



NUTRITIONAL KNOWLEDGE AND FOOD VENDING IN SELECTED MARKETS IN ABAKALIKI METROPOLIS, EBONYI STATE, NIGERIA

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Abstract

Food vending is a vital business operation that helps to ensure the food security and well-being of thousands of people in developing economies. This study analyzed food vendors' sales and nutritional knowledge in selected markets in Ebonyi State, Nigeria. The study was carried out using a multistage random sampling technique. A total number of 50 respondents (food vendors) were used for this study (20 in *Abakpa* main market, and 15 each in *Kpiri-kpiri* and *Eke-aba* markets in Abakaliki metropolis). The findings showed that the food vendors had a limited understanding of nutrition requirements, even though the food vending industry found to be very profitable, with a gross margin of 52,891 per month and a net return of 47,408.33 per month among the vendors, suggesting a high degree of profitability. Several constraints restricted the food vendors' ability for increased sales. The constraints include an unfavorable (space) market climate, insatiable customer taste preferences, and inadequate funds to expand the business. Although food vendors' nutritional awareness was found to be positively correlated to their sales, efforts should be made to educate them on the fundamentals of nutrition, as this will also expand their knowledge of hygiene requirements and increase their sales.

Keywords: Profitability, Constraints, Correlation, Vendors, Vending, Food

Introduction

Food is essential for life's sustenance because it provides the nutritional requirements for good health, improved well-being, vitality, and development (Ogundari, 2017). Food vendors' environment and nutritional knowledge play a vital role in attracting customers and enhance sales. Very little is known about public eateries, nutritional knowledge, and consumption patterns in Nigeria, especially in Ebonyi state, despite this being a large sector of the national economy in terms of employment and food sales. There is a high concentration of food vendors in industrial areas like markets; this is the reason for selecting the major markets in the State. The cleanliness and suitability of the environment where the food vendors operate are also influenced by vendor's knowledge and play a critical role in the sales (Kotsanapoulos and Arvantoyannis, 2011). Food vendors operate from stands/stalls (usually not permanent stands) on the pavements of main roads in rural and urban areas; typically at a lower cost than formal restaurants. More people eat food from street vendors and markets than in restaurants because it is convenient and affordable; it is rich in various foods and has high nutritional content, though the level of hygiene may be in doubt (Steyn *et al.*, 2011). Hence food vendors in the market provide an accessible food source to both

the poor and average Nigerian (Posthumus *et al.*, 2019). The foods available on the vendors' menu usually consist of all food items within their reach. They sell staple foods from rice, *gari*, meat, fish, vegetables, beans, yam, etc.; the food vendors play a critical role in contributing to the food security and welfare of the average Nigerian (Akinyele, 2009).

Food vending is among the most popular businesses in most of Africa; most parts of Africa do it, with activity concentrating in commercial centers. Food vending is known to be very lucrative, and the industry is not seasonal, and it is a primary source of dietary balance for the poor in Africa, America, Europe, and other parts of the world (Aquino *et al.*, 2015, cited in Dipak, (2017). Wortmann (2004) reported that food yields 25% of total calories and 45% of protein intake in most Nigerian diets. It is valued by both the rich and the poor. Basically, in the human diet, food provides a rich combination of carbohydrates, proteins, fats, vitamins and minerals, and other essential nutrients (Fulgence *et al.*, 2007). Adewale (2005) and Bressami (1985) noted that the consumption of selected food sold by food vendors has brought solutions to many nutritional constraints in African diets and has solved the pro-poor's problems regarding the high cost of animal-based protein sources.

The nutritional knowledge of the food vendors to what constitutes a balanced diet and food security for the consumers; vendors with good nutrition knowledge will combine the food items to ensure that the customer eats food with the proper nutritional content. Some factors may influence the vendor knowledge, including socioeconomic skills, training, and education, more significantly (Njaya, 2014).

