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ARTICLE

Perception of Mobile Street Food Vendors in Osun State, Nigeria on Some Operational Issues and Their Exposure to Health Hazards

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ABSTRACT

Street food vending plays a critical role in urban food access and livelihood generation in Nigeria, yet empirical evidence on vendors' socio-economic conditions, health experiences, and regulatory interactions remains limited. This study assessed mobile street food vendors in selected towns of Osun State using a cross-sectional survey design. Data were collected from 219 vendors, of whom over 75% were female, and analysed using descriptive statistics and chi-square tests. Most vendors were married adults with dependants and had attained at least secondary education. Significant gender differences were observed in location, age, marital status, education, dependency burden, employment status, monthly profit, daily sales turnover, business ownership, and vending terms ($p < 0.05$). Daily sales turnover was commonly between \$0.67 and \$3.33, while monthly profits were generally modest. Nearly all respondents (97.7%) operated as mobile vendors, with 54.3% selling local cooked foods. Although 72.1% considered their vending technology appropriate, 54.8% did not sell all food items daily, indicating risks of spoilage and income loss. Health concerns were prevalent, with 63.0% reporting occasional illness and 60.1% experiencing body pain since engaging in street vending. Regulatory engagement was minimal, as 96.8% reported no interaction with government authorities. The

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findings highlight the economic importance yet vulnerability of mobile street food vendors, underscoring the need for inclusive regulation, food safety training, and gender-responsive support interventions.

Keywords: Mobile Street Vendors; Food; Technology; Operational Issues; Health Hazards; Economy and Daily Sales

1. Introduction

Street food vending constitutes a vital component of urban food systems in many low- and middle-income countries, providing affordable, accessible meals to millions of urban residents while serving as a key source of livelihood for economically vulnerable populations. In Nigeria, rapid urbanisation, rising unemployment, and increasing food insecurity have contributed to the expansion of informal food vending, particularly mobile street food vending, across cities and towns [1,2]. Street foods play an important role in meeting daily dietary needs, especially for low-income households, students, and workers who rely on ready-to-eat foods due to time and financial constraints.

Despite their socio-economic importance, street food vending activities are largely informal and often operate outside formal regulatory frameworks. This raises concerns related to food safety, hygiene, occupational health, and economic sustainability. Previous studies in Nigeria and other African countries have documented challenges such as inadequate food handling practices, limited access to potable water and sanitation, weak regulatory oversight, and exposure of vendors to occupational hazards including prolonged standing, heat stress, and traffic-related risks [3–5]. These challenges have implications not only for consumer health but also for the wellbeing and productivity of vendors themselves.

Studies have been conducted on assessing the knowledge, attitudes and practices of street food vendors in many countries including: Namibia, Tanzania, Kenya, Viet Nam, Haiti and Nigeria [6–8] . All these studies were not on mobile street food vendors. In Nigeria, there have been several studies on street food vending such as Anetor [9], who investigated the market value of street vending in Nigeria: A Case of Lagos State. The study covered a broad range of items but did not focus on food vendors. Also, Omemu and Aderoju [10] reported the result of a survey on Food safety knowledge and practices of street food vendors in the city of Abeokuta, Nigeria while Adeyanju et al. [11] investigated the Food Safety and Hygienic Practices Among Street Food Vendors in Ife East Local Government Area Osun State, Nigeria. Both of these studies were conducted on stationary street food vendors that had stalls. Their concept of food hygiene has to do with food and environmental cleanliness of an individual or group of people in charge of food preparation to prepare healthy food for the populace. The focus of this study is on mobile vendors i.e., those who move with carts or head-pans and the focus of their understanding of food hygiene and safety practices has to do with handling the food while vending. In addition, the mobile vendors face unique operational issues different from the stationary vendors. Technology is viewed as a top-down solution, yet the perceived utility and ease of use of these tools by mobile vendors themselves remain unexplored. This research examines the vendor perceptions, thereby providing a more 'vendor-centric' framework for policy intervention.

2. Literature Review

The extant literature has shown that street food vending plays a vital role in urban food systems across Nigeria, providing affordable meals to diverse populations. However, the practice is often associated with significant public health concerns, particularly in Osun State, Nigeria. Recent studies have consistently highlighted the health hazards, technological opportunities, and operational challenges that shape the sector. Reports from relevant recent publications are highlighted below:

2.1. Health Hazards

Food safety remains a critical issue among mobile street food vendors in Osun State. The study by Falusi et al. [12] reported widespread non-compliance with hygiene standards, including poor handwashing practices, inadequate waste disposal, and the absence of protective cloth-

ing. These respondents are stationary vendors as the issues concerned are not relevant to the mobile vendors. These lapses contribute to a heightened risk of foodborne diseases. Similarly, research conducted in Ife East Local Government Area found that while vendors possessed basic awareness of food safety, their practices were inconsistent, often undermined by limited access to clean water and proper storage facilities [13]. Other works confirmed these findings, noting that many vendors lacked formal training in food handling and operated in environments with poor sanitation infrastructure [14,15].

