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Analysis of the Profitability and Marketing Channels of Rice: A Case Study of Menchum River Valley, North-West Region, Cameroon

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Abstract

The study carried out in Menchum River valley, Northwest Region of Cameroon had as objective to analyze the profitability and establish the marketing channels of rice in this zone. The study interviewed a total of 126 respondents, selected purposively and using the snow ball sampling technique. Results showed that the main actors involved in the rice marketing channel were; producers, wholesalers, hullers, retailers and consumers. The production and marketing of rice in the zone is a profitable venture. In terms of profitability in the rice business, millers obtain a relatively large profit margin as a percentage of the cost price (18.69%) followed by the producers (12.77%), wholesalers (8.5%) then retailers (8.33%). The average profit margin per bag of 50kg was; 1054.5FCFA (*franc Communauté financière d'Afrique*) for producers, 1963.5 FCFA for millers; 1100 FCFA for the wholesalers and 1250FCFA for the retailers. The principal constraints identified by the study that affects actors of the rice channel were, bad condition of the roads, lack of capital, poor quality of rice. It was recommended that there should be improvement in infrastructure.

Keywords: Profitability, rice, markets, channels, Menchum-river valley

Introduction

Rice is the 2nd most consumed cereal and half of the world's population depends on it for about 80% of their food calorie requirements (Braun, 2006). The continued reliance of African consumers on rice imports is a potentially precarious and politically dangerous situation (FAO 2000). Rice demand in sub-Saharan Africa has grown since the mid 1970's with an average of more than 6 % per year (FAO, 1999). Rice profitability in West and Central Africa has improved in recent decades (Lançon and Erenstein, 2002). Agriculture is the main-stay of Cameroon's economy and it satisfies the bulk of the population for food, raw materials for

agro-industries and the export market. As a primary industry that provides employment for almost 72% of the Cameroonian population, agriculture is likely to remain the backbone of Cameroon's economy for many generations to come (Winrock International, 2002). The country's agricultural potential for food production is known to be immense and over 60% of its export earnings comes from this sector (PNVRA, 2002). Rice is the staple food for rural and urban populations in Cameroon with national demand being estimated at 300,000 tons in 2009, essentially covered by imports (NSRGC 2009). Average rice consumption/head in Cameroon in 2007 was 25.7 kg per inhabitant for the national average (ECAM3, 2008).

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Marketing is the most important aspect in the development process. Development means larger size productive activities in the economy. But we cannot have more of pro-

duction unless the goods produced are actually sold out and selling depends on proper market conditions (Prasad, 1995). The weak performance of agricultural markets (input and output) in most countries has been recognized in various studies as a major impediment to growth in the agricultural sector and the overall economy (Astewel, 2010). Dawit, (2005) explained that, the flow of agricultural produce from the producer to the consumer involves a long chain of intermediaries, who, without creating value-added, merely keep on stretching the chain. He further pointed out that the involvement of these superfluous intermediaries has constrained the development of the sector and deprived the farmers of equitable returns. Jabbar (2004) also clearly states that the knowledge gaps in the crop sector in a country are inefficiency of the market system (which includes inefficient marketing channel, improper transmissions of price to producers and the type of product produced by farmers). Despite the significance of rice in the livelihood of many farmers, it is also being regarded as an income generating crop in the study area even though it has not been given the due attention. It is only recently that few studies have been done on rice in the zone with the coming of the commodity value chain development support project (PADFA). However, most of these studies have focused on production and were limited to a specific area and marketing aspects. Furthermore, not much is known on various rice marketing channels that exist in the study area. Also the profitability in rice production/marketing is still in doubt in the study area. Therefore this study was initiated to investigate the different marketing channels and analyze the profitability along the market chains. Specifically, the study was aimed at; analyzing the different marketing channels; determining the profit of actors at different levels as well as the role of each set of actors and identifying the major risk associated in rice production and marketing.

