EFFICIENCY ANALYSES OF COCOA MARKETING IN ABIA STATE, NIGERIA

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ABSTRACT
The study analyzed efficiency and constraints of cocoa marketing in Ikwuano Abia State, Nigeria. Ikwuano was purposively chosen because it is among the cocoa major producing/marketing areas in Abia State. Data were obtained from primary source using personal interview and a well-constructed questionnaire from 60 marketers. The results showed that about 87% of the marketers are males; 83% were married; while 63.33% had no-formal education. About 70% of the marketers belonged to marketing unions; also 70% did not have access to credit. The mean age of the respondents was 42.17 years; mean household size was about 5 persons; while mean marketing experience was 8.97 years. The results also showed that transportation accounted for about 51% of the total marketing costs. The mean marketing margin for the marketers was 22.88%, while the marketing efficiency was 5.77. Six independent variables significantly influenced marketing efficiency of the respondents, which were sex, marketing experience, educational level, household size, union membership and age of the respondents. Among the constraints experienced by the marketers were poor access to credit with a mean score of 3.225, significant at 1% alpha level. Others were storage-related issues (3.075), and transportation difficulties (2.825). It was recommended that cocoa marketers advanced with age and those that must have spent years in the business should not leave it for another because its efficiency increases with age and years. The results also call on policies aimed at strengthening the efforts of the cocoa marketers by encouraging them form marketing associations or enhance the bargaining power of their existing unions, through which they can collectively access credit at low interests.

Keywords: Marketing Efficiency, Marketing Margin and Constraints

Introduction
Cocoa *(Theobroma cacao)* is an important cash crop which is believed to have originated from several localities in the area between the Andes and the upper reaches of the Amazon in South America (Julius, 2007). In the 19th Century, cocoa production began to expand beyond its native base in Amazonia and Meso-America, spurred by an increased demand for chocolate as an item of mass consumption. Cote d'ivoire which was placed third in Africa with 143,000 tones behind Nigeria's 196,000 tons in 1970 is now the largest producer in the world with 1-3 million tones accounting for about 40% of the total world's production while Nigeria is currently the fourth largest producer after Cote d'ivoire, Ghana and Indonesia (ICCO, 2003). The dramatic growth of cocoa production in Cote d'ivoire is very interesting in that, Nigeria supplied the improved Amazon hybrid seed to Cote d'ivoire in 1995 for commercial planting to replace Amelonado variety hitherto grown (Opeke, 2003). There are over 500, 000 cocoa farmers engaged in cocoa production in Nigeria, producing more than 20,000 tons of cocoa per year from over 600,000 hectares of land. Over 50% of this quantity is produced in Ondo State alone with substantial quantities produced in Oyo, Ogun and Osun States. Most cocoa farms in Nigeria were established over 40 years ago. On average, each farmer has a total of about 1 – 6 hectares with distribution ranging between 0.5 – 20 hectares, scattered in 2 – 7 different locations. These farmers either own their farms by establishing the farms themselves or by inheritance from their parents (CRIN, 2000).

According to Acharya (2006), a developed agriculture bears positive relationship with employed income distribution, population, technology, capital, credit and efficient marketing system. Efficient marketing in turn brings improved pricing which invariably results in better income distribution among producers of agricultural produce. Marketing is the critical link between farm production and non-farm sector, industry

and urban economy. The role of marketing in developing any economy including agriculture cannot be over emphasized. Marketing involves all those legal, physical and economic services which are necessary to make products from the producer available to consumers (Olukosi and Isitor, 2004). The more efficient the marketing system functions are performed, the better the marketing system for both the farmers, food marketing firms, consumers and society at large. Marketing efficiency is the maximization of the ratio of the output to input in marketing (Olukosi and Isitor, *ibid*). Despite the significant roles of marketing in agricultural development, over the two decades, the world has witnessed a land slide movement towards market liberalization and this movement has affected both international and domestic markets (Onu and IIiyasu, 2008). Cocoa was among Nigeria's leading sources of foreign exchange before the oil boom, and until now it is still Nigeria's largest agricultural foreign trade commodity and has helped to boost the economy of the major producing states in Nigeria. The problems facing cocoa marketers could be attributed to the following causes; poor control of pest and disease, poor handling of post-harvest process and inefficient agricultural extension services (Oluyole and Usman, 2006). Inadequate storage facilities, price instability are also among the problems that face cocoa marketers. Anyanwu, (2003), noted that cocoa are perishable produce and the farmers may not have the technology to process and preserve them, the entire products are offered for marketing immediately, price are forced down and the farmer may not be adequately rewarded for his labour. In Nigeria, since the abolition of the marketing boards in 1986 following structural changes in the Nigeria economy, farmers have been facing problems with the disposal of their produce in the world market especially such crops as cocoa, cotton and rubber with the attendant of most farmers diversifying into production of food crops and other sectors of the economy (Akinwale, 2000). The cocoa market is also characterized by an inadequate transportation network i.e. high cost of transportation limited number of traders with inadequate capital and weak agro-industrial sectors, poor infrastructure, high taxation cost, low access to finance and low patronage. These underlying problems have therefore necessitated the analysis of marketing efficiency of cocoa in the study area.

