

# FEED MILLS DISTRIBUTION, OPERATIONS, MANAGEMENT AND CONSTRAINTS IN SOUTH WESTERN NIGERIA

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DOI: <https://doi.org/10.5281/zenodo.13325137>

Published Date: 15-August-2024

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**Abstract:** Feed mills play a significant role in the success of the livestock industry. Nigeria's animal feed sector remains under developed, largely due to high production costs. The South Western part of the country accounts for over 75 percent of feed mills in the country. However, very little information on the activities of the feed mills in the zone is available. This study was therefore carried out to elicit information on the activities of the feed mills in six states (Ekiti, Lagos, Ogun, Ondo, Osun and Oyo) of the South Western part of Nigeria. A multistage sampling method was adopted for this study. In the first stage, feed mills in the aforementioned states were identified, in the second stage, three senatorial districts from each of these states were selected for the sampling and in the third stage, and communities were proportionally selected from each of the three senatorial districts for the sampling and distribution of the questionnaires. 20 questionnaires were administered to the feed mill managers in each of the 3 selected towns within each of the three senatorial districts of each state, making a total of 360 in all. However, only 151 questionnaires were recovered, processed and subjected to descriptive statistics using frequency counts and percentage. From the results obtained, 78.1% of the feed mill managers were male. The mean age of respondents (41-50 yrs.) was 37.3%. Eighty One (81) percent were married, the household size (1-5) was 66.9%, while 64.8% received tertiary formal education, twenty nine percent of the managers had 11-15 years feed milling experience, 39% of the managers were traders while the remaining claimed to diversify, 45% saw feed milling as investment opportunity, aggregation of livestock farms (39.2%) influenced siting of feed mill, 54.9% of respondents used personal savings to start the business, 41% of the respondents operate on medium scale, production capacity was less than 1 tonne per day (35.8%), semi-modern level of automation (51.9%), source of power was from the national grid (51.9%), and electric generator (48.5%), problems faced by feed mill industry in the study area include lack of capital, irregular supply of electricity, theft of produce and unavailability of feed ingredients. The study recommended that the feed millers should establish cooperative groups among themselves from which members could acquire loans at very low interest rates. Also, sophisticated tools and expensive machines could be jointly purchased by the group for the use of the members.

**Keywords:** Feedmill; operations; management; constraints; South-West Nigeria.

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## 1. INTRODUCTION

Agriculture has been a pivotal sector in the Nigerian economy for decades and remains significant despite the oil boom. It provides employment opportunities, alleviates poverty, and contributes to economic growth (Akinwalere and Oduntan, 2014). Animal husbandry is a crucial economic activity within many African farming systems. In Nigeria, the livestock and poultry production industries are well-developed. The country's livestock resources include cattle, goats, sheep, donkeys,

horses, pigs, giant rats, guinea pigs, and rabbits, while the poultry resources consist of indigenous and imported chickens, guinea fowls, turkeys, ducks, and geese (Oluwasanmi, 2006). Proper feeding of animals for meat, milk, and egg production is a major component of the livestock industry (Odunsi *et al.*, 2008).

Animal feeds and feeding stuffs play a vital role in livestock raising, accounting for 60-80% of the total production cost, particularly in intensively managed stocks. Feed mill operations and livestock farming are closely linked, as the success of livestock enterprises largely depends on effective nutritional management and other factors.

The high cost of feed has been identified as a major factor hindering the growth of the livestock industry in Nigeria. Odunsi *et al.* (2008) noted that feed costs are as significant as livestock procurement costs, with a positive correlation between livestock production efficiency and the economic efficiency of the feed mill industry due to the substantial percentage of feed costs in overall production expenses.

The history of feed milling in Nigeria dates back to the University of Ibadan, which established a small feed mill unit in 1951. This initiative was further developed by the government of Western Nigeria, which set up three feed mills to support the growing livestock industry in the region. Pfizer also established the first commercial feed mill in Nigeria in 1961 and 1963 (Ademuyiwa *et al.*, 2014). Privately owned feed mills emerged in the early fifties and sixties (Jakonda, 1975; Fetuga, 1977) to meet the increasing demand for livestock feeds.

