Journal of
Applied Sciences

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Assessment of the Cotton Industry Using the Global Commodity Chain Analysis Approach in Katsina State, Nigeria

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Abstract: The study examines the cotton commodity chain and assessed the share of each actor in the cotton industry and identified the constraints encountered in cotton production, marketing and processing. A sample of thirty cotton producers, 50 traders, 500 agents and 3 ginneries were selected from Funtua Local Government Area of Katsina State using both random and purposive sampling techniques. Both qualitative and quantitative data were collected from the participants using focus group discussion and structured questionnaire during the 2004/2005 cropping season. Analysis of the data was done using descriptive statistics and budgeting technique. The farmers' budget analysis indicated that from an investment cost of ₦ 33,146.00 ha^{-1}, farmers obtained a revenue of ₦ 44,544-00 ha^{-1}, thus making a net income of ₦ 11,398 ha^{-1}, while the agent analysis shows that an agent is paid a commission of ₦ 500.00 ton^{-1} of seed cotton purchase on behalf of the merchant. The analysis of the traders' budget revealed that from an investment cost of ₦ 36,746.00 ton^{-1} of seed cotton purchased, traders' are making a revenue of ₦ 41,700.00 (lint + seed) and a net profit of ₦ 4,954.00 ton^{-1} of seed cotton. The analysis of the ginnery budget revealed that from one ton of seed cotton processed, a ginnery is making a net profit of ₦ 2,178.00. These analyses indicated that cotton production, marketing and processing under the current price and cost setting is profitable. In spite of the profitability in cotton business, the following problems were identified: adulteration of seed cotton with foreign materials, heterogeneous seeds resale in the market, inappropriate packaging systems, no good prices for improving the quality and no mechanism for ensuring transparency in the quality (trust between actors). There is the need for intensification and expansion of the cotton sector in terms of provision of high quality inputs, clean seed cotton, introduction of jute bags for packaging, introduction of quality control mechanisms and good prices in order to sustain the industry.

Key words: Assessment, cotton, global, commodity, chain, approach

INTRODUCTION

The Global Commodity Chain (GCC) has been developed primarily for industrial commodity chains. The term itself and its definition as "a network of labour and production processes whose end result is a finished commodity" comes from Hopkins and Wallerstein (1986) and Hopkins and Wallerstein (1994), where it was used to discuss a variety of international chains for agricultural products.

The GCC approach has attracted significant attention since the early 1990s and with its focal distinction between producer-driven and buyer-driven, GCCs has generated a number of case-studies. For instance, Gereffi (1999a) has applied the GCC framework to analyze exports of apparel from East Asian countries to the United States. Raikes *et al.* (2000), in comparing the GCC approach with the French Filiere approach, found that the GCC approach has a more coherent framework than Filiere approach.

Gereffi (1994) identifies four dimensions of GCCs; their input-output structure, the territory covered, their governance structures and the institutional framework through which national and international conditions and policies shape the globalization process at each stage in the chain. The fourth dimension, the institutional framework surrounding the chain, has been introduced in recent work by and is used to delineate the conditions under which key agents incorporate subordinate agents through their control of market access and information (Gereffi, 1999b). Under the rubric of the institutional framework, is also discussed how

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subordinate participation in a GCC can provide indirect access to markets at lower costs than individual small-scale producers would face and how technological information and learning by doing allow producers to move up the chain hierarchy.

Cotton (*Gossypium hirsutum* L.) is one of the most important cash crops in the Nigerian economy. It is grown by about 0.8 million farmers on a total estimated area of 6000-7000 ha (Manyong *et al.*, 2005). The major feature of cotton production in Nigeria is that, about 80% of the total production is by peasant farmers (Adeneji, 2002). The Nigerian cotton industry plays an important role in the country's economy (Ogungbile and Kyari, 1989; Chukwendu, 1993). The lint removed from the seed is used in the production of textile fibre, while the short fibre is used in the making of human upholsteries and mattresses. In addition, the cotton seeds provide edible vegetable oil and the cotton seed-cake is used as raw materials for livestock feeds. Consequently, the Nigerian textile industry, which depends on cotton for raw materials, is the second leading employer of labour after the government public sector (Andrae and Beckman, 1987; Idem, 1999; Manyong *et al.*, 2005). The purpose of commodity chain analysis is to identify the actors and the processes that contribute to the origination of a product that is consumed by a market. Thus, a commodity chain includes a sequence of actors, ranging from the producer of raw materials to the intermediary between the consumers (Hopkins and Wallerstein, 1994). There are speculations that the Nigeria Cotton marketing system is exploitative with the major share of the returns accruing to the intermediaries. This study is designed to assess the various linkages that exist among these different actors in the cotton industry, the returns accruing to each actor using the commodity chain analysis approach and the problems faced by the different actors in the cotton industry.