Methodology

This study was carried out in Ikwuano Local Government Area of Abia State Nigeria. Ikwuano lies between latitude 5.5 north and longitude 7.5 east. Ikwuano Local Government area has fifty-seven villages and seventeen communities. The annual rainfall ranges from 1600m to 1700mm and average temperature is within 26°C and 32°C. One of the daily occupations of the people is farming and small holder farmers predominate in her agricultural occupation, a large number of these farmers are petty traders. The

major arable crops grown are yam, cassava, cocoyam, rice, maize, melon and variety of vegetable. The common perennials are oil palm, cashews, mangoes, oranges, kolanuts, avocado etc. Some of the farmers keep livestock such as goat, poultry and pigs while few practice fish farming. Fish farming is a relatively emerging enterprise in the area. The major cash crop grown in Ikwuano is cocoa. Ikwuano Local Government Area of Abia State Nigeria was purposively chosen. This is because it is among the cocoa major producing/marketing areas in Abia State. From the Local Government Area, 2 villages were selected; 30 cocoa marketers from each of 2 villages were randomly selected to give a total of 60 cocoa marketers. Data were obtained from primary source. The basic primary data collection method that was utilized include; personal interview and a well-constructed questionnaire.

Model Specifications

(i) Marketing Margin Analysis

Marketing Margin (MM) is the difference between purchase price and price of resale which is usually expressed as a percentage of producer prices:

$$MM = \frac{Sp-Cp}{Sp} \times 100 \qquad (1)$$

Where,
Sp = Selling price
Cp = Cost price

(ii) Marketing Efficiency

The efficiency of cocoa marketing was analyzed using the Marketing Efficiency Index (MEI) which measures the amount of profit per naira spent in the marketing of one unit of cocoa. It is the ratio of the profit margin to whatever cost was incurred in arriving at the margin and is given as:

$$MEI = \frac{\text{Value added by marketing (N)}}{\text{Cost of marketing (N)}} \qquad (2)$$

These model have been used by other studies to estimate marketing efficiency for agricultural products, such as Emokaro and Amadasun, (2012), Ekunwe *et al.* (2008), Erhabor *et al.* (2008)

The multiple regression model was specified as follows:

$$Y = \beta o + \beta_1 x_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \mu \qquad (3)$$

Where;
Y = marketing efficiency
X_1 = sex (male or female)
X_2 = marital status (0=single; 1=married)
X_3 = credit (Naira)
X_4 = marketing experience (years)
X_5 = price of Cocoa (Naira)
X_6 = educational level (years)
X_7 = Household size (no of persons)
X_8 = membership of marketing union (1 = member; 0 = non-member)
X_9 = Age (years)
μ = Error term

