Profitability Analysis of Three Methods of *Suya* Production and Marketing in Maiduguri metropolitan Council, Borno State, Nigeria

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ABSTRACT: The study determined the economics of alternative methods of *Suya* production and marketing in Maiduguri Metropolitan Area in Borno State of Nigeria. Data were obtained from 108 respondents using questionnaire and oral interview schedule. Descriptive statistics, the gross margin, Ginni coefficient, market margin and average cost function were used as analytical tools. The findings of the study indicate that the three major types of *Suya* in the study area were *Tsire*, *Balangu* and *Kilishi*. Estimated gross margin per kilogram of meat used in preparation of *Kilishi, Balangu* and *Tsire* were ₦150, ₦ 32 and ₦ 114, respectively. The returns to labour were ₦ 3.13, ₦ 1.95, ₦ 2.2 for *Kilishi, Balangu* and *Tsire* producers, respectively. The returns to other variable costs were 29 kobo for *Kilishi* and *Tsire* producers and 1 kobo for *Balangu* producers. The benefit-cost ratios were estimated as ₦ 1:27:1. ₦ 1.25:1 and ₦ 1.1:1 for *Kilishi, Tsire* and *Balangu* production and marketing enterprises, respectively. The marketing margins for *Kilishi, Tsire* and *Balangu* were estimated as 37.45%, 43.39% and 21.56%, respectively. Analysis of the market structures shows that all the *Suya* types were differentiated and market knowledge imperfect. The Ginni coefficients for *Tsire* and *Balangu Suya* types were similar (0.5), with many producers and buyers and relatively free entry into the market, depicting monopolistic competitive structure. In addition to differentiated products and imperfect market knowledge, *Kilishi* market had a Ginni Coefficient of 0.2, few producers and buyers with restricted freedom of entry, typical of oligopolistic competition. There is absence of scale economics in the three types of *Suya* study. Based on the findings of the study it was recommended that all *Suya* products should be registered with National Agency for Food and Drug Administrative Control (NAFDAC) for quality programme to ensure good sanitation of the meat products.
Keywords: *Suya*, marketing, Maiduguri, Borno State

INTRODUCTION

Suya is a very popular indigenous meat product in terms of frequency of consumption in northern Nigeria. Its popularity has now extended to southern part of Nigeria. It is a traditionally processed, ready-to-eat Nigerian meat product, which has a wide acceptance and has become a mass consumer product. The numbers of producers as well as consumers have, therefore, increased tremendously irrespective of ethnicity, religion, social status or sex (Igene, 1982). These meat products have formed the basis of the Nigerian livestock industry, which provides employ-ment and income to the populace. Consequently, its production has become a major economic activity in Nigeria, Cameroon, Senegal, Mali and Chad Republic (Igene and Agboola, 2003).

There are, however, three main forms of *Suya*, namely *Tsire*, *Kilishi* and *Balangu*. *Tsire* is roasted, boneless mutton, beef or goat meat that is cooked around a glowing fire in which the meat pieces are staked on wooden sticks (Alonge and Hiko, 1987). *Kilishi* is usually prepared from different types of meat such as beef and mutton. Beef, however, is mostly used for its preparation. Of the three forms of *Suya*, *Tsire* is the most commonly preferred to most consumers and is synonymous with *Suya* (Igene and Abulu, 1984).

Suya producers are also the marketers. They prepare and retail it along streets, at clubhouse, restaurants, airports, institutions, picnics, doorsteps of houses and offices in order to make accessibility easier. It is generally used as travel, convenience or leisure food. In many cases, it is not consumed immediately it is prepared. It is held and reheated before serving. This is because consumers insist on eating *Suya* while it is still hot (Igene and Mohammed, 1983).

Rapid urbanization in Nigeria has continued to raise incomes in the nation and led to changes in the nature of demand for food, with growing emphasis on "convenience" foods such as *Suya* (Igene, 1982). A revolution in the aesthetic, qualitative and quantitative production of *Suya* is one by which Nigeria can improve the level of protein nutrition of her people. This is possible in view of the diverse and relatively cheap sources of raw materials for its processing. *Suya* would, therefore, be within the reach of most members of the population due to its relatively cheaper price and as such could contribute a growing proportion of much needed animal protein intake.

