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ECONOMIC ANALYSIS OF *SUYA* PRODUCTION IN BENIN CITY, EDO STATE, NIGERIA

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ABSTRACT

The study focused on economic analysis of *suya* production in Benin City, Edo State of Nigeria. Its specific objectives were to examine the socio-economic characteristics of *suya* producers, estimate the costs and returns of *suya* production, examine the relationship between gross income of *suya* production and the inputs affecting it, and identify the constraints limiting *suya* production. A total of 33 *suya* producers identified in the study area using snowballing sampling technique were used for the study. A structured questionnaire was used to elicit information from the respondents. Data analysis was done using descriptive statistics, budgeting and multiple regression analyses. The results showed that *suya* production in the study area was on a small-scale level with initial average capital investment of about N9,809.00. However, the *suya* production was profitable with gross margin and net profit of N 518.00 and N 508.00 per kilogramme (Kg) of meat respectively. Every naira invested in the business yielded a net return of 58k. The regression results showed that about 71% of the variation in the gross income from *Suya* production was significantly ($p < 0.01$) influenced by the costs of meat, charcoal and labour. Costs of meat and charcoal positively influenced the gross income while labour cost affected it negatively. Major problems identified to militate against *suya* production were high cost of input (91%), lack of credit facility (82%), inadequate capital (70%) and disruption of the business by frequent heavy rainfall (61%). In view of the profitability of *suya* production, entrepreneurs were encouraged to invest in it.

Keywords*:* **.**Economics, profitability, *Suya,* Production

INTRODUCTION

Suya is a popular meat snack indigenous to Africa. It is a traditional spicy roasted ready-to-eat intermediate moisture meat product prepared from beef, mutton or goat meat. The increasing importance of *suya* in improving the low level of animal protein intake of the Nigerians and other Africans cannot be overemphasized. Studies have shown that *suya* is widely consumed in Nigeria and other African countries (Igene and Mohammed, 1983; Inyang *et al*., 2004; Igene, 2008 and Omojola, 2008). Its acceptance is invariant with sex, religion, culture, social, political and economic class. It is a delicacy, even among the elites; and a leisure and convenience menu which is available in major streets, restaurants, resort centres, hospitality

institutions, hotels and schools (Igene and Mohammed, 1983 and Igene, 2008). With the increasing rate of population growth, the demand for *suya* meat will continue to increase. It is therefore imperative to increase the production of *suya* in order to meet the increasing demand. Increasing the scale of *suya* production by *suya* producers and attracting potential investors into the industry is a function of whether *suya* production is worth investing in.

Despite the importance of *suya*, its production in Nigeria and other African countries remains largely in the hands of small-scale traditional producers and there is little or no information on the economics of its production, especially in Benin City of Edo State. Though the work of Iliyasu *et al*. (2013) was on the economic aspect of *suya* production, the study was conducted in the northern part of the country where there is large population of livestock for meat production and high population of Hausas who produce *suya*. It is important to know whether *suya* production is also profitable in the southern part of Nigeria. In view of this, the study seeks to analyse the economics of *suya* (tsire and *balangu*) production in Benin City, Edo State of Nigeria. The specific objectives of the study are to examine the socio-economic characteristics of *suya* producers in the study area, estimate the costs and returns of *suya* production, examine the factors influencing gross income of *suya* production and identify the constraints facing the *suya* producers.

METHODOLOGY

Study Area

The study was carried out in Benin City which comprises mainly Oredo, Egor and Ikpoba-Okha Local Government Areas (LGAs) of Edo State. Benin City is situated between latitude 6^0 12^1 North of the Equator and longitude 5^0 22^1 East of Greenwich Meridian. It has tropical climate, marked by two distinct seasons - the wet season from April to October and dry season from November to March. The mean annual rainfall and relative humidity are 2,220.35mm and 83.33% respectively. Average temperature ranges between 23.75^0C and 33.03^0C. The inhabitants of the study area are highly involved in agricultural production activities, including marketing and processing of agricultural products such as *Suya* production.

Sampling Technique and Data Collection

A snowballing sampling technique in which personal contact is established with respondents to build up the required sample for a study was employed in this study. Following this sampling technique, a total of 33 *suya* producers, mainly the producers of intermediate moisture roasted meat product (*tsire* and *balangu*), were identified in the study area (15, 8 and 10 producers in Oredo, Egor and Ikpoba-Okha LGAs respectively) and used for the study.