Furthermore, the factors affecting food vendors' sales and nutritional knowledge include; shortage and inadequate infrastructural facilities to preserve the nutritional value of the food, consumers' taste preference, and *unsafe* transportation system in Nigeria (Chukuezi, 2010). These factors have caused the food vendors to be discouraged while carrying out their food vending activities. Many food vendors lack credit facilities, buildings/shops and water supply, and power supply to enable them to produce and sell good food because most of them cannot afford the enormous capital required to start a business. Lack of trust by the high income earners in the society is also seen as a problem facing food vending (Khairuzzaman *et al.*, 2014). Many do not believe and trust the ability and capability of the local food vendors. Also, food is perishable; lack of adequate and proper storage facilities increases the business cost as most of their prepared foods get spoiled. Another factor is consumers' culture and beliefs, which affects their patronage of the food vendors' business. Consumers' taste preferences are prominent because of their religion; the belief that not all meat or food should be eaten may have a significant influence on food vending. Hence, this study assessed the nutritional knowledge and food vending in selected markets in Ebonyi State, Nigeria.

Methodology

Study Area

This study focused on the markets of *Kpiri-kpiri*, *Abakpa*, and *Eke-aba* in Ebonyi State. It is also a farm gate for farmers and middlemen who trade in crops such as tubers, roots, cereals, palm oil, fruits, and spices due to its cosmopolitan nature. A multi-stage sampling

technique was adopted for the study. The first stage involved the purposive selection of three markets in Abakaliki metropolitan city, Ebonyi State. Purposive selection was used to select markets based on proximity and convenience. The second stage involved random selection of food vendors from the selected markets. A total of 50 food vendors were randomly selected; 15 each from *Kpiri-kpiri* and *Eke-aba* markets and 20 from *Abakpa* main market (because it is the largest among the three markets). A well-structured questionnaire and discussion were used to elicit the required data from the food vendors. To ascertain the nutritional knowledge level of the food vendors, some questions were asked and frequencies and percentages taken. Descriptive statistics, cost and return analysis and Pearson correlation analysis were used to analyze the data. The cost and returns model is specified thus:

$$NI = TR - (TVC + TFC)$$

Where, NEI = Net income in Naira, TR = Total Returns in Naira, TVC = Total Variable Cost in Naira, TFC = Total fixed cost in Naira, Gross Margin = Total Revenue (TR) - TVC (TVC), Net Revenue = Total Revenue (TR) - Total Cost (TC)

$$\text{Benefit Cost Ratio (BCR)} = \frac{\text{Total revenue (TR)}}{\text{Total cost (TC)}} \dots\dots (1)$$

The correlation between the level of nutrition knowledge and food vendors sale output is given as:

$$r_{xy} = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \dots\dots (2)$$

Where r_{xy} = correlation coefficient ($-1 \leq r_{xy} \leq 1$), n = sample size, and X and Y are the variables under consideration (level of nutrition knowledge categorized from 1-100%; and food vendors sale output in naira).

Results and Discussion

The nutritional and hygiene knowledge of the Food vendors were analyzed using descriptive statistics and the result is presented in Table 1.

Table 1: Nutritional knowledge of Food Vendors (n=50)