Nigeria's animal feed sector remains underdeveloped, primarily due to high production costs. Approximately 70% of operational costs for most poultry, aquaculture, and other livestock operations are attributed to feed. Despite this, the sector, valued at over 2 billion dollars, continues to attract significant local and foreign investment in large-scale feed mill operations (Global Agricultural Information Network, GAIN Report, 2019). In late 2016, OLAM International (Singapore-based) commissioned a new feed milling operation with an annual capacity of 720,000 metric tons, producing heat-treated mash and pelleted feeds. Increased operational efficiency in these modern feed mills is expected to reduce feed production costs.

According to Federal Ministry of Agriculture and Rural Development, the South Western part of Nigeria accounts for over 75 percent of the country's feed mills. He also noted that the number of feed mills in Nigeria has grown from 2 in 1957 to over 1,000 today, making Nigeria the 40th leading country in livestock feed production globally (Nigerian Tribune, 2021).

As of 2016, Nigeria's feed industry produces an average of 5.5 million metric tons of animal feed annually, with 85 percent being poultry feeds. With the commercial production of ruminant and swine feed, the industry is expected to produce no less than 50 million metric tons per year. The sector faces challenges such as the high cost of production, making feed almost unaffordable for the average farmer.

To transform the animal feed sector, the ministry suggested that Nigeria must focus on livestock feed production, industrialization, feed value chain development, and the development of national animal feed and feed safety policies. Establishing a National Strategic Feed and Feed Ingredients Reserve Centre and promoting alternative feed ingredient development are also crucial. Additionally, the government should provide incentives to feed millers and agribusinesses to set up operations in rural areas where feed ingredients are more readily available (Nigerian Tribune, 2021).

In light of this background, this study aims to examine the socio-economic characteristics of feed mill managers in the South Western States of Nigeria (Ekiti, Lagos, Ogun, Osun, Ondo, and Oyo), assess the distribution, operations, and management of feed mills in the study area and identify the constraints facing the feed mill industry in the study area.

## 2. METHODOLOGY

### Location of the Study

The study was conducted in the South West geo-political zone of Nigeria, which comprises six states: Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo. This region, rich in both material and natural resources, lies entirely within the tropics. It is bordered by the Atlantic Ocean to the south, the Niger Delta Region to the east, and the Guinea Savannah in the middle belt to the north. The region experiences high rainfall, averaging about 1500mm annually, predominantly between April and October. Livestock farmers in this region are involved in the production of ruminants, pigs, fish, rabbits, and poultry. The prevalence of poultry farming was the primary reason for selecting this region for the study.

### Method of Data Collection

Primary data were collected from feed mill owners and managers in the six states mentioned: Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo. A multi-stage sampling approach was employed. Firstly, the states were purposively selected due to their high rural settlements and profitability from feed mills. Secondly, three senatorial districts from each state were purposively sampled to ensure an even spread of respondents. Thirdly, specific communities were proportionally selected from each of the senatorial districts. In each state, 10 questionnaires were administered to feed mill managers in three selected towns within the three senatorial districts, totaling 360 questionnaires. However, only 151 of these questionnaires were recovered, processed, and analyzed using descriptive statistics. The selected towns from each state were as follows: In Ekiti State, the towns were Ikole, Omuo, and Otun in Ekiti North; Ado, Iyin, and Igede in Ekiti Central; and Ikere, Igbara-odo, and Ilawe in Ekiti South. In Lagos State, the towns were Ikorodu, Ketu, and Owode in Lagos East; Ojoo, Egbeda, and Ikotun-egbe in Lagos West; and Ikeja, Ilupeju, and Agege in Lagos Central. In Ogun State, the towns were Ijebu Ode, Sagamu, and Ikenne in Ogun East; Abeokuta, Ewekoro, and Ifo in Ogun Central; and Ilaro, Ayetoro, and Sango-ota in Ogun West. In Ondo State, the towns were Ikare, Akungba, and Owo in Ondo North; Akure, Ita-Ogbolu, and Igbara-Oke in Ondo Central; and Ile-Oluji, Ore, and Okitipupa in Ondo South. In Osun State, the towns were Erin-Ijesha, Ilesha, and Ile-Ife in Osun East; Ede, Ikire, and Ejigbo in Osun West; and Osogbo, Ikirun, and Okuku in Osun Central. In Oyo State, the towns were Iseyin, Oyo, and Aawe in Oyo North; Egbeda, Akinyele, and Oluyole in Oyo Central; and Igboora, Apata, and Ido in Oyo South. Structured questionnaires were used to gather information from feed millers in these localities. The survey covered demographic characteristics of feed mill managers, feed mill distributions, operations, management, and constraints faced by the feed mills in the study area.