The instrument for data collection was a structured questionnaire. The administration of the questionnaires to the respondents was accompanied by personal interview as most of the respondents did not have formal education. Data were collected on the socio-economic characteristics of the *suya* producers, types of meat used for *suya* production, sources of inputs, quantities of inputs and output of production and their unit prices, and the problems of *suya* production.

Data Analysis

Data analysis was done by means of descriptive statistics, budgetary technique and Ordinary Least Squared (OLS) multiple regression.

Descriptive Statistics: The descriptive statistics of mean, frequency counts and percentages were used to analyse the socio-economic variables, quantities and costs of meat used, labour employed, ingredients and charcoal used, *suya* produced, as well as problems faced in *suya* production.

Budgeting Analysis: The budgeting analysis which involves costs and returns analysis was used to determine the profitability of *suya* production in the study area. In the analysis, gross margin and net profit analyses were employed. The gross margin of the *suya* production is given as:

$GM = TR - TVC$ _____(1)

Where:

GM = Gross margin of *suya* production (N)

TR = Total revenue (N)

TVC = Total variable cost (N).

The net profit is given as:

$NP = GM - TFC$ _____ (2)

Where:

NP = Net profit (N)

TFC = Total fixed cost (N)

GM is as earlier defined.

Regression Analysis: A multiple regression analysis using the Ordinary Least Squared (OLS) estimated technique was employed to examine the relationship between gross income from *suya* production and its major production inputs (in monetary terms). Linear and Cobb-Douglas functional forms of the regression model were fitted for the analysis. This was done in order to select the equation with the best fit. Based on the criteria for the selection of the lead equation given by Koutsoyannis (1977), the linear function was selected. The linear function adapted from Olayide and Heady (1982) is expressed as :

$$Q = b_0 + b_iX_1 + b_2X_2 + b_3X_3 + b_4X_4 + e_i \quad \text{_____(3)}$$

Where:

Q = Gross income of *suya* production (N)

X_i = Cost of meat (N)

X_2 = Cost of ingredients (N)

X_{3-} = Cost of charcoal (N)

X_4 = Labour cost (N)

$b_0, b_1, \ldots, b_4$ = Unknown parameters to be estimated

e_i = Error term.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of *Suya* Producers

The socio-economic characteristics of *suya* producers in Benin City are presented in Table 1. All (100%) of the *suya* producers were males. This indicates that *suya* production was the business of the men, corroborating the report of Ahmadu (2006). The respondents were relatively young (31 years old on the average) and were within the economically active age group. On marital status and family size, majority (67%) of the respondents were married with average family size of six persons. This means that the family members would contribute to the *suya* production through the provision of family labour, *ceteris paribus*. Evidently, most (97%) of the respondents derived their labour from the family (Table 2). It was found that the *suya* producers were mostly illiterates. This is evidenced by the high proportion (49%) of them with no formal education. However, Islamic/Arabic education was the prevailing form of education among the respondents as all of them had Islamic/Arabic education. This confirms the findings of Ahmadu (2006). The relevance of education in production business cannot be overemphasized

Types of Meat, Sources of Inputs and Initial Capital for *Suya* Production

The results of the study (Table 2) showed that the respondents used beef (67%), mutton (12%) and combined beef and mutton (21%) for *suya* production. This confirms the existing finding that *suya* can be produced from beef, mutton or goat meat (Igene, 2008). The respondents depended mainly on family labour for their production (97%). Personal savings was the dominant source of finance available to the *suya* producers for their business (70%). Personal savings has been proved to be inadequate in financing production business venture (Ahmadu, 2006). Consequently, majority (67%) of the producers had less than N10,000.00 as their initial capital investment in the *suya* production business. The low capital for investment constrained the respondents to operate at a small-scale level.