2.2. Operational Issues

Training deficiencies are evident, with many vendors lacking formal instruction in food handling, a gap that both Kulpiisova et al. and Akinola et al. [13,14] recommend addressing through structured and community-based programmes. Regulatory weaknesses compound these challenges. Enforcement of food safety laws is often inconsistent, leaving vendors without clear accountability structures [16]. Scholars argue for integrated policies that combine health, technology, and operational improvements to create a more sustainable framework for street food vending in Nigeria [15].

There is a significant disconnect between the objective health hazards identified by researchers and the subjective perceptions of the vendors. If vendors do not perceive their current operational methods as hazardous, they are unlikely to adopt safer practices, regardless of regulation. Unlike stationary vendors, mobile vendors face unique logistical challenges—such as fluctuating access to clean water and the lack of fixed waste disposal points—that make compliance with standard food safety laws physically and economically difficult.

If these perceptions and operational realities are not clearly understood, public health policies will continue to be ineffective, and the mobile street food sector will remain a major vector for foodborne illnesses in Osun State. There is an urgent need to investigate how mobile vendors perceive these health hazards and technological opportunities to develop a more realistic and sustainable regulatory framework.

The broad objective of this study is to examine the perceptions of mobile street food vendors regarding health hazards, the adoption of technology, and operational challenges in Osun State, Nigeria. To achieve the general objective, the study sought to: (i) Assess the level of awareness and perception of health hazards among mobile street food vendors; (ii) evaluate the vendors' economic and marketing performance; (iii) identify the critical operational issues that affect the practice of safe food vending among mobile vendors in Osun State and the safety of the vendors; (iv) determine the relationship between vendors' demographic characteristics (e.g., age, education level, years of experience) and their perception of food safety risks; and examine the perceived effectiveness of existing regulatory oversight and government support systems from the perspective of the mobile vendors.

3. Materials and Methods

The descriptive research design [17] was deployed for this study. Using Osun State, Nigeria, as the study location, the multistage method was adopted in selecting study participants. The state has three Senatorial districts namely Osun West, Osun Central and Osun East. From each Senatorial District, a major urban Local Government Area which houses a major city was purposively selected due to the commercial nature which brings about influx of people irrespective of gender into the city as well as being the headquarters of their respective Senatorial Districts. The cities selected for the study were Ede from Osun West, Osogbo from Osun Central and Ilesa from Osun East. Four strategic locations (junctions) were identified and purposively selected from each city. At Osogbo the junctions visited are: Rasco/Old garage junction, Post office/ Orisumibare junction, Uniosun teaching hospital/Ajegunle, junction, Olonkoro junction, Igbona junction, Oluode junction, Oja-oba palace junction and Oke-baale junction. At Ede Oke gada junction, Oja Timi junction, Poly Junction, Agip junction, Rombay junction. At Ilesha–Adeelu roundabout, Isokun junction, Odo Oro junction and Adeeti junction were selected for the study. The target participants were adult non-stationary food vendors irrespective of gender. The enumerating periods of the vendors were 7–9 am (school/office rush hour), 11 am–1 pm, 3–5 pm and 6–8 pm. A structured instrument was designed to collect information regarding the subject matter. The instrument

consists of Socio-demographic Characteristics of Mobile Food Vendors (measuring variables which include gender, age, level of education, years of vending, etc); Reasons for food vending, Economic Benefits of Street Food Vending to the Vendors; Categories of Food Items Sold by the Vendors, Nutritional and Microbial Qualities of Vended Foods, Technologies used in Vending Foods and Challenges of Street Food Vending to the Vendors. Eight Research Assistants (RAs) who are graduate students in Demography and Social Statistics were employed and trained to collect the needed information as contained in the questionnaire. The questions were processed using the KOBO software which enabled the storage of responses in the cloud. A pre-test was carried out in locations named Sabo and Mayfair area of Ile-Ife (a city outside of the selected Local Government Areas). Responses from the pretest were subjected to examination and analysis for final amendment on the questionnaire. It must be noted that due to the lack of a sampling frame for mobile food vendors, a total enumeration of respondents seen and willing to participate in the study within the time frame/periods scheduled for data collection was done.

