

Determinants of Efficiency among Egg Marketers in Oyo State, Nigeria: Implication for National Sustainable Development

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Abstract

One of the emerging trends for national sustainable development is striving to attain efficiency in production and marketing of agricultural produce. This study investigated the efficiency level of poultry egg marketers and its determinants in Ogbomosho, Oyo State. Two-stage sampling technique was used to select 110 respondents. Data were collected on socio-economic characteristics of the egg marketers, various marketing activities performed, costs and returns to egg marketing as well as challenges facing the enterprise. Data collected were analyzed using the descriptive, budgetary and regression analytical tools. The results of analyses showed that more female (91.8%) were involved in poultry egg marketing than the male counterpart. Average age of the respondents was 40.7 years. Many (88.2%) of the respondents are married with average household size of 4.73 members. The mean year of experience was 8.94 while 89.1% of respondents depend on personal savings as source of financing the enterprise. The study further revealed that the Gross margin was #65.46 per crate of egg sold. The Benefit cost ratio was 1.07, indicating that poultry egg marketing is profitable in the study area. Respondents were found to be efficient in performing marketing functions with ME > 100%. Determinants of marketing efficiency among respondents include marketing experience, access to credit and sales volume.

Keywords: Marketing efficiency, Market performance, Poultry egg, Budgetary analysis, Poultry Products.

Introduction

Agriculture in Nigeria has remained the largest sector contributing nearly 39% to the Gross Domestic Product for the past two decades and employing nearly 60% of its workforce. Over 80% of the country's population living in the rural area is directly or indirectly dependent on Agriculture for its livelihood (NBS, 2005). Poultry is one of the world's major and fastest growing sources of meat and egg and representing over 22% of the meat production in 1989. Because of their high nutrient content and relatively low caloric value, egg and poultry production are natural commodities to meet emerging consumer demand. Livestock is important for increased productivity in Nigeria's Agriculture. It provides food, fuel, fertilizer, and draught to sustain rural economy. Among livestock-based vocations, poultry occupies a pivotal position because of its enormous potential to bring demand in all parts of the world. When there are no barriers (religious or cultural), poultry meat and egg usually take consumers preference.

Agricultural marketing is the main driving force of economic development and has a guiding and stimulating impact on production and distribution on agricultural produce. The agricultural marketing system takes on increasing importance as a traditional agencies society is transformed into modern industrial society. The increasing proportion of the population

living in urban centres and the rising level of income requires more highly organized channels for processing and distributing agricultural products (Weiday and Eleni 2005).

Feeding on food of animal origin is probably the fastest economic and nutritional route to improvement in the nutritional status. Food of animal origin has the capability of providing 35g per capita of animal protein per day (Ojo, 2003). The available sources of animal protein are fish, beef, pork, mutton, egg and poultry meat. Eggs are more easily produced with a relatively low capital investment. Poultry is the main sector where over 60% of animal protein is being derived. However, the increased growth rate experienced in this industry does not commensurate with the fast rate of growing population. Egg as an important poultry product is known to be acceptable to all people of all races and the most widely demanded poultry product. Eggs are rapidly the cheapest source of meeting the protein requirement of the nation. The production of egg has been the factor of the greatest economic importance in poultry production, thus the marketing of this product cannot be overemphasized.

Production is not complete unless the product reaches the hands of consumers. Therefore, marketing is part and parcel of production. The functions of marketing include assembling, grading and standardization, storing, transporting, financing and risk taking. Poultry production as part of livestock production could be one alternative income generating mechanism for rural households. The problem, which limits farmers not to produce flock of chicken, is the market access condition in the area (Holloway and Ehui, 2002). Poultry products are highly marketable and poultry rearing as a business has high turnover ratio. However as reported by Kenea et al (2003) efficient marketing system is one major component to increase poultry business contribution to the rural household economy.

