
Consumers' preference for meat from food animals in the Niger Delta, Nigeria

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Abstract

This paper assesses the consumers' preference for food animals in the Niger Delta, Nigeria. The questionnaire was used to obtain information in a cross sectional study involving 470 respondents. The method of data analyses includes descriptive statistical tools and the Consumers' Preference Profile (CPP). The results showed that there was no significant difference in preference between beef and goat meat. Goat meat was considered to be more nutritious, tastes better, cooks faster, even though less available, more costly and so not suitable for ceremonial cooking. However, beef was preferred to goat meat because its products are perceived to be affordable, readily available, and better for ceremonial use; and it is clearly preferred to other meat types in terms of all the attributes considered.

Keywords: Consumers' preference, meat, food animals

Introduction

Although fish is widely available, meat is the preferred source of protein in the Niger Delta. Meat is clearly preferred to fish because consumers perceive it as being richer in protein, more appetizing, nutritious, and enjoyed more by children, (Eyo 1995). In an attempt to encourage increased supply of meat, government prohibits barriers to inter-ecological zone movement of food animals and encourages the distribution of production activities by ecological zones based on the principles of comparative advantage. Unfortunately, food animal distribution is enhanced more by variations in consumers' preference for meat from the different food animals.

Marketing activities are driven by consumers' decisions. Usually, consumers' have a directional

striving called wants, which are reflected in their preference for different goods and services. Although provision of the right incentives and appropriate infrastructure have been identified by Njoku (1998) as essential requirements for sustaining efficiency in the marketing system, identifying the consumers food preference is central in all efforts aimed at strengthening the agricultural production and marketing system. This is particularly so because the structure of incentives for the producers, the prevailing market information and the infrastructure needs of the marketing system, depend in part upon the Consumers' Preference Profile.

The factors that affect the consumption of meat have been copiously studied. Several authors (Burton and Young 1992; Beheman *et al* 1988; Garine *et al* 1990; Koppertt and Hladik 1990; Bonnis and Haddad 1988) agreed that such

factors can be classified as economic, social and cultural factors. In particular, meat is essential in man's diet and is an excellent source of essential amino acids, vitamins and minerals, (CAST 1997). Consumers vary considerably in their consumption of meat from different food animals. Such variations are due to the consumers' perception of the functional, physiological and socio-psychological values of meat obtained from the respective food animals. Consequently, the pattern of food animal distribution vis-à-vis meat from the various food animals reflects the meaning that these food animals have for their consumers, and such meanings can be assessed by examining the consumers' preference profile. This paper examines the consumers' preference profile for meat of the various food animals in the Niger delta region of Nigeria.

Materials and Methods

This study was conducted in the Niger Delta, Nigeria. Of all the states of the Niger Delta, the Federal office of Statistics indicates that only two states: Akwa Ibom and Cross River States; have the greater population of livestock reportedly inspected and slaughtered. This study involved 470 respondents from these states. The questionnaire was the main instrument used in data collection. Simple random sampling technique was used in selecting the respondents. Data analysis was through the use of descriptive statistical tools. Also, a modified version of the Consumers' Preference Profile analytical

technique (Foxall, 1980; Eyo, 1995) was used in the analyses of consumers' preference for meat from the various food animals. The views of these authors are that attitude contains the evaluative information regarding a 'meat type and it is essentially a state, which reflects the extent that a buyer prefers one meat type in relation to others.

The Consumers' Preference Profile (C.P.P):

In this approach, survey respondents indicate whether a given food animal attribute is closely associated more with product X or product Y. The said attributes are essentially statements in terms of which consumers' evaluate and choose between the two products. For example, two statements included in this study are presented in Table 1. It shows that product X are perceived by consumers in terms of being affordable, and in terms of being better at ceremonies. Instead of using table 1, it is convenient with large number of statements to express the relevant data as index of each statement's ability to discriminate between the two products.