| Variables | Frequency | Percentage |
|--------------------------|-----------|------------|
| Preferred meat | | |
| Chicken | 3 | 6.0 |
| Pork | 12 | 24.0 |
| Beef | 30 | 60.0 |
| Mutton | 5 | 10.0 |
| Protein rich foods | | |
| 1-2 days per week | 2 | 4.0 |
| 3-4 days per week | 22 | 44.0 |
| Everyday | 16 | 32.0 |
| Not sure | 10 | 20.0 |
| Consumption rate | | |
| Once a day | 7 | 14.0 |
| Twice a day | 6 | 12.0 |
| Thrice a day | 37 | 74.0 |
| Qty of sugar in melon | | |
| Not sure | 34 | 68.0 |
| High | 8 | 16.0 |
| Low | 8 | 16.0 |
| Qty of sugar in tomatoes | | |
| Not sure | 33 | 66.0 |
| High | 9 | 18.0 |
| Low | 8 | 16.0 |
| Protein in egg | | |
| Not sure | 45 | 90.0 |
| Good | 5 | 10.0 |
| Protein in meat | | |
| Not sure | 32 | 64.0 |
| Good | 14 | 28.0 |
| Not good | 4 | 8.0 |
| Protein in fish | | |
| No sure | 39 | 78.0 |
| Good | 5 | 10.0 |
| Not good | 6 | 12.0 |
| Protein in beans | | |
| Not sure | 39 | 52.0 |
| Good | 8 | 16.0 |
| Not good | 3 | 6.0 |
| Starch in Potatoes | | |
| Not sure | 26 | 52.0 |
| Starchy food | 6 | 12.0 |
| Not starchy food | 18 | 36.0 |
| Starch in Plantain | | |
| Not sure | 7 | 14.0 |
| Starchy food | 25 | 50.0 |
| Not starchy Food | 18 | 36.0 |
| Starch in <i>Fufu</i> | | |
| Not sure | 40 | 80.0 |
| Starchy food | 1 | 2.0 |
| Not starchy food | 9 | 18.0 |
| Soup fat | | |
| Melon soup | 16 | 32.0 |
| Palm kernel soup | 8 | 16.0 |
| Pepper soup | 26 | 52.0 |
| Egg weight | | |
| Not sure | 10 | 20.0 |
| Yes | 15 | 30.0 |
| No | 25 | 50.0 |
| Washing soap | | |
| Yes | 40 | 80.0 |
| No | 10 | 20.0 |
| Running water | | |
| Yes | 39 | 78.0 |
| No | 11 | 22.0 |
| Clean towel | | |
| Yes | 41 | 82.0 |
| No | 9 | 18.0 |

Source: Field data, 2018

From the table, results show that 6% of the food vendors indicated their customers prefer chicken, 24% pork, 60% beef, and only 10% prefer mutton. This finding shows that the customers in the study area eat more beef than any other meat. This finding agrees with the report of Aborisade and Carpio (2017), in which the consumers consumed more quantity of beef compared to other meat types. From the distribution, about 4% of the respondents indicated their customers consumed proteinous foods 1-2 days per week, 44% within 3-4 days per week, and 32% every day, while 20% indicated not sure. This distribution shows that 80% of the consumers consume protein rich foods, as noted by the vendors. This result implies that the vendors are conscious when their customers demand food items rich in protein. The distribution shows that 14% of the vendors felt that their customers should eat once per day, 12% two times a day, and 74% three times a day. This result implies that most food vendors believe that for their customers to meet their nutritional needs, they have to take food three times daily.

The distribution in Table 1 show that 66% of the respondents were not sure about the quantity of sugar in tomatoes, 18% indicated high, and 16% low. About 16% each indicated that the sugar in melon is high and low, and 66% noted not sure. The distribution shows that 90% of the respondents were not sure if the protein in egg is good, 10% of the respondents believe that egg is a good source of protein. The distribution shows that 64% of the respondents were not sure if the protein in meat is good, 28% indicated that meat is a good source of protein and 8% thinks is not a good source for protein. The distribution shows that 78% of the respondent were not sure if the protein in fish is good, 10% indicated it as a good source of protein and 12% thinks is not a good source of protein. About 78% of the respondents

indicated not sure if the protein in beans is good, 16% noted it is a good source of protein and 6% thinks is not good for protein. About 52% of the respondents noted not sure if potatoes is a starchy food or not, 12% perceived it as starchy food, and 36% thinks is not a starchy food. The distribution shows that 14% of the vendors were not sure if plantain is a starchy food or not, 50% feels it is a starchy food, and 36% indicated it is not a starchy food. Majority (80%) of the respondents were not sure if *fufu* is a starchy food or not, only 2% indicated it is a starchy food and 18% noted it is not a starchy food. These results imply that most food vendors lack a good knowledge of the nutritional content of the food items on their menu.