Table 2: Types of meat, sources of inputs and initial capital for suya production

Category	Frequency (33)	Percentage (100%)	Average
Types of meat used			
Beef	22	67	
Mutton	4	12	
Both	7	21	
Source of labour			
Family labour	27	82	
Hired labour	1	3	
Both	5	15	
Source of finance			
Personal savings	23	70	
Relations/Friends	7	21	
Money lenders	3	9	
Initial Capital (N)			
<10,000.00	22	67	
10,000 – 20,000	7	21	
21,000-30,000	4	12	9,808.82

Source: Field survey, 2012

as it affects the ability of the respondents to access useful information that would help to increase their productivity. The respondents had long years of experience in *suya* production (12 years on the average). High level of experience would contribute to their ability for efficient management of their production which would increase productivity. Highest proportion (58%) of the respondents had *suya* production as their major occupation. This implies they would pay adequate attention to their business, *ceteris paribus.*

Table 1: Socio-Economic Characteristics of Suya Producers in Benin City

Category	Frequency (33)	Percentage (100%)	Average
Sex			
Male	33	100	
Female	0	0	
Age (years)			
< 20	3	9	
20-29	10	30	
30-39	17	52	
40 -49	3	9	31
Marital status			
Single	11	33	
Married	22	67	
Family size			
1-5	18	54	
6-10	14	43	
>10	1	3	6
Educational level			
No formal education	16	49	
Primary education	15	45	
Secondary education	2	6	
Islamic/Arabic Education	33	100	
Production experience (years)			
1-10	16	49	
11-20	17	51	11
Major occupation			
Suya production	19	58	
Farming	10	30	
Others (trading, bike riding)	4	12	

Source: Field survey, 2012

Costs and Returns of *Suya* Production

The average costs and returns of *suya* production in Benin City are presented in Table 3. The *suya* producers incurred an average total cost of about N872.00 in preparing 1kg of meat into *suya* (0.69kg). The cost of meat (N 774.81/kg) constituted the highest cost of production, representing about 89% of the total cost. This indicates that profit realized from *suya* production would be affected mainly by the cost of meat. Thus, any government policy and programme geared towards boosting livestock production to increase meat supply at low cost will increase the profit from *suya* production and advance the development of the *suya* industry. This result is in agreement with previous findings on *kilishi* (a type of *suya*) production by Ahmadu *et al*. (2004), Ahmadu (2006) and Ahmadu *et al*. (2008a). The depreciated cost of fixed inputs was low (0.98%), confirming the low level of capital investment in the *suya* production business. This, on one hand, means that with little amount of capital, a potential investor can start *suya* production business. On the other hand, it indicates low level of development of the *suya* production industry, which uses traditional unimproved production technique and input. Modern production technique requires high capital investment on fixed inputs. Ahmadu (2006) and Ahmadu *et al.* (2008a) attested to this fact when they reported depreciated cost of fixed inputs as the second highest cost component after cost of meat in modern *Kilishi* production. The low capital investment in the *suya* industry is a pointer to the need for a concerted effort to develop the industry.

On returns, *suya* production in the study area was found to be profitable. This is indicated by the gross margin and net profit realized (N518.00 and N 508.00 per kg of meat respectively). The return per naira invested (0.58) showed that every one naira invested in the business generated a net return of 58k. The previous study by Iliyasu *et al*. (2013) on the profitability of three types of *suya* production in Maiduguri Metropolitan Council of Borno State showed estimated gross margin per kg of meat used in the preparation of *Kilishi*, *tsire* and *balangu* of N150.00, N114.00 and N 32.00 respectively. These profit levels of previous study are lower than the profit level of *suya* production in this study probably because of the low production of *suya* in Benin City which makes it expensive and hence higher returns compared with the production at Maiduguri with higher population of Hausas that are involved in the business. According to economic theory, low production of a commodity which entails its shortage in the market will lead to increase in its price and consequently, higher returns, all things being equal (Adegeye and Dittoh, 1985).

Regression Analysis

The results of the linear regression analysis selected as the lead equation are presented in Table 4. The analysis showed the relationship between inputs of *suya* production in monetary terms and the gross income generated. It was found that the costs of meat, charcoal and labour significantly influenced the gross income from *suya.* Their effects were all significant at 1% level of significance. The cost of ingredients, on the other hand, was not significant. Meat and charcoal costs were positively signed, indicating that as these variables increased, the gross income from *suya* production increased. Their coefficients showed that a unit increase each in the costs of meat and charcoal increased the gross income from *suya* by 0.684 and 6.788 respectively. This is so because, increased costs of meat and charcoal implies

increased use of their quantities, resulting in increased output of suya which, ultimately, will lead to increase in revenue. Labour cost, on the other hand, was negatively signed implying that as labour cost increased, the income decreased. Its coefficient indicated that a unit decrease in labour cost increased the *suya* revenue by 1.200. This was expected as decreasing the cost of production, given that all other factors remaining unchanged, there will be increase in revenue. Similar report was presented by Ahmadu and Ibrahim (2013).