Marketing involves the flow of goods and services from the initial production until they are in the hands of the ultimate consumers. Despite the good and encouraging aspect of the poultry production industry, problems and constraints have been identified in lack of financial assistance to the poultry egg marketers and they rely on their own capital and the informal source of credit which include credit from money lenders, relatives, friends, etc. For instance, the growth of urbanization and the rise in income and standard of living have led to increasing demand for eggs. Specifically, market performance is concerned with technological progressiveness, growth orientation of agricultural firms, efficiency of resources use, as well as product improvement and maximum market service at the least possible costs (Adegeye and Dittoh, 1985).

Marketing efficiency is a measure of market performance and is defined as the movement of crops and livestock from the producers to consumers at the lowest cost consistent with the provision of the services desired by consumers. Hence, there is need for efficient marketing channel and system. Lack of knowledge on the marketing of some crops and their products partly leads to the inherent poor agricultural commodity marketing in Nigeria (Onyenobi *et al*, 2009; Adejo et al, 2011). Marketing of eggs become a challenge on the part of the producers and marketers when transporting them from one town to another. Cracks as well as breakages occur as a result of poor roads. If this happens, consumers will refuse to buy the product, which may result to loss.

The specific objectives are to describe the socio-economic characteristics of the egg marketers, examine marketing activities performed, investigate costs and returns to the enterprise, identify various challenges facing the egg marketers, estimate marketing efficiency

and its determinants. Hypothesis of the study stated that there is no significant relationship between selected socio-economic characteristics of respondents and marketing efficiency.

Methodology

This study was carried out in Ogbomoso, Oyo State. Ogbomoso comprises of five Local Government Areas (LGAs). All the poultry egg marketers in Ogbomoso formed the population of the study. Two-stage sampling technique was used to select respondents. In the first stage purposive sampling technique was employed to select Ogbomoso North LGA based on high population of egg marketers resident in the area. This Local Government shares boundaries with Ogbomoso south, Oriire Local Government to the west, Surulere local government to the east. In the second stage, purposive sampling technique was used to select one hundred and ten (110) poultry egg marketers to form sample size of the study. A structured interview schedule was used to collect primary data based on the study's objectives. Descriptive statistics such as frequencies and percentages were used to analyze socio-economic characteristics of the respondents, egg marketing activities, and challenges facing the enterprise. Budgetary analysis was employed to estimate profitability of the enterprise as well as marketing efficiency.

Budgetary Analysis

$$GM = TR - TVC \text{ ----- (i)}$$

Where GM = Gross Margin

TR = Total Revenue

TVC = Total Variable Cost

$$p = GM - TFC \text{ ----- (ii)}$$

Where p = Net Profit

TFC = Total Fixed Cost (Depreciated value)

$$BCR = \frac{\sum \text{Total Revenue}}{\sum \text{Total Cost}} \text{ ----- (iii)}$$

Where BCR = Benefit Cost Ratio

(When $BCR > 1$, the business is profitable, When $BCR < 1$, the business is not profitable.)

Conceptually, efficiency of any activity or process is defined as the ratio of output to input. If 'O' and 'I' are respectively output and input of the marketing system and 'E' is the index of marketing efficiency; then

$$E = (O \div I) \times 100 \text{ ----- (iv)}$$

A higher value of E denotes higher level of efficiency and vice versa. When applied in the area of marketing, output is the 'value added' by the marketing system and 'input is the real cost of marketing. The measurement of 'value added' is not easy. The difference in the price at the farm level (price received by the farmer) and that at the retail level (price paid by the consumers) may be used to measure the 'value added'. Therefore for this study, marketing efficiency (E) is

$$\frac{\text{Total revenue} \times 100}{\text{Total cost of marketing}} \text{ ----- (v)}$$

The multiple regression analysis was used to test hypothesis of the study

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, e) \text{ ----- (vi)}$$

Where Y = Marketing Efficiency

X₁ = Egg Marketing Experience (Years)

X₂ = Level of Education (Years)

X₃ = Age (Years)

X₄ = Household size (Actual)

X₅ = Sex (Dummy: Female=1, Otherwise=0)