Research methodology

This study was carried out in the Menchum River Valley in the North West Region of

Cameroon. This area engulfs two divisions of the region namely Mezam and Menchum divisions which lies on both sides of the Menchum River. This zone was selected for the study, because of its high rice production potential, long history and tradition of rice production. The study zone commonly known as Menchum River Valley also lies on both sides of the Menchum River that drains this area, flowing westward into Nigeria to join the Benue River which is an added advantage for swamp rice production in the area. Also, the region is dominated by high volcanic mountains with fertile soils (hydromorphic, volcanic and ferralitic), an area with good water retention capacity (contain some clay and/or organic matter, i.e. Loamy soil); it has clay and Heavy soils at the valleys which are most desirable for rice cultivation. A stratified sampling procedure was used in this study. Since the study population was divided into subpopulations samples were taken at each stratum either purposively or randomly depending on its size. In each of these two divisions only the rice producing Sub-Division were selected on purpose i.e. Bafut subdivision in Mezam as well as Menchum valley and Wum central subdivisions in Menchum respectively. In these 3 rice producing Sub Divisions, the rice producer organizations working were censured which gave us 9 Producer organizations in Menchum valley. From the producer organizations, individual farmers were randomly selected proportional to the number of members per producer's organization. This gave a sample size of 126 respondents. The snow ball sampling was used to identify and select the intermediaries such that actors involved in the rice marketing channel identified each other. This technique was used because the population of these actors was not known and difficult to determine at the beginning of this study.

Data for this study came from two main sources i.e. primary and secondary sources. The primary data collected was obtained by the use of pre-tested structured questionnaires. The data was collected from a cross-sectional sample of rice farming households

in the study area, rice millers, all intermediaries that were identified in the zone and rice consumers.

The data collected was analyzed using descriptive and inferential statistics. The descriptive statistics used includes frequency distribution, means and percentages. Profitability was analyzed using profits and marketing margins of the actors at different levels of the channel. For this study the gross profit was adopted to analyze the profitability of rice production on one hectare to obtain cost and on 50kg to obtain returns in the study area.

$$\text{Average profit} = V - C = PQ - \sum pq \dots\dots\dots(1)$$

Where C = Average Total cost of production FCFA, V = Average Total income, Q = Total production (per ha (kg), q = Quantity of input, p = unit cost Price of input FCFA, P = unit sales Price of the produce in FCFA/kg

Marketing margins were used to analyze the profitability at the level of intermediaries. Marketing margins can be expressed in cash or in percentage of the cost price (Abbot and Makeham, 1986; Adegeye and Dittoh, 1982). The formula adopted for this study was

$$\text{Average profit margin} = \frac{(\text{Av. gross margin} - \text{av. marketing cost})}{\text{Cost price}} * 100 \dots\dots\dots(2)$$

Results and discussion

Type and description of actors in the rice market

Five main actors that intervene in the marketing channel of rice were identified in the zone. They handle the commodity at different levels of the transaction. These actors form the link and create the channel which usually begins from the producers until the commodity reaches the final consumer. The five main actors that were identified in this

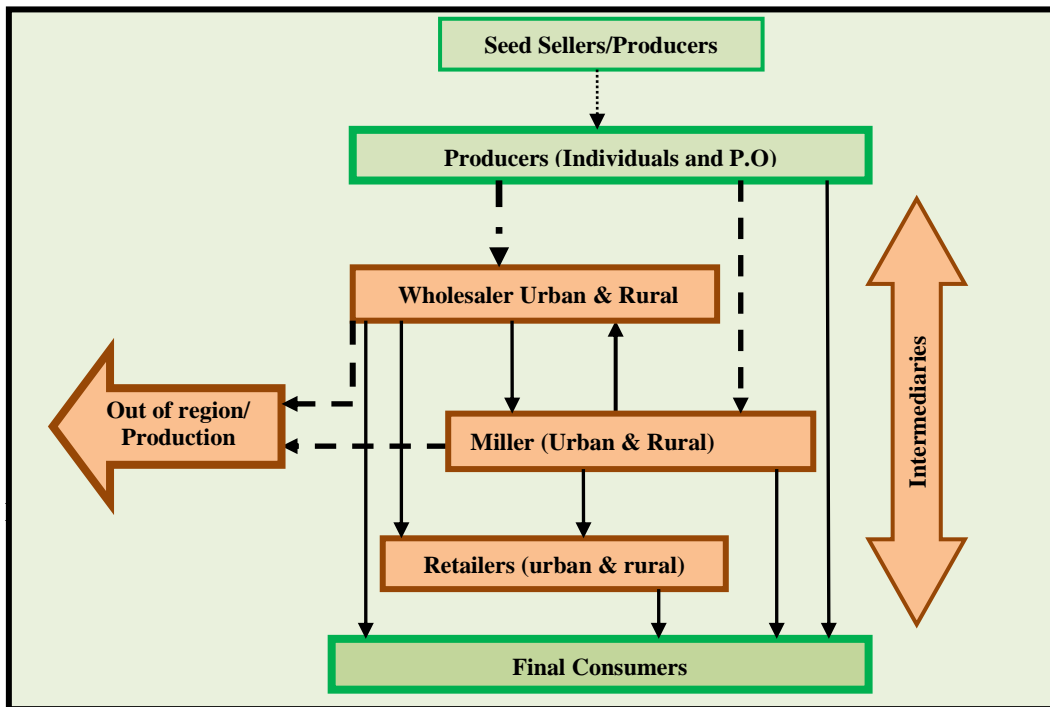
study were; producers, millers, wholesalers, retailers and consumers.