About 71% of the variation in the gross income from *suya* production (R^2 = 0.7130) was accounted by the changes in the explanatory variables. The remaining 29% of the variation in the gross income not explained by the regression was due to other factors such as transportation cost, rent, cost of depreciation and the socio-economic characteristics of the respondents not captured in the analysis. The value of the F-statistic (17.4100) was significant at 1% level of significance, indicating the goodness of fit of the regression model and the overall significance of the combined effect of the explanatory variables as indicated by the coefficient of determination. The magnitude of coefficient of determination here was slightly at variance with that (0.976) reported by Ahmadu *et al*. (2008b) for *Kilishi* production.

Table 3: Average costs and returns of suya production per kilogramme (kg) of meat

Category	Quantity (Kg)	Unit price (N)	Value (N)	Percentage of total cost (%)
Returns				
Suya produced	0.69	2,000.00	1,380	-
Variable costs				
Meat	1	774.81	774.81	88.84
Ingredients	0.06	386.96	23.22	2.66
Charcoal	0.27	100.78	27.21	3.12
Labour	0.07	462.85	32.40	3.72
Transportation	-		4.27	0.49
Total variable cost			861.91	98.83
Fixed costs				
Depreciation	-		8.51	0.98
Rent/market tax	-		1.69	0.19
Total fixed costs			10.2	1.17
Total cost			872.11	100
Profitability				
Gross Margin			518.09	59.41
Net Profit			507.89	58.24

Source: Computed from field survey, 2012

Table 4: Input-output relationship in suya production: estimated linear regression model

Variable	Coefficient (b)	Standard Error (SE)	t-ratio
Constant	3846.0000	2025.1200	1.8991
Meat cost	0.6840	0.1097	6.2352*
Cost of ingredients	1.0185	1.5617	0.7588
Charcoal cost	6.7880	1.6088	4.2193*
Labour cost	-1.2000	0.2317	5.1791*
R2	0.7130		
Adjusted R2	0.6720		
F-statistic	17.4100*		
Standard error of regression estimate	1376.0000		

Source: Computed from field survey, 2012

***** Significant at 1% level of significance

Problems of *Suya* Production

The constraints confronting the *suya* producers in the study area are presented by the multiple responses in Table 5. The major constraints identified were high cost of input (91%), lack of credit facility (82%), inadequate Capital (70%) and frequent rainfall (61%). Previous studies also reported some of these constraints in small-scale meat production enterprises (Ahmadu *et al*., 2004 and Ahmadu, 2006). The problem of high cost of inputs was mainly due to the high cost of meat which accounted for the highest cost of production (Table 3). The problem of inadequate capital was not unconnected with the fact that the major source of finance for the business was personal savings (Table 2). The respondents lacked access to credit facility to ameliorate the problem of inadequate capital. Consequently, the producers were constrained to expand their production to large-scale enterprise, a setback in the development of the *suya* industry. The frequent rainfall experience in Benin City during the wet season created unfavourable weather that often disrupted the *suya* production business. This is because majority of the producers had their production/sale stands in the open space.

Table 5: Problems of suya production

Problem	Frequency	Percentage
Lack of credit facility	27	82
Insufficient capital	23	70
High cost of inputs	30	91
Poor patronage	16	49
Inadequate storage facility	16	49
Frequent rainfall	20	61

Source: Field survey, 2012
* Multiple responses

CONCLUSION / RECOMMENDATIONS

The study has established that *suya* production in Benin City was profitable as evidenced by the values of gross margin, net profit and return per naira invested in the business. Variation in the gross income from *suya* production was positively and significantly influenced by the costs of meat and charcoal; and negatively and significantly influenced by labour cost. A number of constraints, including high cost of inputs, lack of credit facility, inadequate capital and frequent rainfall which often disrupted the business were found to militate against the *suya* production business. Thus, boosting *suya* production requires combating these problems.

In view of the fact that *suya* production is a profitable business venture, entrepreneurs are encouraged to invest in it. Government should specifically subsidize the cost of meat for *suya* production since high cost of inputs was the most serious problem confronting the producers and meat cost was the highest component of the cost. Credit facility should be made accessible to the *suya* producers to enable them expand their production. The *suya* producers on their part should form *suya* producers' co-operative society to serve as source of finance to them and also through which they can easily access loans.

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