These indices are:

1. *Index Statements Power to Discriminate Between Product X and Y:* This index measures the consumer's ability to discriminate between products X and Y using the formula:

$$ISD = \frac{X \text{ replies} + Y \text{ replies}}{\text{All replies}}$$

For this study, ISD of 39 and below was considered irrelevant and therefore unacceptable.

Table 1. Consumers' Preference Profile

Type of Product	Statements	
	1. Affordable	2. Better at Ceremonies
Product X	0.55	0.45
Product Y	0.37	0.10
Both	0.06	0.13
Neither	0.02	0.22

Source: Foxall (1980) and Eyo (1995)

2. *Index of Statement's Relative Applicability (ISRA) to each Product:* This index indicates the proportion of respondents who distinguish between the two products based on the attributes.

$$\text{ISRA (for product x)} = \frac{\text{X replies}}{\text{X replies} + \text{Y replies}}$$

The mean values of the resulting ISRA for the various meat types were computed and the t-statistics was used to ascertain if there was any statistically significant difference in preference for meat of one food animal to the other.

3. *Index Statements' Assignment Value (ISAV):* This index was obtained by multiplying the ISD by the ISRA for a particular product to obtain the statements overall assignment value. It is calculated for each product to reflect the closeness of association between a given statement and the product in question. In this research the ISAV for each type of meat is computed and used as basis for comparing the overall closeness of the statements to the meat types.

For this study products X and Y are as follows:

Product X	v/s	Product Y
Beef	v/s	Goat meat
Beef	v/s	Pork
Beef	v/s	Game meat
Goat meat	v/s	Pork
Goat meat	v/s	Game meat
Pork	v/s	Game meat

And the statements are:

1. It taste good
2. It is affordable
3. It is always available in shop
4. It is high in nutritional value
5. It is faster to cook
6. It is better at ceremonies.

Results and Discussion

Social Characteristics of the Respondents:

This study included mostly government workers who are better disposed to buy meat from the market. In fact, 67.06% of the respondents were male while 32.94 were female; 45.88% were married while 52.94% were not married. However, Table 2.0 shows that 86.73% of the respondents were either public or civil servants, 12.39% were traders and only 0.88% of the respondents were fishermen.; and about 21% of the respondents had obtained secondary education while 78.29% had completed post secondary education. The mean age of the respondents was 32 years. However, 5.74% were below the age of 21 years; 4.68% were in the 51 – 60 years of age category; 14.04% were in the 41 – 50 years category; 32.77% were in the 31 – 40 years category and 42.71% were in the 21 – 30 years of age category.

Consumers Preference for meat from food animals:

Cattle, goat, swine and game animals are the food animals available in the study area. Meats from these sources are consumed grilled [SUYYA], as pepper soup, and as components of several foods cooked and consumed by the people. This research reveals that consumers vary considerably in their consumption of foods prepared with meat obtained from different food animals. For instance, respondents were asked which they would consume if served pepper soup prepared with goat meat, beef, pork, or game animal meat respectively. Their responses as shown in Table 3 shows that more respondents would prefer to consume products prepared with goat meat, comparatively. In fact, 39.36 per cent of the respondents would buy and consume food types prepared with meat from goats compared to 34.05 per cent of the respondents who generally would go for food types prepared with meat from cattle and 25.74 per cent would buy and consume food types prepared meat from

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Table 2: Characteristics of respondents.

<i>S/n</i>	<i>Characteristics</i>	<i>Percentages (n= 470)</i>
1.	<i>Sex</i>	
	Male	67.06
	Female	32.94
2.	<i>Marital Status</i>	<i>Percentage</i>
	Married	45.88
	Single	52.94
	Widowed	1.18
3.	<i>Major Occupation</i>	<i>Percentage</i>
	Civil/public servant	86.73
	Trading	12.39
	Fishing	0.88
4.	<i>Education</i>	<i>Percentage</i>
	Secondary School	21.71
	Post secondary school	78.29
5.	<i>Age</i>	<i>Percentage</i>
	<i>[Mean age = 32 years]</i>	
	Below 21	5.74
	21 – 30	42.71
	31 – 40	32.77
	41 – 50	14.04
	51 – 60	4.68

game animals. Pork is obviously the least preferred of the meat types.