MATERIALS AND METHODS

The study was conducted in Katsina State, Nigeria. The State is located between latitudes 11° and 13° N and longitude 6° and 9° E (Anonymous, 1998). It is bounded to the North by Niger Republic, to the South by Kaduna State, West by Zamfara State and East by Kano State. It covers a land mass of 23,938 square kilometers with a population of 5,792,578 (NPC, 2006). The State has about 863,000 farm families and a cultivated land area of 1.64 m ha. The State falls between Sahel/Sudan Savannah zones. The major crops grown in the State include cotton, cowpea, sorghum, millet, groundnut, maize and some vegetables. Livestock such as cattle, sheep and goat and

poultry are also kept. The State is blessed with agro-allied industries such as flour mills, cotton crushing companies, cotton ginneries and oil mills (Anonymous, 1998). A sample of 30 cotton producers, 50 traders, 500 agents and 3 ginneries were selected from Funtua Local Government Area of Katsina State using both random and purposive sampling techniques. Funtua Local Government Area was chosen due to its high involvement in cotton production, marketing activities and processing. Both qualitative and quantitative data were collected from the participants using focus group discussion and structured questionnaire during the 2004/2005 cropping season. Analysis of the data was done using descriptive statistics and budgeting technique. The net income budgeting technique was used to determine the share of the actors in the cotton commodity chain analysis. The Net Income (NI) by definition is the difference between Gross Income (GI) and the total cost of production. The Net Income (NI) is expressed as:

$$NI = GI\text{-}TC$$

Where:
NI = Net Income (N) ton^{-1} of seed cotton ha^{-1} ton^{-1} of lint
TC = Total Cost of production (Total Variable Cost + Total Fixed Cost)

The fixed cost was calculated using the straight line depreciation method.

RESULTS AND DISCUSSION

Organization of the cotton commodity chain: The marketing chain describes the succession of the markets through which products pass until they reach the consumers (Olukosi and Isitor, 1990). Marketing chain is part of the marketing channel. The cotton commodity chain in Katsina State is as shown in Fig. 1. The Fig. 1 shows the relative importance of the various markets or exchange points in the cotton marketing system. The figure indicates that from the farmer, seed cotton is moved to the merchant and from the merchant to the ginneries where the processing of the seed cotton into seed and lint takes place. From the ginnery, the lint and the cotton seed are returned to the merchant who in turn sell the cotton seed to the farmers and oil mills and the lint to the textiles and exporters. The ginneries may also purchase the lint from the merchants and sell to the textiles and exporters. The textiles then spin the lint into different fabrics and sell to the consumers. The oil mills crush the cotton seed purchased from the merchants and/or the ginneries and
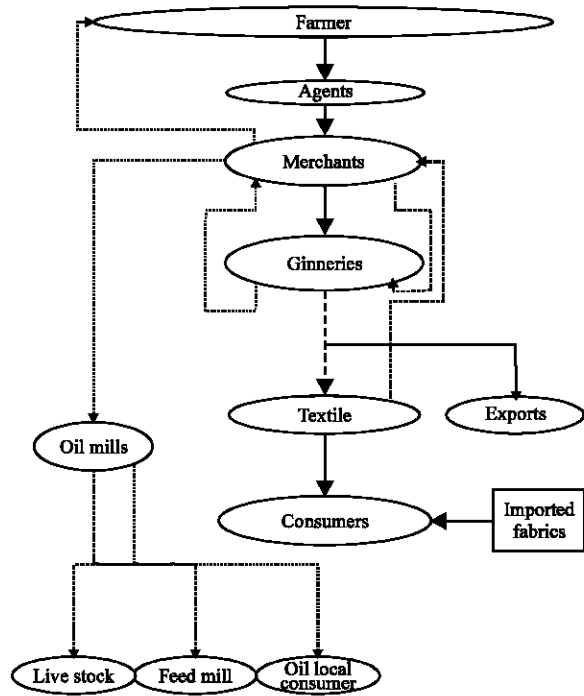
Fig. 1: Organization of the cotton commodity chain in Katsina State, Nigeria, ———▶: Strong linkage and ······▶: Weak linkage

