starting a business. The study revealed that marketers realized a total revenue of ₦128,629,450; gross margin of ₦37,956,900, net marketing income of ₦37,915,973.51; net return on investment of 0.35 and gross ratio of 0.84. The high gross margin indicates profitability. This concurs with Opata (2016), that what concerns every marketer is the level of marketing margin which determines profit. The gross ratio of 0.84 (84%) of the total income is high enough to take care of marketing cost and make profit. This agrees with Nwankwo (2014) who reported that a high marketing margin in agribusiness is a precondition for profit making. The net return on investment of 0.35, by implication the profit made from cocoyam wholesale business is 35% over capital invested. That is every ₦1 invested generates 35 kobo or ₦0.35 as profit. Thus, the result implied that in the study area, the wholesale cocoyam business is a profitable venture

Table 4: Estimated monthly profitability of Wholesale marketing of cocoyam

Variable	Amount (N)	Percentage (%)
Revenue	128,629,450	
Variable costs		
Cost of purchases/stock	90,672,550	83.77
Loading cost	647,288	0.60
Land fee	16,900	0.02
Daily levies/charges	212,140	0.20
Transportation cost	4,795,110	4.43
Transport cost to vending point	207,250	0.19
Workers' salaries	1,612,100	1.49
Storage cost	244,500	0.23
Cost of Jute bag	1,255,900	1.16
Association dues	33,050	0.03
Cost of recharge card cost	472,250	0.44
Cost of food and lodging **cost**	3,424,150	3.16

Produce levies	1,636,950	1.51
Physical loss and gift	1,177,000	1.09
Miscellaneous cost	1,618,850	1.50
Total Variable cost(TVC)	**108,242,238**	**100**
Fixed Cost		
Dep.on annual Shop rent	20,151.002	49.24
Depon.cost of Wheel barrow	12500	30.54
Dep. on cost of chair	2,463.96	6.02
Dep on cost of pan	2,606	6.37
Dep on cost of basket	2799.48	6.83
Dep cost of knife	406.12	1.99
Total Fixed cost (TFC)	**40,926.562**	**100**
Total cost (TC=TVC+TFC)	**108,283,162.57**	
Gross Margin(TR- TVC)	37,956,900	29.51
Net marketing income(GM-TFC)	37,915,973.44	
Return on investment(TR/TC)	1.19	
Net return on investment (NMI/TC	0.35	
Gross Ratio (TC/TR)	0.84	

Source: Field Survey 2022. Dep =depreciation; CP = cost of purchases/stock

The study revealed that marketers realized a total revenue of ₦128,629,450; gross margin of ₦37,956,900, net marketing income of ₦37,915,973.51; net return on investment of 0.35 and gross ratio of 0.84. The high gross margin indicates profitability. This concurs with Opata (2016), that what concerns every marketer is the level of marketing margin which determines profit. The gross ratio of 0.84 (84%) of the total income is high enough to take care of marketing cost and make profit. This agrees with Nwankwo (2014) who reported that a high marketing margin in agribusiness is a precondition for profit making. The net return on investment of 0.35, by implication the profit made from cocoyam wholesale business is 35% over capital invested. That is every ₦1 invested generates 35 kobo or ₦0.35 as profit. Thus, the result implied that in the study area, the wholesale cocoyam business is a profitable venture.

Conclusion and Recommendation
The study showed that in the study area cocoyam wholesale is competitive and a profitable venture. These findings of the study, will contribute in launching Nigeria into international marketing of the product as the country struggles to diversify its revenue base. Against the background of the findings, it is recommended that Government should provide necessary transportation facilities such as good network of roads to rural and farm areas that can ameliorate the transportation problems which is critical for marketing efficiency, while the traders should be encouraged through subsidies to procure other marketing infrastructure especially equipment for standardizing the measurements of cocoyam such as the use of weighing scales.

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