Production and marketing of *Suya* is mostly carried out along roadsides, which made adequate sanitation of the meat product nearly impossible. This factor of sanitation has greatly affected the social appeal of this important indigenous meat product. Another reason for the low social appeal of *Suya* is the mode of its packaging and retailing. It is retailed to consumers in cement papers, newspapers and so on. This is not acceptable to many consumers especially among the educated elites who have the capacity to patronize the meat product. They expect, amongst other things, that the food available to them be clean, safe, well packaged, reasonably priced and handled under good sanitary conditions (Igene and Mohammed, 1983).

In the face of the demand for improved *Suya*, it has become imperative to focus more attention in search for alternative ways and methods for improving the production and marketing of *Suya* with adequate considerations of the costs and returns implications. This will ginger more interest in its consumptions as well as subsequent revenue to be derived from the industry. This study was, therefore, designed to examine the economics of alternative methods of *Suya* production and marketing in Maiduguri Metropolitan, Borno State of Nigeria.

Objectives of the study
The main objective of the study was to determine the economic of alternative methods of *suya* production and marketing in Maiduguri Metropolitan, Borno State of Nigeria. The specific objectives were to:

i. determine the costs, returns and marketing margins in *suya* production and marketing;
ii. determine the efficiency of resource-use and benefit-cost ratio in *suya* production and marketing;
iii. determine the market structures for different types of *suya* production and marketing; and
iv. determine scale economies in *suya* production and marketing

METHODOLOGY
Study Area
The study was conducted in Maiduguri Metropolitan Council of Borno State, located in the north east part of Nigeria between latitude 10° 2' and 14^oN and longitude 11^oE and 13" 4' E. It has a population of about 4,151,193 people (NPC 2006). The state occupies greater part of the Chad basin and shares borders with the Republic of Niger to the north, Republic of Chad to the north-east and Republic of Cameroun to the east. The climate of Borno State is hot and dry for greater part of the year. The rainy season lasts for about three months (July to September). The annual rainfall ranges from 250mm to 500mm. The temperature ranges from as low as $19^o – 21^o$ in January to as high as $31^o – 34^o$ in May and June (Burnet and Okonkolifa, 1999). Farming, fishing and herdsman are the major occupations of the people. *Suya* production and marketing is one of the businesses of the people of the State.

Sampling techniques
Borno State is one of the 36 states of Nigeria and has 27 Local Government Areas (LGAs) out of which Maiduguri was purposively selected for the study because of its prominence in *suya* production and marketing. A simple random sampling was employed to select 50 *tsire* and *balangu* producers each, while eight available *kilishi* producers were selected for the study. Few people were involved in *kilishi* production because of the difficulty in it preparation.

Data collection
Data for the study were obtained from both primary and secondary sources in 2004. The primary data were collected through the administration of structured questionnaires and oral interview to *suya* producers, while secondary data were collected from journals,

conference papers, newsletters and other relevant documents.

Analytical technique
The analytical tools employed for the study include budgetary techniques, ginni coefficient, marketing margins and average cost function.

Budgetary techniques
The budgetary technique, using gross margin analysis, was used to determine the profitability of *suya* production. The gross margins per Naira invested in labour and in other variable inputs were calculated as measures of resource use efficient (Beda, 2000). Benefit-cost ratio was used to estimate the return to each Naira invested in *suya* production and marketing enterprise.
The gross margin is expressed as follows:-
GM = GI – TVC
Where:
GM = Gross margin of meat used (₦/kg)
GI = Gross income of meat used (₦/kg)
TVC = Total variable costs of meat used (₦/kg)

The gross margin was used because the fixed costs of *suya* production and marketing are negligible (Iheanacho and Phillips, 2002).