Table 1: Costs and returns analysis of cotton production per hectare in Katsina State, Nigeria

Items	Value (Naira ha^{-1})	Total cost (%)
Costs		
Intermediate inputs and services		
Seed	1618.00	5.00
Fertilizer	3015.00	9.00
Manure	2105.00	6.00
Pesticide	677.00	2.00
Feeds	1817.00	5.00
Sub-total	9232.00	
Labour		
Land preparation	1315.00	4.00
Ridging/ploughing	2066.00	6.00
Planting	1126.00	3.00
Fertilizer application	1060.00	3.00
Weeding	7705.00	23.00
Moulding-up	3588.00	11.00
Pesticide application	610.00	2.00
Harvesting	5202.00	16.00
Transportation	333.00	1.00
Sub-total	23005.00	
Depreciation on tools and equipments	909.00	3.00
Total cost	33146.00	
Average yield (kg ha^{-1})	1536.00	
Price (N kg^{-1})	29.00	
Total revenue	44544.00	
Profit	11398.00	
Return on investment	0.34	

state is the importation of foreign cotton-based fabrics into the country. This, according to the stake-holders in cotton industry in the state, has some negative effects on production, marketing and processing of the commodity.

One of the factors that affect the efficiency of an industry is the market structure in which the actors in the industry operate. Market structure relates essentially to the degree of competition in a market (Olukosi and Isitor, 1990). It refers to certain characteristics which influence the behaviour of the participants in the industry. Such characteristics are relative size and number of participants, conditions of entry into and exit out of the industry, degree of information available to the actors in the industry and type of products produced by the actors. In present study, these characteristics were analyzed to determine the structure of all the actors in the cotton industry in the state. The study revealed that there are relatively large numbers of each of the actors in the industry. At the farmers level the structure is competitive while it could be said to be oligopolistic in structure at the agents, merchants and ginneries levels. It however does not have the typical characteristics of a pure oligopolistic market structure in which the actions of one firm or trader have a perceptible influence upon other traders and the goods are differentiated.

extract the edible oil. The major by-product from this processing activity, cotton seed cake, is sold to the livestock farmers and feed mills. Another important component identified in the GCC of cotton in Katsina

Despite the oligopolistic structure in the cotton industry at the agents, merchants and ginneries levels, the other important features of perfect competitive market structure as obtained in the agricultural sector are upheld. Such features include price determination, which is determined by forces beyond the control of the individual economic agents (buyers and sellers) in the industry.

Farmers' performance assessment: The budgeting analysis indicated that labour accounted for 68% of the total variable cost incurred in cotton production, while other intermediate inputs accounted for 27% and the fixed cost accounted for only 3%. The analysis revealed that from an investment cost of ₦ 33,146.00, farmers obtained a net income of ₦ 11,398.00 ha^{-1}. The average net return on expenses was found to be 0.34 on each naira spent. It could therefore be concluded that the analysis indicated that cotton production is a profitable venture (Table 1).

Agent/traders/merchants performance assessment: The share in the cost and returns of the collecting agents in the cotton market increases with increase in the total volume of activities in terms of raw cotton (seed cotton) purchased by the agent for the trader/merchant. The

trader/merchant bears all the cost of the agents' activities. The agent is paid a commission of ₦ 500.00 ton⁻¹ of seed cotton purchase on behalf of the merchant. Thus, the more the volume of seed cotton purchase by an agent, the more income the agent receive in the chain. The analysis of the traders' budget shows that 81% of the total cost is incurred in purchase of raw cotton (seed cotton) and 14% on processing fee. The analysis indicated that from an investment cost of ₦ 36,746.00 ton⁻¹ of seed cotton, traders' are making a revenue of ₦ 41,700.00 (lint + seed) making a net profit of ₦ 4,954.00 ton⁻¹ of seed cotton. The average net return on expenses was found to be 0.13 on each naira spent. It could therefore be concluded from the analysis that cotton marketing is profitable (Table 2).