If we go by the revealed preference theory it implies that consumers who reveal preference for goat meat by buying its pepper-soup declare pepper soup made with the other meat types inferior. However this research used six statements as the basis for which the consumers preferred one type of meat to the other. The statements are: [1]. Tastes good [2] Affordable

[3] Always in the shop [4] Highly nutritious [5] Faster to cook, [6] Better at ceremonies. Tables 4 shows the extent that the consumers' discriminated against the products based on the given statements. Beef and goat meat were clearly differentiated in terms of taste [ISD= 68%]; affordability [ISD= 76%] and availability in the shop [ISD= 70%]. Beef and goat meat were marginally differentiated on the basis of their being highly nutritious [ISD = 45%]. For the beef v/s pork, beef v/s game meat, goat meat v/s pork,

Table 3: Distribution of respondents by meat liked more.

<i>Meat type</i>	<i>Frequency</i>	<i>Percentage</i>
Goat meat	185	39.36
Beef	160	34.05
Bush meat	122	25.75
Pork	3	0.64
Total	470	100

goat meat v/s game meat, and pork v/s game meat sets, the statements included in the study were satisfactory in providing basis for which the respondents differentiated between these meat types.

However, an analysis of the meaning that meats from the various food animals have for the respondents was carried out. Each attribute was matched with different meat sources and rated 4, 3, 2, and 1 respectively depending on the particular food animal that the attribute apply best. The result of the analysis is presented in Table 5. The respondents considered game meat as tasting better than meat from all other sources. This is followed by goat meat, beef and pork respectively.

Beef is the most affordable and available meat with a score of 4 in each attribute. This is followed by goat meat, pork, and game meat respectively. More so, the respondents considered meat from game animals as being the most nutritious; meat from goat as being the fastest to cook; and beef as being the most suitable in preparing foods during ceremonies. Invariably, in terms of taste

Table 4: Indices of statement's power to discriminate (ISD)

<i>Evoked Sets</i>	<i>Statement Numbers</i>					
	1	2	3	4	5	6
Beef v/s Goat meat	0.68	0.76	0.70	0.45	0.74	0.75
Beef v/s Pork	0.88	0.73	0.74	0.71	0.79	0.91
Beef v/s Bush meat	0.68	0.87	0.89	0.61	0.78	0.86
Goat meat v/s Pork	0.87	0.78	0.75	0.64	0.77	0.89
Goat meat v/s Bush meat	0.59	0.82	0.76	0.54	0.65	0.85
Pork v/s Bush meat	0.78	0.73	0.65	0.66	0.65	0.63

consumers prefer meat from game animals most; in terms of availability, affordability, and suitability for ceremonies the respondents preferred beef; but game meat is preferred in terms of its nutritional value and good taste whereas goat meat is preferred in terms of its ability to cook fast.

To ascertain the closeness of association of each statement with each product, the indices of the statement relative applicability (ISRA) and the indices of the statement assignment value (ISAV) were calculated. The ISRA and ISVA derived from the survey of consumers' preference for the evoked sets of products are given in Table 6.

For the set Beef v/s Goat meat, statement 2 [Affordable] with ISRA of 71%; statement 3 [Always in shops] with ISRA of 92%; and statement 6 [Better at ceremonies] with ISRA of 75% were more applicable to beef whereas statement 1 [Tastes good] with ISRA of 71%, statement 4 [Highly Nutritive] with ISRA of 56%, and statement 5 [Faster to cook] with ISRA of 54% were more applicable to goat meat.