Results and Discussion
Socioeconomic Characteristics of the Respondents
Some socio-economic characteristics of the respondents were examined, as shown in Table 1. Majority of the respondents were males (86.70%), while only 13.30% were females. This is in consonance with Taphee *et al.* (2015) that cocoa marketing is mainly a job for men as. Majority of the respondents were married (83.30%), while 16.70% were single. This agrees with the findings of Fabiyi et al., (2007) in Gombe State. The educational qualification of the respondents showed that 63.30% of the respondents had no formal education. This result is a bit surprising because the level of education in Abia State has been brought up to levels higher than this. However, about 23.33% of the respondents had secondary education, while 6.67% attained tertiary education. About 70% of the respondents owned plantations where cocoa is grown, while 30% did not. This variable is important because the source of the product and the total marketing cost is affected by the ease of access to the product. Thus it is expected that those that owned their own farms and grew the crop themselves would make higher margins than those that solely bought from the producers. The result further showed that only 30% of the respondents belonged to marketing unions, while majority 70% did not. This is expected to have negative effects on the ability of the marketers to source external capital and market opportunities, since these are the benefits that collective bargaining through unions/groups gives its members. Only 30% of the respondents had access to loan, while majority (70%) could not access loans. Access to external credit gives the farmer an added opportunity to expand scale of operation, and make more profit (FGN, 2007). In the absence of external credit and substantial savings, the marketers' operations would still remain peasant. Majority sourced their product from their own farms (46.67%) while another 33.33% bought from producers. It also showed that 20% of the respondents bought from the wholesalers. The implication is that the marketing channel for cocoa in the study area flows from producers to wholesalers to retailers. The age of the respondents showed that majority (58.33%) of the marketers were between the ages of 21-40 years, while those above 40 years accounted for 21.67% of the sample. The mean age of 42.17 years indicate that the cocoa marketers were economically productive. The household size of the respondents indicated that those with 4-6 persons per households accounted for 55% of the total sample, while those with 7-10 persons were 18.33%. However, the mean household size was about 5persons which indicates small household size. The size of the house is sometimes an important indicator of amount family labour available for business. According to Taphee *et al.* (2015), cocoa marketing sometimes involves bulk-breaking into smaller quantities and other auxiliary activities performed by the marketer before the product is brought into the market. Whether it is own produce or purchased produce that the farmer sells, certain amount of labour is still required to ease the operations. The results showed that 40% of the respondents had business experience of 5-10 years, while 33.33% had been in the business for more than 10 years. The mean years in the business was 8.97 years.

Marketing Margin and Marketing Efficiency of Cocoa Marketers in Ikwuano, Abia State
Marketing costs
According to the results in Table 2, transportation cost which was N501.00 per bag accounted for about 51% of total marketing cost of cocoa in the study area. This is largely due to poor access roads to the farms, and poor road networks in the rural areas from where this product is sourced. Both the low and high grades of cocoa attracted the same transportation cost because weight and distance were the major considerations in determining transportation costs. The next important source of marketing cost was the cost of storage, which accounted for about 34% of total marketing costs. Cocoa marketing is seasonal, mostly commanding high market prices when harvesting have been completed (Folayan *et al.* 2006). Most of the marketers take advantage of the harvest period to stock products. This stocking period usually involves protecting the product from theft, damage and deterioration. This service attracts some costs from the marketers. Market charges accounted for only about 10% of the total marketing costs; while offloading was the least cost, attracting only 5.10% of total marketing costs. These two cost items, although recorded the least of them all, are equally important marketing services. The marketers pay some statutory dues to the market authorities when they convey their products to any recognized market. The reasons which made this a little component of total marketing cost could be because that most of the transactions occur at the place of storage of the products, not in a conventional market environment. It is worthy to note that the marketers with the minimum marketing costs, through observation were those who sold the lower quality cocoa beans. Both their marketing costs and selling prices were lower than average for the study area. However, their marketing margins and marketing efficiency indices were higher than those who sold higher quality cocoa beans. This observation, although was not part of the scope of this study, can be investigated further.

Marketing Margin
The mean marketing margin of the cocoa farmers was 22.88% (Table 2). The marketing margin is a measure of the difference between the cost of the product, and the price the marketer sells the product. It is usually the profit to marketing activities; a measure of the value added by marketing. In this case, the mean value added was N5, 664.00 per bag of cocoa sold, which represented about 22.88% marketing margin. This implies that the marketers made a profit of about 23%

per bag of cocoa cold. This result is in line with the finding of Folayan *et al*. (2006).

Marketing Efficiency
The marketing efficiency measures the level of marketers' efficiency in the use of resources in conducting their marketing activity. The marketing cost items identified earlier are aids to marketing. How effective an individual marketer is in utilizing these constitutes his marketing efficiency. The mean marketing efficiency index for the marketers was 5.77 (Table 2). This result agrees with the finding of Gotsch and Burger (2001). The implication of this result is that for every ₦1 invested in the marketing of cocoa, the marketers made a profit of ₦5.77. This is indicative that the marketers were highly efficient in the marketing of cocoa in the study area.