X_6 = Access to credit (Amount in #)
 X_7 =Sales volume per week (Crates)
 e =Error term

Presentation and Discussion of Results

Socio-economic Characteristics of Egg Marketers (Table 1)

Results of analysis as presented in Table 1 showed distribution of the respondents based on socio-economic characteristics. Results revealed that 15.5 were below 30 years, 79.1% fall between the age ranges of 30-59 years while only 5.4% claimed age range of 60-69 years. The mean age of respondents was 41 years. Results further revealed that 91.8% of the poultry egg marketers were female while only 8.2% were male. This implies that the female gender is more involved in poultry egg marketing than the male gender. Exactly 88.2% of the respondents were married while 0.9% was divorced. According to the result obtained, 67.3% of the respondents had household size of 1-5 while 32.7% claimed between 6-10 members. The average household size was found to be 5 individuals. Furthermore, 10% of the respondents claimed not to receive any formal education, implying that many of the respondents were educated.

Egg Marketing Activities of Respondents (Table 2)

Many of the respondents have been in poultry egg marketing business for so long, with a mean of 8.94 years. The result revealed that 89.1% depended on personal saving while 2.7% depended on credit from cooperative societies. Exactly 20% of the respondents used hired labour while 80% claimed otherwise. Results further revealed that 4.5% of the respondents sold less than or equal to 20 crates per week while 66.4% sold 61-80 crates on weekly basis. Average sale per week is 60.07 crates. Exactly 62.7% sell directly in crates while only 14.5% sell in units, implying that very few of the respondents operate in small scale.

Table 1: Socio-Economic Characteristics Distribution of Egg Marketers, n=110

Variable	Frequency	Percentage
Age		
20-29	17	15.5
30-39	33	30.0
40-49	37	33.6
50-59	17	15.5
60-69	6	5.4
Sex		
Male	9	8.2
Female	101	91.8
Marital status		
Single	12	10.9
Married	97	88.2
Divorced	1	0.9
Household size		
1-5	74	67.3
6-10	36	32.7
Educational status		
No formal schooling	11	10.0
Adult education	7	6.4

Primary school	24	21.8
Secondary school	42	38.2
Tertiary school	26	23.6

Source: Field Survey, 2017.

Table 2: Egg Marketing Activities of Respondents, n=110

Variable	Frequency	Percentage
Marketing experience (in years)		
≤10	86	78.2
11-20	17	15.5
21-30	5	4.5
31-40	2	1.8
Major Source of finance		
Personal saving	98	89.1
Cooperative loan	3	2.7
Others (friends/ relatives)	9	8.2
Use of Hired Labour		
Yes	22	20.0
No	88	80.0
*Measure of sale		
Crate	69	62.7
Dozen	41	37.3
Units	16	14.5
Crates Sold per Week		
≤20	5	4.5
21-40	12	10.9
41-60	6	5.5
61-80	73	66.4
81-100	8	7.3
>100	6	5.5

*Multiple choices

Source: Field Survey, 2017.

Budgetary Analysis

Total revenue (TR) = Quantity of eggs sold (in crate) x Selling price per crate.

TR = N57, 178.09

Total variable cost (TVC) = Cost of egg + Marketing cost (Transportation, labour cost e.t.c.)
= N51, 015.45 + N2, 230.36
= N53, 245.81

Gross Margin (GM) = TR– TVC
= N57, 178.09 – N53, 245.81
= N3, 932.28 per week

$$\begin{aligned} \text{GM per crate} &= \text{N3, 932.28} \div \text{Average number of crate sold per week} \\ &= \text{N3, 932.28} \div 60.07 \text{crates} \\ &= \text{\#65.46} \end{aligned}$$

$$\text{Profit} = \text{Gross Margin (GM)} - \text{Depreciated Fixed Cost (DFC)}$$

$$\text{Gross Margin} = \text{\#3, 932.28}$$

$$\text{Depreciated fixed cost} = \text{\#156.17}$$

$$\text{Profit} = \text{\#3, 932.28} - \text{\#156.17}$$

$$\text{Profit} = \text{\#3, 776.11 per week}$$

$$\text{Profit per crate} = \text{\# 3,776.11} \div \text{Average number of crate sold per week}$$