Table 5: Meanings that meats from various food animals have

<i>ATTRIBUTES</i>	<i>FOOD ANIMAL</i>		
	BEEF	GOAT MEAT	GAME
TASTE GOOD	2	3	
AFFORDABLE	4	3	
AVAILABILITY	4	3	
NUTRITIOUS	2	3	
FAST TO COOK	3	4	
BETTER AT CEREMONIES	4	3	

The indices of statement assignment value shows that the respondents clearly preferred beef to goat meat in terms of, being affordable [ISAV of 53% against 23%], always being available in the shop [ISAV of 64% against 16%], and being better at ceremonies [ISAV of 56% against 19%]. On the other hand, goat meat was clearly preferred to beef in terms of tasting better [ISAV of 48% against 20%], and marginally preferred to

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beef in terms of being highly nutritious [ISAV of 25% against 20%] and being faster to cook [ISAV of 39% against 34%]. However, based on the values of the ISRA the respondents clearly preferred beef to goat meat in terms of its being affordable (statement 2), always being available in shop (statement 3) and being better at ceremonies (statement 6) whereas goat meat is preferred by respondents to beef in terms of tasting good (statement 1), high nutritional value (statement 4) and being faster to cook (statement 5).

For the set beef v/s pork, the higher ISRA and ISAV values for beef confirmed that the considered statements were generally more applicable to beef comparatively. Consequently, the respondents clearly preferred beef to pork in terms of all the attributes. For the beef v/s game meat set, statement 1 [taste good] with a ISRA of 81% and statement 4 [High in nutritive value] with ISRA of 72% were more applicable to game meat; whereas statement 2 [Affordable] with ISRA of 87%, statement 3 with ISRA of 96%, statement 5 with ISRA of 66%, and statement 6 with ISRA of 90% were more applicable to beef.

Table 6: Indices of statement relative applicability (ISRA) and indices of statement assignment value (ISAV)

<i>EVOKED SETS</i>	<i>STATEMENT NUMBERS</i>					
	1	2	3	4	5	6
<i>Beef and Goat meat</i>						
ISRA – Beef	0.29	0.71	0.92	0.45	0.46	0.75
ISRA – Goat meat	0.71	0.29	0.08	0.56	0.54	0.26
ISAV – Beef	0.20	0.53	0.64	0.20	0.35	0.56
ISAV – Goat meat	0.48	0.23	0.16	0.25	0.39	0.19
<i>Beef and Pork</i>						
ISRA – Beef	0.81	0.59	0.93	0.79	0.71	0.97
ISRA – Pork	0.19	0.41	0.07	0.21	0.29	0.03
ISAV – Beef	0.69	0.43	0.69	0.56	0.56	0.88
ISAV – Pork	0.16	0.30	0.06	0.15	0.23	0.03
<i>Beef v/s Game meat</i>						
ISRA – Beef	0.19	0.87	0.96	0.28	0.66	0.90
ISRA – game meat	0.81	0.13	0.05	0.72	0.34	0.10
ISAV – Beef	0.13	0.76	0.85	0.17	0.52	0.77
ISAV – game meat	0.55	0.13	0.04	0.44	0.27	0.09
<i>Goat meat v/s Pork</i>						
ISRA –goat meat	0.91	0.58	0.81	0.77	0.74	0.97
ISRA – Pork	0.09	0.42	0.19	0.16	0.27	0.04
ISAV –goat meat	0.79	0.45	0.61	0.54	0.56	0.86
ISAV – Pork	0.08	0.33	0.18	0.10	0.21	0.03
<i>Goat v/s Game meat</i>						
ISRA –goat meat	0.45	0.94	0.95	0.32	0.82	0.94
ISRA –game meat	0.56	0.07	0.04	0.68	0.19	0.06
ISAV –goat meat	0.26	0.77	0.73	0.18	0.53	0.80
ISAV – Game meat	0.33	0.05	0.03	0.37	0.12	0.06
<i>Pork v/s Game meat</i>						
ISRA – Pork	0.15	0.72	0.70	0.45	0.52	0.22
ISRA – Game meat	0.85	0.29	0.27	0.56	0.53	0.79
ISAV – Pork	0.12	0.53	0.48	0.29	0.34	0.14
ISAV –game meat	0.66	0.20	0.17	0.37	0.30	0.49