The survey was conducted between April and May 2024. The towns visited and the number of respondents in parentheses are Ilesa (60), Osogbo (92) and Ede (67). Detergent powder was given to the vendors to appreciate them for the time given to provide answers to the questions. The data collected were harvested from the cloud, merged together and analysed using SPSS version 20. Three levels of data analysis were deployed towards the realisation of the objectives of the study. The levels are univariable (which describes each of the variables), bivariable (which examines significant associations between two variables) and multivariable (which examines the effect of categories of significant variables on the identified dependent variable). The level of significance was set at the 0.05 level of significance.

4. Results and Discussion

4.1. Socio-Demographic Profile of Mobile Street Food Vendors

A total of 219 mobile street food vendors participated in the study across Ede, Ilesa, and Osogbo in Osun State. Not all vendors approached consented to be interviewed. Incentives (sachet of detergent powder) were given to the respondents after the interaction to justify the time spent. The time of day influenced the willingness to interact with the interviewers. Just about 26% of the vendors contacted were willing to talk in the morning, claiming "it was too early in the day to spend time talking". About 74% of the respondents were captured before 6 pm. Most of the food vendors on the street at night were stationary using easily dismountable structures or stands to display their goods. The darkness prevented visibility of goods and people, but the stationed vendors had lamps helping to draw attention to their wares and were not included in the study. In a study in China, Wang et al. [18] reported that female vendors are more likely than male vendors to operate during weekdays and in daylight hours than on the weekends and at night. Hawking at night increases exposure to abuse and in addition, women have domestic chores to perform at home.

The findings reveal a strong female dominance, with women constituting more than three-quarters of respondents across all locations (**Table 1**). Gender distribution varied significantly by location ($\chi^2 = 17.71$, $p = 0.001$), with Ilesa recording the highest proportion of female vendors (96.7%). This pattern confirms that street food vending in Osun State, Nigeria is a gendered livelihood activity, largely sustained by women, as widely reported in Nigeria and other low- and middle-income countries [1,19]. This result agrees with the findings of Sekhani et al. [20] for South Africa and Motala [21] for Pekanbaru, The large number of female vendors highlights the importance of street vending to female economic empowerment.

Survey results showed the age of the respondents to be 11.9% (18–24 years), 32.9% (25–34 years), 37.9% (35–44 years), 12.3% (45–54 years) 4.6% (55–65 years) and 0.5% were above 66 years of age. The mean age of the respondents is 36.33 ± 9.97 years. Most of the elderly vendors older than 54 years of age were women. Age was significantly associated with gender ($\chi^2 = 32.60$, $p = 0.001$), with female vendors concentrated in older age groups, particularly those aged 45–54 years and above. This suggests that street food vending functions as a long-term economic strategy, especially for women with declining access to formal employment opportunities. A significant association ($\chi^2 = 32.595$, p-value = 0.001) existed between gender and age.

Table 1. Demographic Information of Mobile Street Food Vendors by Gender.

Background Characteristics	Gender		χ^2	*p*-Value
	Female	Male		
Location	No (%)	No (%)		
Ede	45 (67.2)	22 (32.8)		
Ilesa	58 (96.7)	2 (3.3)	17.710	0.001*
Osogbo	68 (73.9)	24 (26.1)		
Age (Years)				
18–24	1 (100.0)	0 (0.0)		
25–34	19 (73.1)	7 (26.9)		
35–44	41 (56.9)	31 (43.1)	32.595	0.001*
45–54	77 (92.8)	6 (7.2)		
55–65	24 (88.9)	3 (11.1)		
66+	9 (90.0)	1 (10.0)		
Marital Status				
Single	21 (48.9)	22 (51.2)		
Married	129 (83.2)	26 (16.8)	29.780	0.001*
Divorced	11 (100.0)	0 (0.0)		
Widowed	10 (100.0)	0 (0.0)		
Highest Education				
Below Primary Six (Primary Incomplete)	39 (61.9)	24 (38.1)		
Attended Secondary School (Secondary Incomplete)	52 (74.3)	18 (25.7)		
Finished Secondary School (Secondary Complete)	72 (96.0)	3 (4.0)	27.209	0.001*
Attended Higher Education (Tertiary Incomplete)	4 (57.1)	3 (42.9)		
Graduated from Higher Education (Tertiary Complete)	4 (100.0)	0 (0.0)		
Dependents				
None	18 (46.2)	21 (53.8)		
1–2	38 (80.9)	9 (19.1)	30.065	0.001*
3–4	87 (88.8)	11 (11.2)		
>4	28 (80.0)	7 (20.0)		
Employed				
No	101 (71.6)	40 (28.4)	9.627	0.002*
Yes	70 (89.7)	8 (10.3)		

Note: * Significant at 0.05 level of significance.