Distribution according to the soup that contains fat shows that melon (*egusi*) soup contains 32% fat as indicated by the food vendors, palm kernel (*ofe akwu*) soup contains 16% fat, and pepper soup contains 52% fat as indicated by the food vendors. The distribution according to the data collected by the respondents show that 20% were not sure if egg leads to weight gain, 30% indicated it leads to weight gain and 50% disagrees with this. From the distribution, majority (80%) of the respondents provided washing soap for the customers, and 20% do not. From the distribution, 78% of the respondent made provision for running water for their customers, and 22% do not. About 82% of the respondents made provision for clean towel for their customers, and 18% do not. These results imply that most food vendors lack do not pay attention to hygiene details.

The performance of the food vendors was analyzed using descriptive statistics and the result is presented in Table 2.

Table 2: Performance of the Food Vendors

| Variables | | Frequency | Percentage |
|-------------------------------|---------------------|-----------|------------|
| Sale of foodstuff | Yes | 17 | 34.0 |
| | No | 33 | 66.0 |
| Purchase of foodstuff | Yes | 7 | 14.0 |
| | No | 43 | 86.0 |
| Food dealers | Yes | 36 | 72.0 |
| | No | 14 | 28.0 |
| Expenses on foodstuff (Naira) | 3000-8000 | 25 | 50.0 |
| | 9000-13000 | 19 | 38.0 |
| | 15000 | 4 | 8.0 |
| | 20000 | 1 | 2.0 |
| | 30000 | 1 | 2.0 |
| Average customers | 11-21 | 6 | 12.0 |
| | 22-40 | 25 | 50.0 |
| | Others | 19 | 38.0 |
| Cooking equipment | Firewood | 34 | 68.0 |
| | Gas cooker | 13 | 26.0 |
| | Electric stove | 1 | 2.0 |
| | Kerosene stove | 2 | 4.0 |
| Time to cook | 4:00-8:00 | 49 | 98.0 |
| | 12:00 | 1 | 2.0 |
| Cost of food preparation (N) | 2000.00-7500.00 | 12 | 24.0 |
| | 8000.00-11000.00 | 21 | 42.0 |
| | 12000.00-18500.00 | 13 | 26.0 |
| | 20000.00 | 3 | 6.0 |
| | 25000.00 | 1 | 2.0 |
| Capital (N) | 10000.00-35000.00 | 6 | 12.0 |
| | 40000.00-70000.00 | 12 | 24.0 |
| | 75000.00-120000.00 | 19 | 38.0 |
| | 130000.00-200000.00 | 9 | 18.0 |
| | 250000.00 | 2 | 4.0 |
| | 275000.00 | 1 | 2.0 |
| | 300000.00 | 1 | 2.0 |

Source: Field data, 2019

The results show that 34% of the food vendors engage in sale of foodstuff, while 66% do not; 14% purchase foodstuff they use by themselves and 86% do not; majority (72%) of the food vendors get their foodstuffs from a particular food dealer and 28% do not. From the data, 50% of the food vendors spend N3000 - N8000 to cook in a day, 38% use N9000- N13000, 8% N15000, and only 2% use N20000 and N30000 each. About 12% of the respondents have an average number of the customers ranging from 11-21, 50% from 22-40 and 38% above 40 customers. From the distribution, 68% of the respondent use firewood to cook, 26% gas cooker, 2% electric stove and 4% use kerosene stove. According to the time the respondents cook for their customers,

98% of the respondents cook between 4:00 - 8:00am, 2% by 12:00noon. The distribution of the food vendors according to cost of preparing food daily is as follows; 24% between N2000- N75000, 42% N8000-N11000, 26% N12000- N18500, 6% N20000 and 2% N25000. The distribution shows that 12% of the respondents utilized between N10000-N35000 as capital, 24% N40000 - N70000, 38% N75000- N120000 as capital, 18% N130000- N200000, 4% N50000, 2% of used N75000 and N300000 as capital each.

The Profitability of the food vendors in selected markets in Ebonyi State was analyzed using cost and returns analysis, and presented in Table 3.