$$= \text{\#3, 776.11} \div 60.07 \text{crates}$$

$$= \text{\#62.86}$$

$$\text{Benefit Cost Ratio (BCR)} = \frac{\sum \text{Total Revenue}}{\sum \text{Total Cost}}$$

$$\text{TC} = \text{TVC} + \text{DFC}$$

$$= \text{\#53, 245.81} + \text{\#156.17}$$

$$= \text{\#53, 401.88}$$

$$\text{BCR} = \text{\#57, 178.09} \div \text{\#53,401.88}$$

$$= 1.07$$

The benefit cost ratio is 1.07. This shows that poultry egg marketing in the study area is profitable since the benefit cost ratio is greater than 1.

Marketing Efficiency (ME) of Respondents

$$\text{ME} = \text{TR} \div \text{TC} * 100$$

$$= 107 \%$$

A value greater than 100% signifies efficiency.

Distribution of Respondents based on Challenges to Poultry Egg Marketing (Table 3)

Table 3 shows that 82.7% of the respondents identified with challenge of market price fluctuation in egg transaction while 61.8% endorsed frequent breakages in eggs as pressing challenge.

Table 3: Distribution of Respondents based on Challenges to Poultry Egg Marketing

Challenges	*Frequency	Percentage
Breakages	68	61.8
Price Fluctuation	91	82.7
Inadequate supply	42	38.2
Low demand	28	25.5
Storage problem	6	5.5
Poor Marketing Information	12	10.9

*Multiple choices

Source: Field Survey, 2017.

Ordinary Least Square (OLS) Regression Analysis (Table 4)

Adjusted R² is 0.992 indicating that 99.2% of the variations in marketing efficiency are caused by the estimated variables. F value is 23.14 (significant at 10%), implying the goodness of fit of the model. Marketing experience is significant at 1%, and has a direct relationship with marketing efficiency. This implies that increase in marketing experience is likely to increase the efficiency of egg marketers in the study area. Access to credit is significant at 1% and has a positive relationship with the marketing efficiency. This implies that respondents' accessibility to credit is likely to improve marketing efficiency. In other

words, access to credit will increase marketing efficiency of respondents. The number of crates sold per week is significant at 1%. This implies that an increase in the number of crates sold on weekly basis also increase the efficiency of marketers. Operating on a larger scale will grant the marketers the advantage of reduction in average marketing cost, thereby having a positive effect on efficiency of the marketers.

Table 4: Result of OLS Regression Analysis

Variable	Coefficient	t-value
Constant	9682.288	1.467
Marketing Experience	0.036	2.859***
Educational level	914.782	0.959
Age	-186.945	-1.386
Household size	-149.085	-0.219
Sex	-115.148	0.741
Access to credit	0.090	3.388***
Sales volume per week	59.739	20.449***

*** Coefficient significant at 1%

R = 0.996

Adjusted R² =0.992

F value is 23.14***

Source: Data Analysis, 2017.

Conclusion and Recommendations

The study concluded that:

- Poultry egg marketing is profitable in the study area.
- Factors influencing marketing efficiency among respondents were marketing experience, access to credit and sales volume per week

The study recommends that:

- Since many of the respondents depend on personal savings in running their business, egg marketers should form cooperative societies through which members can have access to low-interest and timely credit to finance egg marketing activities. This is expected to have positive effect on marketing efficiency and consequently sustainable development of the nation.
- Since respondents endorsed price fluctuation as a serious challenge, egg marketers should form a registered trade union through which necessary actions could be taken to correct price-related challenges. Pricing efficiency is expected to have positive effect on sustainable development of the nation.

Contribution to Knowledge

Nigerian policy makers could therefore be guided by this knowledge (of factors associated with marketing efficiency) in the process of formulating effective agricultural marketing policies towards national sustainable development as well as the nation food security.

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