Marital status differed significantly by gender (χ^2 = 29.78, p = 0.001), with married women accounting for the majority of vendors, while all widowed and divorced respondents were female. These findings reinforce the role of street food vending as a household survival mechanism, especially for women with dependants. This was further supported by a significant association between gender and dependency burden (χ^2 = 30.07, p = 0.001). Among married respondents, the study showed a higher percentage of female respondents (83.2%) compared to males (16.8%). The study also revealed a significant association between gender and marital status (χ^2 = 29.780, p-value = 0.001).

Educational attainment was generally modest, with most vendors having incomplete or complete secondary education. At least 71.3% of participants attended secondary school or had some form of higher education. Gender differences were statistically significant (χ^2 = 27.21, p = 0.001), as men were more likely to report tertiary education. This educational profile is consistent with existing literature indicating that street food vending absorbs individuals with moderate education who face barriers to formal sector employment [3,5]. There is a significant association between the highest level of education and gender (χ^2 = 27.209, p-value = 0.001). In Pekanbaru, Indonesia, Mar-

liati [22] reported that 16% of the vendors had a Bachelor's degree and concluded that educational factors are important in shaping entrepreneurial behavior and will ultimately affect business success.

The number of dependents is significantly associated ($\chi^2 = 30.065$, p-value = 0.001) with gender, with a higher proportion of females having dependents. The number of dependents in the family can be a source of motivation in engaging in street trading to increase household income [22]. The proportion of employed and unemployed individuals differs significantly by gender ($\chi^2 = 9.627$, p-value = 0.002).

4.2. Income, Sales Turnover, and Business Characteristics

About half (49.3%) of the respondents reported having an average sales turnover of between ₦10,000.00 ($6.7) and ₦20,000.00 ($13.4) daily. The result shows that 73.1% of the vendors interviewed earned a profit of less than ₦30,000 ($20.1) a month which is the national minimum wage. The analysis revealed significant gender disparities in income and sales turnover. Average monthly profit differed significantly by gender ($\chi^2 = 11.71$, $p = 0.020$), with most vendors earning modest incomes, while men were proportionally more represented in higher income categories (₦20,001 and above, i.e., >$13.33). The income for a household is expected to cover essentials like nutritious food, clean water, decent housing, healthcare, and education, plus provision for savings and unexpected events. The income made by the hawkers interviewed cannot be classified as a living wage.

A majority of the vendors (79.9%) used their running capital to buy the food they sold. This result suggests that most food vendors are working for themselves and bear all the risks. Those who get commission pass on the risk to the owners of the goods. About 35.6% of the vendors start daily with goods worth less than ₦5,000 ($3.35) and 49.7% actually trade in goods worth more than ₦9,000 ($6.03) daily. This small starting capital greatly limits the amount of profit that can be made and also the quality or type of goods that can be sold. Many in this category will be selling items like fruits and vegetables, chips, *ogi*, etc. Items like yam, fish etc. require higher investment.

Table 2 revealed that 84.5% of the vendors own the business. This result agrees with the information that 79.9% of the respondents use their capital to buy the items they sell. The topmost reasons why the vendors prefer doing their business on the streets include quick turnover (33.3%), no money to rent a shop (21.9%) and preference for the street "for now" (19.6%). These reasons underscore the role of economic necessity and reinforce the idea that street vending is often a survival strategy rather than a chosen career path [23]. There is a significant association between gender and average monthly profit ($\chi^2 = 11.711$, $p = 0.020$). Female vendors tend to dominate the lower profit categories (<₦10,000 ($6.7) and ₦10,000 ($6.7)–₦20,000 ($13.4)). Daily sales turnover was significantly associated with gender ($\chi^2 = 13.11$, $p = 0.041$). Although the majority of vendors earned between ₦1,000 and ₦5,000 per day ($0.67 and $3.33), male vendors were more prevalent in the highest turnover category (≥₦13,000 or ≥$8.67).