Table 7: ISRA values showing mean preference

<i>Meat type in the evoked sets</i>	<i>Mean ISRA values for all Statements</i>			<i>Mean of means</i>
Beef	0.59	0.80	0.64	0.68
Goat meat	0.41	0.80	0.74	0.65
Game meat	0.36	0.26	0.54	0.39
Pork	0.20	0.20	0.46	0.29

However, the ISAV confirmed that the respondents clearly preferred beef to bush meat in terms of its being affordable (statement 2), always being available in shop (statement 3), being faster to cook (statement 5) and being better at ceremonies (statement 6); and game meat is clearly preferred to beef in terms of taste (statement 1) and being high nutritional value (statement 4).

The comparison between goat meat and pork shows that all the statements were more applicable to goat meat comparatively. The ISRA and the ISAV values were generally larger in all cases. Invariably, the respondents generally preferred goat meat to pork in terms of all the attributes considered. For the goat meat v/s game meat set, statements 2, 3, 5, and 6 were more applicable to goat meat with ISRA values of 94%, 95%, 82%, and 94% respectively. Similarly, the ISAV values for statements 2, 3, 5, and 6 confirm that goat meat was clearly preferred to game meat in terms of their being affordable, availability, faster to cook and better at ceremonies. However, statement 1 [Taste good] with ISRA of 56% and statement 4 [High in nutritional value] with ISRA of 68% were more applicable to game meat. The ISAV values shows that game meat was marginally preferred to goat meat in terms of taste but generally preferred in terms of being considered to be more nutritious.

To ascertain the most preferred meat in terms of all the attributes, the mean values of the ISRA for the meat obtained from the various food animals were calculated and tested for any significant difference in preference, (Table 7). According to this table, beef had the highest mean ISRA of 0.68 in all the evoked set of meat types considered.

Table 8: T- values showing difference in preference

<i>Meat types and [ISRA means]</i>		<i>T-values</i>
Beef [0.68]	Goat meat [0.65]	0.27*; p<0.05
Beef [0.68]	Game meat [0.39]	3.43; p>0.05
Beef [0.68]	Pork [0.29]	6.79; p>0.05
Goat meat [0.65]	Game meat [0.39]	2.19*; p< 0.05
Goat meat [0.65]	Pork [0.29]	2.97; p>0.05
Game meat [0.39]	Pork [0.29]	1.02*; p<0.05

This is followed by goat meat with mean ISRA value of 0.65; game meat with mean ISRA value of 0.39; and pork with mean ISRA value of 0.29. Invariably, beef is the most preferred meat followed by goat meat, game meat, and pork. However, table 8 shows that there were no significant differences in preference between beef and goat meat [p>0.05]; between goat meat and game meat [p>0.05]; and between game meat and pork. However, there were significant difference in preference between beef and game meat, between beef and pork, between goat meat and pork.

Conclusion

In terms of the attributes considered, the respondents agreed that game meat taste better and it is more nutritious than meat from all other sources; beef is the most affordable, available, and most suitable in preparing foods during ceremonies; while meat from goat is the fastest to cook. However, the result of this research points to the fact that beef is the most preferred meat followed by goat meat, game meat, and pork consecutively. Beef is preferred to goat meat because its products are perceived to be affordable, readily available, and better for ceremonial use; but clearly preferred to other meat types in terms of all the attributes considered in this research. On the other hand, goat meat is preferred to beef in terms of tasting better, being higher in nutritional value, and being faster to cook.

However, the result of the t-test confirms that the respondents do not differ significantly in their preference between goat meat and beef. Similarly, the preference for goat meat did not differ significantly from the preference for game meat, even though the respondents clearly preferred goat meat for its affordability, availability, ability to cook faster, and being better at ceremonies. Consequently, beef and goat meat are the preferred meat, but goat meat is considered to be more nutritious, tastes better, cooks faster, less available, more costly and so not suitable for ceremonial cooking.

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