Ginni coefficient analysis
The Ginni coefficient was used to determine the structure of the *suya* markets. The model is expressed as follows:-
GC = 1 - ∑xy
Where:
GC = Ginni Coefficient
x = Percentage of seller's profit
y = cumulative percentage of seller's profit

Marketing Margin Analysis
Marketing margin expressed in percentage is the difference between the sales revenue and cost price. The formula is expressed as follows:-

$$MM = \frac{CPP - PRP}{CPP} \times 100$$

Where: MM = Marketing margin
    CPP = Consumers paid price
    PRP = Producers received price

Average cost function
The average cost function using the least square regression was employed to measure the presence of scale economies associated with *suya* production and marketing. The model is expressed as follows:
AC = a + bQ = e
Where:
AC = Average cost of *suya* handled per producer/marketer (₦)
Q = Average quantity of *suya* handled per producer/marketer (kg)
a = constant
b = coefficient
e = error term

RESULTS AND DISCUSSION
Marketing margin, costs and returns in *suya* production and marketing
Table 1 shows that for one kilogram of meat used in preparation of *kilishi*, a gross revenue of ₦ 708.60 and a gross margin of ₦ 150.00 were realized, while gross revenue of ₦ 563.90 and a gross margin of ₦ 114.00 were realized for *Tsire*. *Balangu* had the lowest gross revenue and gross margin of ₦ 352.00 and ₦ 32.00, respectively.

The three categories of *suya* were, therefore, profitable. *Kilishi* was however, the most profitable followed by *tsire*. *Kilishi* production and marketing enterprise was more profitable than *tsire* or *balangu* production and marketing enterprises because it has longer shelf life. As a result, most travelers like to purchase large quantity of *kilishi* even at higher price. *Balangu* production and marketing enterprise was the least profitable. The reason is that, in spite of its shorter shelf life, the quality of meat used in preparing it is low, which results in low price and subsequently low return. The findings of the study agree with the finding of Ibrahim (1982) that *suya* enterprises are profitable.

The marketing margins for *kilishi*, *tsire* and *balangu* were estimated as 37.45%, 43.39% and 21.56%, respectively. The high marketing margins for *kilishi* and *tsire* were attributed to the high costs of meat, labour and spices used (Table 1). As a result, consumers paid higher retail prices for *kilishi* and *tsire* than *balangu*.

Resource-use efficiency and benefit-cost ratio in *suya* production and marketing enterprise
Analysis of the returns to labour and to other variable costs shows that for every one Naira invested on other variable inputs in producing *kilishi*, a gross margin of ₦ 0.29 was realized,

while return to labour was ₦ 3.13 (Table 2.). In the case of *tsire*, for every one Naira invested in other variable inputs, a gross margin of ₦ 0.29 was realized while ₦ 2.2 was return to labour. Similarly, *balangu* had return to other variable inputs of ₦ 0.1 and return to labour of ₦1.95. The findings indicate that resources were more efficiently utilized in producing *kilishi* than *tsire* or *balangu*. Likewise, resources were more efficiently utilized in producing *tsire* than *balangu*. *Kilishi* producers are old in the business and, therefore, managed resources more efficiently.

The benefit-cost ratios were estimated as 1.27:1, 1.25:1 and 1.1:1 for *kilishi*, *tsire* and *balangu* production and marketing enterprises respectively (Table 2). This implies that, for every one Naira invested in *kilishi* production and marketing enterprise, a profit of ₦0.27 (27 kobo) was realized while for every one naira invested in *tsire* production and marketing enterprise, a profit of ₦0.25 (25 kobo) was realized. Similarly, for every one Naira invested in *Balangu* production and marketing enterprise, a profit of ₦0.1 (1 kobo) was realized. Analogically, this was equivalent to 27%, 25% and 10% profit for *kilishi*, *tsire* and *balangu* production and marketing enterprises respectively. Since the prevailing interest rate was 8-10% (Central Bank of Nigeria, 2003), it implies that the returns were higher for investment in *kilishi* and *tsire* production and marketing enterprises than if the money were kept in savings account.

Thus, all the efficiency indices indicate that labour and other variable inputs were more efficiently utilized in *kilishi* than *tsire* production. *Balangu* was the least resource-use efficient enterprise. The same results were true of the benefit-cost ratios.

Market Structure of *Suya* Production and Marketing Enterprise
Analysis of market structure of different types of *suya* marketing enterprise is presented in Table 3. The estimated Ginni coefficient for

kilishi production enterprise was 0.2. This indicates that there was low concentration of *kilishi* producers/marketers in the market. In spite of the low concentration of *kilishi* marketers, there was a barrier to entry into the market. This is because of the skill required in cutting the meat into sheets and large amount of capital required to operate the business. In addition, the nature of *kilishi* differed from one product to another as quality of meat (camel meat, mutton and beef) and spices differed.