### Data Analysis

The data collected were analyzed using descriptive statistics tools such as frequency counts and simple percentages.

## 3. RESULTS AND DISCUSSION

Table 1 presents the socio-economic characteristics of the respondents. The majority were male: 87.3% in Ogun State, 85.0% in Lagos State, 81.8% in Osun State, 80.4% in Ondo State, 75.6% in Ekiti State, and 58.6% in Oyo State. Conversely, the proportion of female respondents was 41.4% in Oyo State, 24.4% in Ekiti State, 19.6% in Ondo State, 18.2% in Osun State, 15.0% in Lagos State, and 12.7% in Ogun State. Although both sexes were involved in feed milling operations, a higher proportion of men participated. This predominance of men may be attributed to their greater access to entrepreneurial resources. This finding is consistent with the studies of Folorunso and Bifarin (2009) and Okunlola (2020), which also reported a higher involvement of men in feed milling businesses in Ibadan and across Oyo State.

The majority of respondents were adults aged 41-50 years: 50.0% in Oyo State, 40.0% in Lagos State, and 38.2% in Ogun State. This age distribution suggests that most respondents are in their productive years, which likely contributes to their ability to manage the demanding aspects of the feed milling business and make effective economic decisions. Additionally, individuals in this age group are generally better risk-takers. Most respondents were married and had household sizes of 1-5, indicating that they likely receive family support in their business operations.

Table 1 also shows that 81.7% of respondents had tertiary education. Specifically, 81.7% of respondents in Oyo State, 61.8% in Ogun State, and 75.0% in Lagos State had attained this level of education. This high level of educational attainment may be attributed to the early exposure to education due to pre-independence regional government policies (Ademuyiwa *et al.*, 2014). The educational background of the respondents suggests they are well-equipped to adopt innovative strategies for improving their businesses.

Table 2 details the feed mill operations in the study area. It shows that a significant percentage of respondents had 11-15 years of experience in feed milling: 20.0% in Lagos State, 43.3% in Ogun State, and 10.0% in Oyo State. This level of experience likely enables them to navigate the complexities of feed mill operations effectively, generate sufficient income, and adopt new innovations to enhance production efficiency. Nwaru (2004) reported that the number of years spent in agricultural ventures indicates the practical knowledge they have acquired, enabling mastery of the intricacies of their enterprises.

The study further reveals that a significant proportion of respondents had trading as their primary occupation: 19.0% in Oyo State, 45.5% in Ogun State, and 50.0% in Lagos State.

Table 3 describes the management aspects of feed milling enterprises. According to Oladejo (2014), factors influencing the siting of feed mills in parts of the South West include poor feed quality on farms, unemployment, and investment opportunities. This observation aligns with factors such as the aggregation of livestock farms, infrastructure presence, availability of raw materials, and cheap land, which were noted in this study as influencing the siting of feed mills.

The study found that a majority of respondents—62.2% in Ekiti State, 58.3% in Lagos State, 56.9% in Oyo State, and 54.6% in Ogun State—started their feed milling ventures using personal savings. Others received financial assistance from family funds, commercial banks, and cooperatives. This reliance on personal savings suggests limited access to institutional credit, which may constrain their operational scope. Agricultural financing is a critical aspect of agriculture, which plays a vital role in determining the quantity and quality of inputs such as technology, materials, and labour used on farms. This aspect of agriculture is essential for ensuring that the necessary resources are available to optimize farm operations (Miller and Jones, 2010; Ellinger and Penson, 2014). Membership in feed mill associations may offer opportunities for government support in terms of financial and technical assistance.