Table 3 presents operational information from mobile food vendors. The table presents key operational characteristics of mobile food vendors, highlighting their business types, technology usage, sales patterns, and peak selling periods. More than half (54.3%) are primarily involved in selling local food items thus making it the dominant business activity. Other vendors sell snacks (16.0%), drinks and water (15.5%), and fruits (14.2%). The majority (72.1%) of food vendors consider their technology very appropriate for food vending, while 26.1% see it as somewhat appropriate and only 1.8% view it as not appropriate. This suggests a generally positive perception of technology among vendors. In terms of sales performance, more than half of the vendors (54.8%) do not sell all their food items daily, indicating possible issues such as low demand, overproduction, or perishability. Only 45.2% report selling out daily. The time taken to sell food items varies: About 4 out of every 10 vendors sell their items in less than a day. Others take one day (22.4%), two days (22.8%), while a smaller percentage take three days or more. Finally, the afternoon (49.3%) is the peak sales period for most vendors, followed by the morning (34.2%) and evening (16.4%), indicating that customer demand is highest during midday hours. Mobile food vending is largely driven by local food sales, supported by generally appropriate technology. However, inconsistent daily sales and varying sales durations suggest opportunities for improving demand forecasting and inventory management.

Table 2. Marketing Information of Mobile Street Food Vendors by Gender.

Sales and Turnover	Gender		χ^2	*p*-Value
	Female	Male		
Average Monthly Profit (₦)				
≤10,000 (≤$6.67)	42 (91.3)	4 (8.7)		
10,000.00–20,000.00 (=$6.67–13.33)	60 (81.1)	14 (18.9)		
20,001.00–30,000.00 (=$13.33–20.00)	26 (65.0)	14 (35.0)	11.711	0.020*
30,001.00–40,000.00 (=$20.00–26.67)	22 (66.7)	11 (33.3)		
≥40,000.00 (≥$26.67)	21 (80.8)	5 (19.2)		
Average Sales Turnover Daily (₦)				
≤1,000.00 (≤$0.67)	20 (87.0)	3 (13.0)		
1,000.00–5,000.00 (=$0.67–3.33)	88 (81.5)	20 (18.5)		
5,001.00–9,000.00 (=$3.33–6.00)	27 (77.1)	8 (22.9)		
9,001.00–13,000.00 (=$6.00–8.67)	20 (80.0)	5 (20.0)	13.106	0.041*
≥13,000.00 (≥$8.67)	14 (56.0)	11 (44.0)		
Don't want to say	0 (0.0)	1 (100.0)		
I don't know	2 (100.0)	0 (0.0)		
How Long Have You Been Trading on the Street (Years)?				
<1	24 (85.7)	4 (14.3)		
1–2	50 (83.3)	10 (16.7)		
More than two years but less than three	28 (68.3)	13 (31.7)	5.779	0.328
More than three years but less than four	30 (71.4)	12 (28.6)		
More than four years but less than five	10 (76.9)	3 (23.1)		
Five years and above	29 (82.9)	6 (17.1)		
What Are the Terms and Conditions (T&C) for Trading?				
I collect, sell, remit sales and get commissions daily	11 (55.0)	9 (45.0)		
I collect, sell, remit sales and get commissions weekly	0 (0.0)	2 (100.0)		
I don't get any commission I have *oga (a master)*	16 (88.9)	2 (11.1)	17.381	0.002*
I use my running capital to buy the food	142 (81.1)	33 (18.9)		
Other	2 (50.0)	2 (50.0)		
How Much Worth of Goods Do You Start with Daily on Average?				
Below ₦1,000 (<$0.67)	4 (80.0)	1 (20.0)		
₦1,000–₦5,000 (=$0.67–3.33)	64 (87.7)	9 (12.3)		
₦5,001–₦9,000 (=$3.33–6.00)	38 (77.6)	11 (22.4)		
₦9,001–₦13,000 (=$6.00–8.67)	26 (74.3)	9 (25.7)	10.201	0.116
≥₦13,000 (≥$8.67)	36 (69.2)	16 (30.8)		
Don't want to say	0 (0.0)	1 (100.0)		
I don't know	3 (75.0)	1 (25.0)		
Do You Sell the Same Type of Products All the Time or You Change Products?				
I change products based on financial factor	8 (88.9)	1 (11.1)		
I change products based on seasons	30 (65.2)	16 (34.8)	5.934	0.051
I sell the same types of products all time	133 (81.1)	31 (18.9)		
Are You the Owner of the Business or Are You Selling for Someone Else?				
I sell for someone else	22 (64.7)	12 (35.3)	4.208	0.04*
Yes, I am the owner	149 (80.5)	36 (19.5)		

Note: Exchange rate $1 (1 USD) = ₦1,500 as at the time of the survey in March 2024.

Table 3. Some Operational Information from Mobile Food Vendors.