Marketing channels of rice

The analysis of the rice market channel is intended to provide a systematic knowledge of the flow of the goods and services from their origin to the final destination (consumer). All the channels identified started with the producers ended with the consumers. They had varying lengths and were relatively less complicated when compared to channels indetified in other studies or work in different places. The rice market channels drawn are based on the data collected from different sources in the study area. A total of 18 lines of market channels were identified when we considered wholesalers and millers in the urban and rural milieu as separate entities. The main receivers from farmers were wholesalers and millers. Base on estimates of volumes that passed through each channel, the channel that went out of the production zone hosted the largest volume of rice, followed by channels that stretched from Farmer → millers → Wholesalers → Retailers → Consumers. The 9 main channels of rice marketing identified in the study zone were as shown below and also identified in Fig 1.

1. Farmer → Millers → Wholesalers → Retailers → Consumers
2. Farmer → Millers → Out Of The Region (By Intermediaries)
3. Farmer → Millers → Retailers → Consumers
4. Farmer → Millers → Consumers
5. Farmer → Wholesalers → Retailers → Consumers
6. Farmer → Wholesalers → Millers → Consumers
7. Farmer → Wholesalers → Out Of Region
8. Farmer → Wholesalers → Consumers
9. Farmer → Consumers

The nine identified channels of rice in the zone



Source: Field survey (2013)

From fig 1 above, it can be seen that channels 5, 7, 8 and 9 are without millers. In these channels the farmers are also millers, that is, they mill their products before selling. On the other hand, they are farmers who only cultivate the rice and seller to millers after harvesting (channels 1,2,3,4,6).

Marketing cost, margins and profitability of rice

Gross profit of paddy production

The mean paddy rice production obtained from data in this study for the zone was 3221.57kg per hectare with a standard deviation of 1310.21.

When the average paddy production is converted to milled rice using 0.7 as conversion factor, (3221.56*0.7), hence, the mean production in terms of milled/hulled rice is 2255.09kg hulled rice per ha. Here producers generate income mainly from sales of paddy. Very few of them sell hulled rice. Rice has three by-products straw yield, rice bran and husk yield.

Straw yield can be used in some areas for construction of house and husk yield (cover rice) and rice bran also used as feed for fattening of some animal by farmers. Husk yield is also used for making chip wood in some countries. Usually farmers in the study zone do not use the husk/rice bran yield. It is left at mill after milling of their paddy. This accounts for their low profit margin in the channel while favoring or accounting for the high profit margins of hullers. The typical average gross profit or income of paddy production in the locality per hectare estimated using equation 1 above:

From the study $Q = 3221.566 \text{ kg per ha}$
 $P = 150\text{FCFA/kg}$
 Hence average Profit /ha = $(3221.56) \times (150) - 348750 = 134484.9\text{FCFA}$

Table 1 summarizes the results of the average cost margin, revenue obtained and the average profit margin per ha based on the data collected during this study.

Table 1: Average costs, revenues and margins of rice farming for 1ha in the zone

Quantity	Average selling price /kg	Av. Revenue/ha
Average Yield/ha in Kg/ha = 3221.566kg paddy	150FCFA	483234.9fcfa
Item	Unit	Amount
Average total cost /ha ATC=AVC+AFC		348750 FCFA
Average Cost per unit	Total Cost/Quantity	FCFA/Kg 108.2548053
Average Profit-margin	Revenues-Cost	FCFA 134484.9
% Profit to cost(profitability)	(Profit/Cost)*100	% 38.56%
% Profit margin(return)	(Profits/Revenue)*100	% 27.83%
Average profit Margin	Profit/Quantity	FCFA /kg 41.75FCFA
Turnover ratio	Revenue / Cost	1.386

Source: Field survey 2013

After hulling of their rice the secondary products such as rice bran and rice husk are left at the hulling mill. Considering the rice yield which gives about 7-10% rice bran, the quantity of rice bran obtained per ha was as follows;

Considering 10% of average total yield/ha = $(0.1 \times 3221.566\text{kg}) = 322.1566\text{kg}$ rice bran/ha. A bag of rice bran is sold for about 3000FCFA /50kg (about 60FCFA/kg) this therefore implies that per ha a farmer loses $322.1566 \times 60 = 19329.396\text{FCFA}$ to the huller.