Table 4 illustrates the processing practices of feed mills. The data indicate that most feed mills operate on a small scale: 62.2% in Ekiti State, 58.9% in Ondo State, 52.8% in Ogun State, 52.8% in Osun State, and 50.0% in Lagos State. Regarding production capacity, most feed millers produced between 1-10 tonnes of feed weekly: 60.0% in Ekiti State, 45.1% in Ondo State, 40.0% in Ogun State, 40.0% in Osun State, and 25.0% in Lagos State. This aligns with Ademuyiwa *et al.* (2014), who reported that 56% of feed mills in Southwestern Nigeria were small-scale businesses.

The study also found that respondents sourced raw materials from contract suppliers—55.2% in Oyo State, 53.4% in Lagos State, 43.6% in Ogun State, 43.6% in Osun State, and 39.2% in Ondo State—and local markets—48.8% in Ekiti State, 46.6% in Lagos State, 41.2% in Ondo State, 36.4% in Ogun State, and 36.4% in Osun State. This sourcing method allows for easier tracing of any issues with feedstuffs, as noted by Wilson (1990), who emphasized the importance of raw material sources in feed mill operations. The study further revealed that a majority of respondents—68.8% in Ekiti State, 60.8% in Ondo State, 55.2% in Oyo State, 54.6% in Osun State, 54.6% in Ogun State, and 50.0% in Lagos State—used locally fabricated machines. Odunsi *et al.* (2008) suggested that the government should support feed millers with technical and capacity-building assistance to reduce reliance on imported machinery.

Table 5 shows that most feed mills engaged in semi-modern production methods: 62.1% in Oyo State, 56.4% in Ogun State, 54.5% in Ondo State, 50.0% in Lagos State, 41.7% in Osun State, and 35.5% in Ekiti State. In contrast, some mills used modern methods: 20.7% in Oyo State, 18.0% in Osun State, 16.7% in Lagos State, 14.5% in Ogun State, 9.8% in Ondo State, and 4.5% in Ekiti State. Semi-modern methods combine manual and mechanized processes, while modern methods rely entirely on machinery. The reliance on manual labour in some mills may affect their production output.

The study found that all respondents relied on electricity from the national grid, supplemented by generators, for power. This choice is likely due to the lower cost of the national grid compared to other power sources. Table 6 presents constraints faced by feed mills, showing that most had a workforce of 1-10 people: 79.3% in Oyo State, 76.8% in Ekiti State, 62.8% in Ondo State, 45.0% in Lagos State, 38.2% in Ogun State, and 33.1% in Osun State. This is consistent with the National Council on Industry (2001) definition of a micro industry.

On methods adopted in recruitment of workers, respondents recruited their workers through direct contact, social media, employment agencies, and advertisements. In the study area, major constraints facing feed milling ventures included financial issues, with Ogun State (43.6%), Osun State (43.6%), Ekiti State (40.9%), Ondo State (36.3%), Lagos State (33.3%), and Oyo State (31.0%) reporting significant challenges. Electricity supply problems were most acute in Lagos State (51.7%), followed by Ondo State (46.1%), Osun State (45.5%), Ogun State (45.5%), Ekiti State (37.8%), and Oyo State (17.2%). Inaccessibility to raw materials was a concern in Oyo State (39.7%), while Ekiti State (13.4%), Ondo State (9.8%), Lagos State (6.7%), Ogun State (5.4%), and Osun State (5.4%) reported varying levels of difficulty. Labour problems were notably present in Lagos State (8.3%), Oyo State (6.9%), and Ekiti State (4.4%). Additionally, infrastructure issues were reported in Ekiti State (4.4%), Ondo State (3.9%), and Osun State (3.7%).