Variable	Frequency	Percentage
Nature of Business		
Selling local food items	119	54.3
Selling snacks	35	16.0
Selling drinks and water	34	15.5
Selling fruits	31	14.2
Do You Consider the Technology You Use Appropriate for Food Vending?		
Not appropriate	4	1.8
Somehow appropriate	57	26.1
Very appropriate	158	72.1
Do You Always Sell All Your Food Items Every Day?		
No	120	54.8
Yes	99	45.2
How Long Does It Take to Sell a Set of Items?		
Less than a day	78	35.6
One day	49	22.4
Two days	50	22.8
Three days	15	6.8
Four days	7	3.2
More than four days	20	9.1
What Period of the Day Do You Have the Highest Sales?		
Morning	75	34.2
Afternoon	108	49.3
Evening	36	16.4

The majority of vendors (81.1%) relied on personal running capital, and this variable was significantly associated with gender ($\chi^2 = 17.38$, $p = 0.002$). Ownership status was also significant ($\chi^2 = 4.21$, $p = 0.040$), with women more likely to own their businesses outright. Logistic regression further indicates that ownership status positively influences income, as owner-vendors exercise greater control over pricing and profit margins than commission-based vendors. However, reliance on self-financing exposes vendors—particularly women—to greater financial vulnerability. Duration of vending was not significantly associated with gender ($p = 0.328$), suggesting that both men and women remain in the sector for extended periods. This supports the argument that street food vending represents a stable informal occupation rather than a temporary coping strategy.

4.3. Nature of Vending, Food Handling Practices, and Economic Losses

More than half of respondents (54.3%) sold local cooked foods, followed by snacks (16.0%), drinks/water (15.5%), and fruits (14.2%). Although 72.1% of vendors perceived their vending technology as very appropriate, 54.8% reported not selling all food items daily. Food spoilage was reported by 15.5% of respondents, most commonly occurring twice per week (58.8%), with weekly losses largely below ₦1,000 ($0.67). Given the low daily turnover reported by most vendors, these losses represent a substantial economic burden. The display technologies included raffia baskets, metal trays, metal bowls, plastic baskets, plastic bowls, plastic crates, covered plastic buckets/containers, wheel barrows (mainly used by men probably because it requires energy to push it and it is used to display heavy items like raw products such as yam, pineapple, etc.), wooden trays, wooden platform/tray on wheels, coolers on wheelbarrow, combination of metal tray on plastic bowl, wooden box on motorcycle.

Food safety practices were inconsistent. Data in **Table 4** revealed that 57.1% of the vendors never sold expired products, 20.1% did not check expiry dates, and 90.0% of consumers did not ask about expiry information.

Table 4. Responses of Mobile Street Food Vendors on Food Safety Issues.

Variable	Frequency	Percentage
Do You Check the Expiry Date of the Packaged Food Items You Sell?		
I always check before I buy them	48	21.9
I do not check expiry dates	44	20.1
I sometimes forget to check	2	0.9
Have never sold expired product	125	57.1
Have You Ever Sold Expired Products?		
No	217	99.1
Yes	2	0.9
Do Buyers Ask/Check About the Expiry Date?		
No	197	90.0
Yes	22	10.0
Do Your Food Items Get Spoilt?		
No	185	84.5
Yes	34	15.5
If Yes, How Often Does This Happen?		
Everyday	10	29.4
Thrice in a week	3	8.8
More than thrice in a week	1	2.9
Twice in a week	20	58.8
Like How Much Do You Lose from Spoilt Food per Week?		
Below ₦1,000 (<$0.67)	21	61.8
₦1,000–₦5,000 (=$0.67–3.33)	10	29.4
₦5,001–₦9,000 (=$3.33–6.00)	1	2.9
₦9,001–₦13,000 (=$6.00–8.67)	1	2.9
Don't want to say	1	2.94

Note: Exchange rate $1 (1 USD) = ₦1,500 at the time of the survey in March 2024.

4.4. Health Outcomes and Occupational Risks

Street food vending was associated with notable occupational health challenges. Most vendors stood for 2–7 h daily (87.6%), and although 70.8% reported taking breaks, 63.0% experienced illness occasionally, while 9.2% reported frequent or very frequent illness (**Table 5**). The most commonly reported ailments that began after entering street vending were body pain (60.1%) and headaches (21.5%), reflecting prolonged standing, load carrying, and exposure to heat and traffic-related pollution.

Table 5. Responses on Health Concerns by Mobile Food Vendors.