Factors Influencing Marketing Efficiency among the Cocoa Marketers in the Study Area
A regression analysis was conducted to determine the factors that influence the marketing efficiency of cocoa marketers in Ikwuano LGA of Abia State. The four functional forms of the model were tried, and the semi-log functional form was chosen as the lead equation because it had the highest R^2 value, highest f-ratio, and the highest number of significant independent variables. The results of the analysis are presented in Table 3. Six of the nine independent variables fitted in the model were significant at statistically acceptable levels. The coefficient of multiple determination (R^2) value was 69.50%, which is an indication that the independent variables accounted for 69.50% of the variations in the dependent variable, which was marketing efficiency index.

Sex: The regression coefficient of 0.088 which was significant at 10% alpha level shows that sex positively affected the marketing efficiency of the respondents. Since the weight of the variable increased towards the males, it therefore implies that the males had higher marketing efficiency because they were males as posited by Taphee *et al.* (2015).

Marketing experience: This variable had a positive coefficient of 0.021 which was significant at 1% level of significance. Literally, one-year increase in marketing experience would result in an increase in marketing efficiency index by 0.021. The implication is that as the number of years the marketers spent in the cocoa marketing business, their marketing efficiency increased.

Level of education: This represented the number of years a cocoa marketer had spent in formal education. The regression coefficient was 0.026, which was significant at 1% level. This indicates that higher formal educational attainment translated to increased marketing efficiency (Gotch and Burgaer, 2001).

Household size: The coefficient of household size was -0.054 which shows that it has a significant negative relationship with marketing efficiency. The reason could be that a significant proportion of finances for investing in cocoa marketing were spent taking care of the larger families. This conformed with the result of Taphee *et al.* (2015).

Membership of marketing union: This variable had a positive coefficient of 1.350 which was also significant at 1% alpha level. This indicates that being a member of the marketing union enhanced the marketing efficiency of the respondents. Membership of these unions come with some benefits. For example, it could be noticed that majority of the marketing costs were uniform for all the respondents. This was probably because the union regulated the rates for these items, including the prices of their final products.

Age: The age of the respondents was positively related to the marketing efficiency of the marketers with a coefficient of 0.015, significant at 1% alpha level. This implication is that the older marketers performed better than their younger counterparts. Experience, as earlier noted, had positive effect on the index of marketing efficiency. The age of the marketer and his marketing experience, *a priori*, are expected to be positively correlated. This relationship would translate to age equally being positively related to the index of marketing efficiency.

Constraints to Cocoa Marketing
Some constraints which impeded cocoa marketing in the area were examined. A Likert scale of four points was used to get mean scores; while a t-test was used to test the statistical significance of these variables against the benchmark of 2.50. The respondent's opinion about the magnitude of constraints that these factors imposed on the business is presented in Table 4. The results showed that three of the five inhibiting factors were significant at 1% and 10% levels of significance, respectively. These were (in order of highest mean score) poor access to credit (3.225), storage-related issues (3.075), and transportation difficulties (2.825). These results imply that poor access to credit was the highest militating factor against cocoa marketing in the study area as was opined by Oluyole and Usman (2006). This was followed by storage-related issues which include provision of storage space, preventing insect attack in storage, and against theft. The last recognized constraint was transportation difficulties which mainly resulted from poor or absent access roads in the rural areas where cocoa is produced. According to FGN (2007), poor transportation network affects cocoa business.

Conclusion
The results showed that cocoa marketers in the study were efficient in the marketing of cocoa. Their marketing margin and marketing efficiency were indicative of this position. Their socio-economic characteristics also had significant influence on their marketing efficiency. They also experienced some constraints in their activities. The results therefore recommend that cocoa marketers advanced with age and those that must have spent years in the business should not leave it for another because its efficiency

increases with age and years. The results also call on policies aimed at strengthening the efforts of the cocoa marketers by encouraging them form marketing associations or enhance the bargaining power of their existing unions, through which they can collectively access credit at low interests. This will enable them improve in their operations; and they should adopt new storage technologies which will reduce their level of loss in storage due to poor storage facilities.