International Journal of Novel Research in Life Sciences

Vol. 11, Issue 4, pp: (32-39), Month: July - August 2024, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

Table 1: Socio-Economic Characteristics Distribution of Respondents (n=151)

| States                   | EKITI       | LAGOS       | OGUN       | ONDO       | OSUN       | OYO        | OVERALL MEAN |
|--------------------------|-------------|-------------|------------|------------|------------|------------|--------------|
| <b>Sample size</b>       | 45          | 60          | 55         | 51         | 55         | 58         |              |
| <b>Gender</b>            |             |             |            |            |            |            |              |
| Male                     | 34 (75.6%)  | 51 (85.0%)  | 48 (87.3%) | 41 (80.4%) | 45 (81.8%) | 34 (58.6%) | 78.1%        |
| Female                   | 11 (24.4%)  | 09 (15.0%)  | 07 (12.7%) | 10 (19.6%) | 10 (18.2%) | 24 (41.4%) | 21.9%        |
| <b>Age (years)</b>       |             |             |            |            |            |            |              |
| Under 20                 | --          | --          | --         | 01 (1.9%)  | --         | 08 (13.8%) | 2.8%         |
| 21-30                    | 11 (24.4%)  | 10 (16.7%)  | 11 (20.0%) | 09 (17.7%) | 10 (18.2%) | 04 (6.9%)  | 16.9%        |
| 31-40                    | 16 (35.6%)  | 16 (26.7%)  | 13 (23.6%) | 23 (45.1%) | 13 (23.6%) | 17 (29.3%) | 30.2%        |
| 41-50                    | 15 (33.4%)  | 24 (40.0%)  | 21 (38.2%) | 11 (21.6%) | 21 (38.2%) | 29 (50.0%) | 37.3%        |
| 51-60                    | 03 (6.60%)  | 10 (16.7%)  | 10 (18.2%) | 07 (13.7%) | 11 (20.0%) | --         | 12.7%        |
| <b>Marital status</b>    |             |             |            |            |            |            |              |
| Married                  | 36 (80.0%)  | 45 (75.0%)  | 49 (89.1%) | 46 (90.2%) | 44 (80.0%) | 45 (77.6%) | 81.8%        |
| Single                   | 09 (20.0%)  | 15 (25.0%)  | 06 (10.9%) | 05 (9.8%)  | 11 (20.0%) | 06 (10.3%) | 16.1%        |
| Separated                | --          | --          | --         | --         | --         | 07 (62.1%) | 2.2%         |
| <b>Household size</b>    |             |             |            |            |            |            |              |
| 1-5                      | 31 (68.99%) | 40 (66.70%) | 36 (65.5%) | 30 (58.8%) | 40 (72.2%) | 40 (69.0%) | 66.9%        |
| 6-10                     | 12 (26.6%)  | 15 (25.0%)  | 15 (27.3%) | 17 (33.3%) | 11 (20.8%) | 11 (19.0%) | 25.6%        |
| Above 10                 | 02 (4.5%)   | 05 (8.3%)   | 04 (7.2%)  | 04 (7.9%)  | 04 (7.0%)  | --         | 5.9%         |
| No response              | --          | --          | --         | --         | --         | 07 (12.1%) | 2.1%         |
| <b>Educational Level</b> |             |             |            |            |            |            |              |
| Primary school           | 05 (11.1%)  | --          | --         | 12 (23.5%) | --         | --         | 5.2%         |
| Secondary school         | 15 (33.4%)  | 15 (25.0%)  | 21 (36.2%) | 17 (33.3%) | 18 (32.7%) | 03 (5.20%) | 27.5%        |
| Tertiary education       | 25 (55.5%)  | 45 (75.0%)  | 34 (61.8%) | 22 (43.1%) | 37 (67.3%) | 47 (81.7%) | 64.8%        |
| Others                   | --          | --          | --         | --         | --         | 04 (6.9%)  | 1.2%         |
| No response              | --          | --          | --         | --         | --         | 04 (6.9%)  | 1.2%         |