The market knowledge is imperfect as prices differ in different places of production and marketing. Based on these findings, therefore, the market structure can be described as Oligopolistic. This implies that the *kilishi* producers have some degree of control over the market forces of demand and supply because of their smaller size.

In the case of *tsire* and *balangu* production enterprises, however, the structural characteristics were the same. These structural characteristics are: Ginni coefficient of 0.5, which indicate moderate concentration, product differentiation (as spices and quality differ), relatively free entry into the market and imperfect market information as prices differed in different places of production and marketing. Based on these findings, therefore, the market structure of *tsire* and *balangu* production enterprises can be best described as monopolistic.

Scale Economies of *Suya* Production and Marketing Enterprise
Analysis of scale economies for the three types of *suya* shows a positive relationship between the costs of production and marketing of *suya* and the quantities produced (Table 4). This indicates an absence of scale economies in the market. As the quantities of *suya* produced increases, therefore, the costs of production and marketing also increase. This implies that small-scale *suya* producers/marketers have relative cost advantage over large-scale producers/marketers.

Table 1: Marketing margin, costs and returns per kilogram in *suya* production and marketing enterprise, Maiduguri Metropolitan Council

	Types of *Suya*					
	Kilishi value/kg (₦)	%	*Balangu* value/kg (₦)	%	*Tsire* value/kg (₦)	%
Gross revenue	708.60		352.00		563.90	
Variable Inputs						
Meat	443.20	79.36	276.10	86.28	319.20	71.00
Firewood	3.600	0.65	6.00	2.06	13.50	3.00
Vegetables	2.200	0.39	2.40	0.76	6 .40	1.42
Spices	53.40	9.56	5.80	1.81	32.20	7.17
Groundnut oil	3.30	0.59	7.00	2.19	17.80	3.96
Labour	48.00	0.80	16.40	5.13	52.20	11.61
Packaging						
(Cement bags/paper)	4.80	0.8 6	5.10	1.59	8.30	1.85
Total variable costs	558.50	100	320.00	100	449.60	100
Gross margin	150.00		32.00		114.00	
Marketing margin %	37.45		21.00		43.39	

Source: Field survey, 2004

Table 2: Resource-use efficiency and benefit-cost ratio in *suya* production and marketing enterprise, Maiduguri Metropolitan Council

Efficiency index	Types of *Suya*		
	Kilishi value/kg	*Balangu* value/kg	*Tsire* value/kg
Return to other variable cost	0.29	0.1	0.29
Return to labour	3.1	1.9	2.2
Benefit-cost ratio	1.27:1	1.1:1	1.25:1

Source: Field survey, 2004

Table 3: Market structures of *suya* marketing enterprises, Maiduguri Metropolitan Council

Suya type	G.C*	Structural Characteristics				
		Number of Firms	Nature of products	Entry	Market Knowledge	Market Structure
Kilishi	0.2	Few	Differentiated	Difficult	Imperfect	Oligopolistic
Tsire	0.5	Many	Differentiated	Relatively Easy	Imperfect	Monopolistic
Balangu	0.5	Many	Differentiated	Relatively Easy	Imperfect	Monopolistic

Source: Field survey, 2004   G.C* Ginni Coefficient

Table 4: Regression analysis of relationship between costs of production and marketing of *suya* and quantities produce in Maiduguri Metropolitan Council

Suya type	constant	Coefficients	Standard error	t-value	r^2	r^1	F-ratio	n
Kilishi (Double Log Function)	2.280	0.947	0.079	11.96*	0.960	0.953	143.07*	8
Tsire (Linear Function)	-254.82	487.59	72.95	6.65*	0.48	0.47	44.68	50
Balangu (Double Log Function)	2.76	0.80	0.10	7.86	0.56	0.55	61.80	50

Source: Field survey, 2004

CONCLUSION & RECOMMENDATIONS

The profits and returns to returns to labour and other variable costs were worthwhile, while patronage of the product was guaranteed. *Suya* production and marketing, therefore, not only provides a good investment opportunity, but also increase in protein intake for the average Nigerian. Effort should, however, be made to improve the hygienic condition of the marketing environment of *suya* in general. All *suya* marketers should be registered with the National Agency for Food and Drug Administration Control (NAFDAC) to regulate the quality of the meat products.

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