Variable	Frequency	Percentage
How Long Are You on Your Feet on Average Daily?		
< 2 h	2	0.9
2–4 h	105	47.9
5–7 h	87	39.7
> 7 h	25	11.4
Do You Take Breaks?		
No	64	29.2
Yes	155	70.8
If Yes How Often?		
Once a day	64	41.3
Twice a day	44	28.4
Thrice a day	30	19.4
More than thrice a day	17	10.9

Table 5. *Cont.*

Variable	Frequency	Percentage
What Impact Does Street Vending Have on Your Health?		
I do not fall sick at all	61	27.8
I fall sick once in a while	138	63.0
I fall sick frequently	17	7.8
I fall sick very frequently	3	1.4
Which of the Ailments Started after You Started Street Vending?		
Body pain	95	60.1
Headache	34	21.5
Malaria	10	6.3
Typhoid	1	0.6
Other	18	11.5
How Do You Prevent Ailments?		
I drink herbs (*agbo*)	61	27.8
I take time to rest regularly	26	11.9
I use self-medication with drugs	90	41.1
I visit hospital once in a while	32	14.6
I visit the hospital at regular intervals	10	4.6
Have You Been Involved in an Accident on the Street Before?		
No	189	86.3
Yes	30	13.7
Have You Been Involved in a Street Fight Before?		
No	201	91.8
Yes	18	8.2

Logistic regression analysis shows that longer daily vending hours and older age significantly increased the odds of reporting frequent illness or body pain. Conversely, taking regular breaks reduced the likelihood of adverse health outcomes, indicating a protective effect. Despite this, preventive health behaviour was largely informal, with 41.1% relying on self-medication and 27.8% using herbal remedies, while regular hospital visits were uncommon. This pattern mirrors findings from other informal worker populations, where cost and time constraints limit access to formal healthcare [19].

4.5. Regulatory Engagement and Governance Context

Interaction with government authorities was extremely limited, as 96.8% of vendors (**Table 6**) reported no contact with government agencies, and 89.5% were unaware of any regulations governing street vending. Only 13.2% belonged to a vendor association, restricting access to training, advocacy, and collective bargaining.

Table 6. Perception of Mobile Street Food Vendors on Food Vending and Interaction with Government Officials.

Variable	Frequency	Percentage
Do You Have Any Interaction with the Government?		
No	212	96.8
Yes	7	3.2
What Type of Interaction?		
Attended training organised by government	4	57.1
payment of dues	2	28.6
Other	1	14.3

Table 6. *Cont.*

Variable	Frequency	Percentage
How Often Do You Get Visited by the Government Official?		
Once in a week	1	14.3
Once in a while	6	85.7
Are You Aware of Any Regulation or Law for Street Vending in Nigeria?		
No	196	89.5
Yes	23	10.5
Is Your Street Vending Activity Supervised by Government Officials?		
No	13	56.5
Yes	10	43.5
Do You Have an Association of Street Vendors?		
No	190	86.8
Yes	29	13.2

To further explain these patterns, logistic regression analysis (**Table 7**) suggests that gender and business ownership independently predict higher income levels. Male vendors and those who owned their businesses had higher odds of earning above lower income thresholds, even after accounting for age, education, and vending experience. This indicates that while women dominate the sector numerically, men may benefit from better access to capital, profitable locations, or higher-value product lines, as reported in similar Nigerian studies [19,24]. Also education and years of vending experience increased the likelihood of safer food handling behaviours, such as checking expiry dates. These findings align with previous studies highlighting the role of both vendor capacity and systemic constraints in food safety outcomes [5,25]. Furthermore regulatory awareness and formal interaction were not significant predictors of safer practices or better health outcomes, underscoring the weakness of the current governance framework. This regulatory vacuum is consistent with existing Nigerian and regional studies that describe street food vending as operating largely outside formal oversight [24,25].

Table 7. Logistic Regression Summary of Key Predictors.

Outcome Variable	Predictor	AOR	Interpretation
Higher income	Male gender	>1.0	Higher odds of earning above low-income threshold
	Business ownership	>1.0	Owners earn more than commission vendors
	Higher education	>1.0	Education improves earning potential
Safe food handling	Secondary + education	>1.0	More likely to check expiry dates
	Years of experience	>1.0	Experience improves food safety behaviour
Frequent illness	≥5 h standing	>1.0	Increased odds of illness
	Older age	>1.0	Higher vulnerability
	Regular breaks	<1.0	Protective effect

Note: AOR = Adjusted Odds Ratio.

4.6. Overall Synthesis

The integrated findings demonstrate that mobile street food vending in Osun State is a female-driven, informal livelihood that provides essential income and food access but is constrained by low earnings, limited capital, inconsistent food safety practices, and substantial occupational health risks. While individual factors such as gender, education, ownership status, and working hours significantly influence income, food safety behaviour, and health outcomes, structural constraints—including weak regulation, limited financial inclusion, and minimal institutional support—play a dominant role. These results highlight the need for inclusive, gender-responsive, and system-oriented interventions that move beyond individual behaviour change to strengthen vendor livelihoods, protect public health, and

improve the sustainability of urban food systems.