Table 3: Profitability of the food vending enterprise (monthly)

| | |
|------------------------------|------------------|
| Revenue | |
| Sale per month | 109,900 |
| Variable Costs | |
| Cost of Food Stuffs | 44,540 |
| Electricity | 930 |
| Tax and Levies | 8242 |
| Wages | 3297 |
| Total Variable Cost | 57,009 |
| Fixed cost | |
| Rent | 5115 |
| Other fixed cost depreciated | 367.67 |
| Total fixed cost | 5,482.67 |
| Total cost | 62,491.67 |
| Net profit | 47,408.33 |
| Gross profit | 52,891 |
| BCR | 1.76:1.00 |

Source: Field data, 2019

Results show estimated total variable cost of 57,009, total fixed cost of 5,482.67 and a total cost of 62,491.67. The net profit of the food vendors was estimated at 47,408.33, with a gross margin of 52,891. This indicates the food vendors enterprise option is viable by returning N1.76 for every N1.00 spent.

The correlation coefficient between the sales revenue of food vendors and their knowledge of nutrition is presented in Table 4. The correlation coefficient between nutritional knowledge of the food vendors and their sales was significant (5%) and positive, which implies that vendors sales may increase with the increase in the level of their knowledge on nutrition.

Table 4: Relationship between nutritional knowledge of the food vendors and their monthly sales value

| Nutritional knowledge Level | | Nutritional knowledge Level | Value of Sale (food) |
|-----------------------------|---------------------|-----------------------------|----------------------|
| | Pearson Correlation | 1 | 0.473** |
| | Sis. (2-tailed) | | 0.003 |
| | N | 50 | 50 |

Source: Field data, 2019

The constraints faced by the food vendors in the selected markets were analyzed using descriptive statistics and the result is presented in Table 5. The highest constraint (64.00%) faced by food vendors, according is the consumers' taste preference; the various insatiable tastes of consumers influence the vendor. When customers visit street vendors and are dissatisfied with the taste of the food or some other factor, they immediately refrain from visiting that vendor, causing the vendor to lose customers and profits. Lack of cooking skills: with 56.00%, formal training in catering exposes food vendors on proper food preparation methods, proper food handling, food safety and proper food storage methods before undertaking food vending. Lack of this ability would limit the food vendors on the type of food

requested by the consumers, causing the food vendors to sell only one type of food and restricting the respondents' nutritional intake. Insufficient fund: with 56.00% of the respondents indicating; inadequate funding is posing problems for food vendors. Food vendors cannot carry out all that is required due to a lack of funds. Space: 34.00% of the vendors indicated; the work space of the food vendors has a high influence on the vendors. The study area is in markets, most of these vendors carry out their activities under temporary structures in these locations and had no access to clean water or toilet facilities near their vending sites. The absence of toilet facilities and water implies that vendors may not observe proper hygienic practices.

Table 5: Constraints faced by food vendors

| | N | Percentage |
|-------------------------------------|----|------------|
| Insufficient fund | 50 | 56.00 |
| Poor Space (no toilets and kitchen) | 50 | 34.00 |
| Customers taste preference | 50 | 64.00 |
| Lack of cooking skills | 50 | 56.00 |
| Valid N (list wise) | 50 | |

Source: Field data, 2019

Conclusion

The research examined the state and nutritional awareness of food vendors in Ebonyi State, Nigeria. According to the findings, most food vendors lack the required nutritional awareness to enhance sales. The cost-return analysis showed that food vending is profitable, although limited by insatiable consumer tastes, inadequate funding and a suitable area with ample space and toilet facilities. Based on these results, the study recommended that the following suggestions be considered to enhance the nutritional awareness of food vendors; Local government authorities should establish food vending sites with good social amenities and infrastructure such as piped-borne water, modern toilet facilities, waste collection services and electricity in their various jurisdictions. Provision of capacity building/training on food hygiene and food safety issues for vendors and their support staff, provide sensitization and education for street food consumers, and train resource departments/units in charge of regulating street food business. There is also need to make loans more accessible for food vendors to fund their businesses at little or no interest rates.

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