This goes to the huller/miller and accounts for the high profit margins made by the hullers in the rice channel. Therefore considering a scenario where the farmer were to own and sell their secondary products (rice bran) themselves, their profit per ha will increase by 19329.396 FCFA/ha and even more if other secondary products like the husk yield and straw yields are put into use. Straw yield in some areas is used for construction of house and husk yield (cover rice) also used for cattle feeding and fattening purpose by farmers. Husk yield is also used for making chip wood. Usually farmers do not use the husk yield. It is left for millers during milling of their paddy. Hence In this study, the value of straw was not considered to calculate the

gross income of farmers nor for millers as majority rather burn it up after long accumulation. The turnover ratio obtained was 1.386, which is greater than one. All of these put together bring us to the conclusion that rice production in the study area is a profitable venture.

Results from similar studies such as that of Ogundari, in 2006 on rice in Nigeria showed that the mean yield was 1159.8kg per ha with a standard deviation of 1260.14kg/ha. Also, in this same study results showed that the average price of 55 Naira per kg of paddy rice as compared to the 150fcfa recorded in this study. The results of Diop, (2008) in Senegal showed that the Gross margin on a 10hectare farm was 3,218,050fcfa (321805fcfa/ha) which is far higher than that obtained in this study.

Marketing cost and margin analysis of traders

Marketing cost for farmers and intermediaries incurred at different level of the channel have been summarized in the table 2. It gives an overview of distribution of marketing margin among different actors in the channel. From this table farmers got a profit margin of 1054.5frs/bag of 50kg of hulled rice (i.e. 21.09frs/kg). Millers got the highest

profit margin i.e. 1963.55 Fcfa/bag (39.27 Frs. /kg) due to the value added by the milling process couple with the rice bran and husk which results from the paddy. Retailers

and wholesalers got almost equal profit margins 1100 Fcfa (22fcfa/kg) and 1250 Fcfa/50kg (25FCFA/kg) of hulled rice respectively.

Table 2: Summary of marketing cost, margin and profit for farmers and traders

Cost item	Cost per bag (FCFA)	Gross market margin (1)	Total market cost (2)	Profit Margins/ (3)=(1)-(2)	Profit as % of cost & selling price	Profit/kg of hulled rice
Farmer/producers		2543.49	1489	1054.49		
Average Cost of paddy	6767.04					
Transport cost per bag	500					
Cost of hulling	714					21.09frs
Packaging(twin + bag)	275					
Total cost	8256.04				12.77%	
Average selling price 50kg	9310.54				11.33%	
Millers / processors		3252.5	1289	1963.5		
Av. buying price of paddy	9211.24					
Cost Of Packaging	275					
loading & unloading	100					
Cost of hulling	714					
Other cost	200					39.27frs
Total cost	10500.24				18.69%	
Rice husk	280					
Sells price of bran 10kg	420					
Average selling price 50kg	11763.74					
Total sales	12463.74				15.75%	
Wholesalers		2000	900	1100		
Buying price 50kg rice	12000					
Transport cost per bag	500					
Travel cost and others	400					22frs
Total cost	12900				8.5%	
Average selling price 50kg	14000				7.86%	
Retailers		2250	1000	1250		
Av. buying price 50kg	14000					
Transport cost per bag	500					
Retailing plastic	300					25frs
Market fee and others	200					
Total cost	15000				8.33%	
Average selling price 50kg	16250				7.42%	

Note: (1) Gross marketing margin (value added) = Average selling price – Average buying price.
 (2) Average selling and /buying price at different level was based on the own survey of this study.
 (3) The time dimension for profit margin is one year (2012/13)

Source: Field survey 2013

It can be observed that although rice millers got the highest profit margin, they also incur the highest marketing cost amongst intermediaries. Retailers got the lowest marketing cost while wholesalers got the lowest profit margin. The last but one column of the Table shows the relative profitability (profit /cost and profit/selling price) amongst the different rice traders. It shows that rice millers obtain a relatively large profit as a percentage of the cost price (18.69%) while retailers obtain the lowest (8.33%). This indicates that in terms of profitability of the rice business, it is relatively more profitable at the level of the miller 18.69%, followed by the producers 12.77%, wholesalers 8.5% then retailers 8.33%.