Taken together, the results show that mobile street food vending in Osun State, Nigeria is a female-driven, informal livelihood that provides essential income and food access but is characterised by low earnings, limited capital, health risks, and weak regulatory support. Significant gender differences in income, ownership, and business structure reveal underlying inequalities within the sector. Without supportive and inclusive policies, these vulnerabilities may persist, undermining both vendor welfare and public health.

4.7. Broader Implications

Taken together, the study data and the comparative literature emphasize that: (i) Street food vending is a critical food provisioning system for urban residents, providing affordable meals and supporting livelihoods, especially among low-income groups [4]. (ii) Women's dominance in street vending reflects broader socio-economic constraints, including limited formal employment and family care responsibilities [1]. (iii) Food safety risks and low regulatory engagement are common challenges across Nigeria and similar contexts, pointing to the urgent need for supportive interventions rather than punitive regulation [24].

5. Conclusions

This study demonstrates that mobile street food vending in Osun State, Nigeria is a female-dominated informal economic activity that plays a critical role in household income generation and urban food access. Vendors are predominantly married women with dependants, modest educational attainment, and limited alternative employment opportunities. While the sector provides quick turnover and low entry barriers, it is characterised by low profit margins, self-financing, weak regulatory oversight, and significant occupational health risks. Statistically significant gender differences in income, ownership, and business arrangements highlight structural inequalities within the informal food economy. Inadequate food safety practices, limited consumer awareness, and minimal interaction with government authorities further expose both vendors and consumers to health risks. Overall, mobile street food vending in Osun State represents a vital yet vulnerable component of the urban food system that requires supportive, inclusive, and gender-responsive policy interventions.

Policy Recommendations

Supportive Regulatory Framework: Government agencies should adopt inclusive and non-punitive regulations that recognise street food vending as a legitimate livelihood, with simplified registration and licensing processes tailored to mobile vendors. Targeted Training on Food Safety and Hygiene i.e., Regular, low-cost training programmes should be implemented on food handling, storage, expiry date monitoring, and personal hygiene, using local languages and practical demonstrations.

Gender-Responsive Financial Support: Access to microcredit, grants, and cooperative savings schemes should be expanded, particularly for female vendors, to improve capital availability, business scaling, and income stability.

Occupational Health and Social Protection: Health education, ergonomic awareness, and access to affordable healthcare services should be integrated into vendor support programmes to address physical strain and frequent illness.

Strengthening Vendor Associations: Encouraging the formation and formal recognition of street vendor associations can enhance collective bargaining, access to training, information dissemination, and engagement with government authorities.

Consumer Awareness and Public Engagement: Public education campaigns should promote consumer demand for food safety, including checking expiry dates and hygienic practices, thereby reinforcing compliance through market pressure. Implementing these measures would improve vendor welfare, food safety, public health outcomes, and the sustainability of urban food systems in Osun State, Nigeria and similar settings.

While this study highlights the economic significance and vulnerability of mobile street food vendors—emphasizing the need for inclusive regulation and gender-responsive support—several avenues for future inquiry remain. Although digital tools have been proposed as a solution [12], there is limited empirical evidence regarding how vendors with varying digital literacy levels adopt or resist these technologies. Future research should investigate the socio-technical barriers to digital integration in this sector. Furthermore, given the minimal regulatory en-

gagement observed in this study, future research should explore the underlying causes of this disconnect. Specifically, studies should examine whether limited government interaction stems from administrative underfunding, systemic corruption, or the inherent challenges of monitoring mobile enterprises. Finally, as this study employed a cross-sectional design, longitudinal research is needed to track hygiene practices over time. Such studies could determine if improvements following food safety training are sustained or if they regress due to persistent infrastructural deficits [14].Top of Form

Author Contributions

Conceptualization, K.A.T. and T.O.O.; methodology, K.A.T., T.O.O. and S.S.A.; software, S.S.A.; validation, K.A.T., T.O.O. and S.S.A.; formal analysis, S.S.A.; data curation, S.S.A.; writing—draft preparation, S.S.A. and K.A.T.; writing—review and editing, K.A.T., T.O.O. and SSA; funding acquisition, K.A.T. and T.O.O.; project administration, T.O.O. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

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Informed Consent Statement

All participants provided informed consent to participate in the study.

Data Availability Statement

The data that support the findings of this study were collected by the authors and are included in this published article.

Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study, in the data collection, analyses, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results.

AI Use Statement

During the preparation of this work, the authors used ChatGPT to reduce the length of the manuscript. The authors subsequently reviewed and edited the content as necessary and take full responsibility for the final content of the published article.

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