Ginneries (processors) performance assessment: The budget analysis of the ginnery shows that the total variable cost (₦ 2401.00) incurred in processing one ton of seed cotton accounted for 85%, while the fixed cost (₦ 420.00) accounted for 15%. The analysis revealed that

Table 2: Costs and returns analysis for 1 ton of seed cotton purchased and marketed by traders in Katsina State, Nigeria

Items	Value per ton of raw cotton (N)	Percentage of total cost
Costs		
Raw cotton (seed cotton)	29696.00	81.00
Processing fee	5000.00	14.00
Cost of transportation	400.00	1.00
Labour (agent and driver)	650.00	2.00
Tax	300.00	1.00
Depreciation	700.00	2.00
Total cost	36,746.00	
Revenue		
Lint	33,300.00	
Seed	8,400.00	
Total revenue	41,700.00	
Profit	4954.00	
Return on investment	0.13	

Table 3: Costs and returns analysis for 1 ton of seed cotton ginned in Katsina State, Nigeria

Costs	Cost per ton of main output (N ton⁻¹ of Lint)	Percentage of total cost
Variable cost		
Fuel	411.00	15.00
Electricity	685.00	24.00
Casual labour	432.00	15.00
Packaging material	873.00	31.00
Total variable cost	2401.00	
Fixed cost		
Permanent staff	107.00	4.00
Communication	3.00	0.10
Tax	70.00	2.00
Insurance	110.00	4.00
Depreciation (Machines and buildings)	131.00	5.00
Total fixed cost	420.00	
Total cost of production	2821.00	
Revenue (Ginning fee)	5000.00	
Profit	2179.00	
Return on investment	0.77	

from one ton of seed cotton processed, a ginnery is making a net profit of ₦ 2,178.00 (Table 3). The average net return on expenses was found to be 0.77 on each naira spent (Table 3). This result implies that, the more volume of seed cotton processed by a ginnery, the more profit it would obtain. Thus, investment in seed cotton processing is a profitable venture.

Problems identified by the actors in cotton business: Quality is the major issue in terms of cotton production. It concerns the whole commodity chain from farmers to the ginneries and results from different interaction. The problems identify by the producers were heterogeneous cotton seed resale by the merchants and ginneries, high cost and adulteration of agro-chemicals and no incentive for improving the quality of seed cotton produced since all grade of seed cotton attracts the same price in the market. The ginneries and merchants' major problems were adulteration of seed cotton with foreign materials and the use of polypropylene bags as packaging material instead of jute bags which affects the ginning machines and the quality of the lint and no mechanism is put in place for ensuring transparency in the quality of seed cotton.

CONCLUSIONS

The analysis of the cotton commodity chain revealed that farmers are making a net income of ₦ 11394.00 ha⁻¹, while the traders' agent received a commission of ₦ 500.00 ton⁻¹ of seed cotton purchase, traders, a net income of ₦ 4954.00 ton⁻¹ of seed cotton and ginneries a net income of ₦ 2179.00 ton⁻¹ of seed cotton ginned. This analysis indicated that cotton production, marketing and processing are profitable ventures. Therefore, this finding show that, none of the actors in the cotton marketing chain is being exploited which is contrary to a priory speculation. The study has also clearly identified the different actors in the cotton commodity chain. In spite of the profitability in cotton business, a number of problems were identified militating against the potential industry. These problems include heterogeneous cotton seed resale by the merchants and ginneries, high cost and adulteration of agro-chemicals and no incentive for improving the quality of seed, adulteration of seed cotton with foreign materials and the use polypropylene bags instead of jute bags and no mechanism is put in place for ensuring transparency in the quality of seed cotton. There is the need for intensification and expansion of the cotton sector in terms of provision high quality inputs, clean seed cotton, introduction of jute bags for packaging, introduction of quality control mechanism and good prices in order to sustain the industry.

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