These results are on the other hand different from the findings of Astewel (2010) who

found in a similar study in Ethiopia that farmers received the highest 10.22%, followed by retailers 6.37, wholesalers 1.28 and millers 0.8%, in terms of profit margin to cost. Another study in Vietnam showed that producers received 29.9%, followed by wholesalers 3.19, millers 2.29, and retailers 2.0. The differences between these findings and this study is based on the fact that in their studies producer took and made use of their secondary products which was not the case in this study.

Ranking of the Identified Risks managed by the actors

From the farmers’ response and ranking, they were unanimous on the fact that, their three most important risk with regards the marketing of their products were transport problems, lack of capital and the poor quality of their product amongst others as shown in figure 2 below.

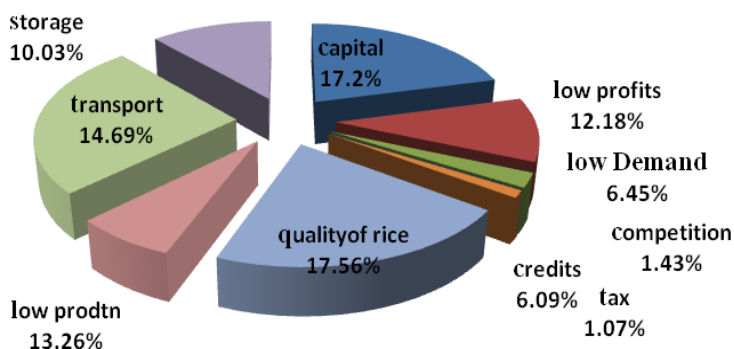


Figure 2: Ranking of various risks as indentified by respondents

- Bad state of farm to market roads which increases cost of production in terms of time and transportation cost to evacuate their product to the house or market. Here at least 14.69% the respondents agreed to the fact that roads are a big constraint to their activity. The case of Bu and Aguli villages are glaring examples where this constraint is a call for concern. Accessing the production zone, to evacuate or transport their produce home or to the market is very tedious, difficult and therefore increases cost of production and marketing.
- Lack of own capital: Featuring as one of the three most important constraints is that of lack of own capital which forces some farmers as well as other actors to

sell away their product at give away prices sometimes even before harvest to enable them solve some crucial needs of the time. This obviously contributes in maintaining the vicious cycle poverty in the rural milieu.

- Another serious constraint that affects marketing of rice in Menchum river valley is the quality of the rice. Here at least 17.56% of the respondents equally agreed to the fact that the poor quality of their rice is really a big problem to its marketing. This comes as a result of presence of high amount of impurities, and mixing of varieties by farmers, thereby resulting to high break rates of the rice during processing making the product less attractive to consumers.

Conclusion

Based on the results obtained, the following conclusions can be made:- The actors involved in the marketing channels of rice produced in Menchum river valley were: individual's farmers, producer organisations, millers/processor, wholesalers, retailers and consumers. There exist 9 main channels of rice marketing in the area but when we consider urban and rural wholesaler, millers, and retailers as separate entities we obtain 18 market lines of rice within and without the production zone.

The production and marketing of rice in Menchum river valley is a profitable venture. Nevertheless the profit margins of the rice business are unevenly distributed and varied depending on the different actors involved and their position or role in the marketing channel. Results showed that farmer receive the smallest margins among actors in the channel. Rice processor/hullers receive the greatest share of the profit margins in the rice channel. This is explained by the fact that besides the income they obtain from hulling paddy rice they equally own and sell the rice bran, broken grains and waste that results from the hulling process. They also incur the highest marketing costs relative to other intermediaries.

From the different risks identified in this study we can conclude that the three most important ones identified by the actors of the channel were: transport problems, lack of capital and the poor quality of their product. It was therefore recommended that government should develop infrastructure especially good roads to enable the farmers evacuate their products from the farms. Also they should help make credit available and accessible to farmers.

Note: CFA is a french acronym which means "Communauté financière d'Afrique" (African Financial Community). According to the exchange rate \$1 = 500franc CFA

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