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Table 1: Socioeconomic characteristics of the respondents

Socioeconomic characteristics		Frequency	Percent
Gender	Female	8	13.33
	Male	52	86.67
	Total	**60**	**100.00**
Marital status	Single	10	16.67
	Married	50	83.33
	Total	**60**	**100.00**
Educational qualification	Primary	4	6.67
	Secondary	14	23.33
	Tertiary	4	6.67
	Non-formal	38	63.33
	Total	**60**	**100.00**
Membership of unions	Member	42	70.00
	Non-member	18	30.00
	Total	**60**	**100.00**
Plantation ownership	Do not own a farm	18	30.00
	Own a farm	42	70.00
	Total	**60**	**100.00**
Access to loan	Did not have access to loan	42	70.00
	Had access to loan	18	30.00
	Total	**60**	**100.00**
Source of products	Bought from producers	20	33.33
	Own produce	28	46.67
	Bought from wholesalers	12	20.00
	Total	**60**	**100.00**
Age of the respondents	Less than 20	12	20.00
Mean: 42.17	21-40	35	58.33
Std. dev: 16.53	41-60	13	21.67
	Total	**60**	**100.00**
Household size	Less than 3	11	18.33
Mean: 4.80	4-6	33	55.00
Std. dev: 1.57	7-10	11	18.33
	Above 10	5	8.33
	Total	**60**	**100.00**
Marketing experience	Less than 5	16	26.67
Mean: 8.97	5-10	24	40.00
Std. dev: 3.42	Above 10	20	33.33
	Total	**60**	**100.00**

Source: field survey, 2016

Table 2: Marketing statistics of cocoa marketers in the study area

Variables	Minimum	Maximum	Mean	% of marketing cost
Cost per bag of cocoa	10,000.00	22,000.00	18,105.00	
Transportation per bag	250.00	750.00	501.00	51.07%
Market charges	100.00	100.00	100.00	10.19%
Offloading	50.00	50.00	50.00	5.10%
Storage cost	300.00	400.00	330.00	33.64%
Total marketing cost per bag	700.00	1,050.00	981.00	
Total cost per bag	10,700.00	23,050.00	19,086.00	
Selling price	15,000.00	26,100.00	24,750.00	
Value added by marketing	4,300.00	3,050.00	5,664.00	
Marketing margin (%)	**28.67**	**10.73**	**22.88**	
Marketing efficiency	**6.14**	**2.15**	**5.77**	

Source: Computed from field survey, 2016

Table 3: Regression Estimates of Factors Affecting Marketing Efficiency of Cocoa Marketers in Ikwuano LGA, Abia State (semi-Log form)

Parameters	B	Std. Error	t-value	Sig.
Constant	0.267	0.227	1.175[ns]	0.241
X_1(Sex)	0.088	0.053	1.672[b]	0.095
X_2(Marital status)	-0.092	0.065	-1.408[ns]	0.160
X_3(Credit)	0.000	0.000	0.618[ns]	0.537
X_4(Marketing experience)	0.021	0.005	4.346[a]	0.000
X_5(Price of cocoa)	0.000	0.000	-0.210[ns]	0.834
X_6(Education)	0.026	0.005	4.882[a]	0.000
X_7(Household size)	-0.054	0.020	-2.649[a]	0.008
X_8(Membership of association)	1.350	0.054	24.975[a]	0.000
X_9(Age)	0.015	0.005	3.107[a]	0.002
R^2	69.50			
F-ratio	11.623[a]			

Dependent Variable: LnY. [a], [b], and [ns] indicate significance at 1%, 10% and not significant, respectively. Source: SPSS output (see appendix II) of survey data, 2016.

Table 4: T-test for constraints militating against Cocoa Marketing

Constraints (Grand mean = 2.795)	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t-value	Sig.
Transportation difficulties	2.825	1.107	0.175	0.325	1.857[b]	0.071
Poor access to credit	3.225	1.209	0.191	0.725	3.794[a]	0.001
Marketing charges	2.475	1.086	0.172	-0.025	-0.146ns	0.885
Processing facilities	2.375	1.125	0.178	-0.125	-0.703ns	0.486
Storage-related issues	3.075	0.888	0.140	0.575	4.094[a]	0.000

[a], [b], and [ns] indicate significance at 1%, 10% and not significant, respectively. Decision rule: Mean scores ≥2.50 = constraints; otherwise not. Source: SPSS output of survey data, 2016