Table 2: Distribution of Respondents Production Parameters (n=151)

| States                        | EKITI      | LAGOS      | OGUN       | ONDO       | OSUN       | OYO        | OVERALL MEAN |
|-------------------------------|------------|------------|------------|------------|------------|------------|--------------|
| <b>Sample size</b>            | 45         | 60         | 55         | 51         | 55         | 58         |              |
| <b>FeedMilling Experience</b> |            |            |            |            |            |            |              |
| Less than 5 years             | 07 (15.6%) | 12 (20.0%) | 11 (20.0%) | 09 (17.7%) | 09 (16.4%) | 04 (6.9%)  | 16.0%        |
| 6-10 years                    | 12 (26.6%) | 19 (31.7%) | 17 (30.0%) | 14 (27.5%) | 19 (34.5%) | 06 (10.3%) | 27.5%        |
| 11-15 years                   | 10 (22.2%) | 15 (25.0%) | 11 (20.0%) | 12 (23.5%) | 11 (20.0%) | 36 (62.1%) | 29.3%        |
| 16-20 years                   | 09 (20.0%) | 08 (13.3%) | 10 (18.2%) | 11 (21.5%) | 10 (18.2%) | 12 (20.7%) | 18.5%        |
| <b>Feed Milling Duration</b>  |            |            |            |            |            |            |              |
| Less than 5 years             | 07 (15.5%) | 10 (16.6%) | 12 (21.3%) | 11 (21.6%) | 12 (21.8%) | 08 (13.8%) | 18.5%        |
| 6-10 years                    | 10 (22.2%) | 13 (31.7%) | 03 (16.4%) | 07 (13.7%) | 09 (16.4%) | 07 (12.1%) | 15.1%        |
| 11-15 years                   | 15 (33.4%) | 12 (20.0%) | 24 (43.6%) | 22 (43.1%) | 24 (43.6%) | 32 (55.2%) | 39.8%        |
| 16-20 years                   | 07 (15.5%) | 10 (16.7%) | 05 (9.10%) | 05 (9.8%)  | 05 (9.10%) | 11 (19.0%) | 13.3%        |
| Above 20 years                | 06 (13.4%) | 03 (15.0%) | 05 (9.10%) | 06 (11.8%) | 05 (9.10%) | --         | 7.7%         |
| <b>Primary occupation</b>     |            |            |            |            |            |            |              |
| Farming                       | 07 (15.5%) | --         | 12 (21.8%) | 11 (21.6%) | 12 (21.8%) | 21 (36.2%) | 19.4%        |
| Civil servant                 | 18 (40.0%) | 15 (25.0%) | 10 (18.2%) | 13 (25.5%) | 10 (18.2%) | --         | 20.4%        |
| Trading                       | 15 (33.4%) | 30 (50.0%) | 25 (45.5%) | 22 (43.1%) | 25 (45.5%) | 11 (19.0%) | 39.5%        |
| Artisan                       | 05 (12.1%) | 15 (25.0%) | 08 (14.5%) | 08 (14.5%) | 08 (14.5%) | 04 (6.9%)  | 13.9%        |
| Others                        | --         | --         | --         | --         | --         | 11 (19.0%) | 3.4%         |
| No response                   | --         | --         | --         | --         | --         | 11 (19.0%) | 3.4%         |
| <b>Reasons for Milling</b>    |            |            |            |            |            |            |              |
| Poor feed millers grand       | 06 (13.4%) | --         | 12 (21.8%) | 08 (15.7%) | 12 (21.8%) | 09 (15.5%) | 14.5%        |
| Unemployment factor           | 21 (46.6%) | 22 (36.7%) | 18 (32.7%) | 15 (29.4%) | 16 (32.7%) | 15 (25.9%) | 33.0%        |
| Investment opportunity        | 18 (40.0%) | 38 (63.3%) | 25 (45.5%) | 28 (54.9%) | 25 (45.5%) | 14 (24.1%) | 45.7%        |
| Other factors                 | --         | --         | --         | --         | --         | 16 (27.6%) | 4.9%         |
| Other response                | --         | --         | --         | --         | --         | 04 (6.9%)  | 1.2%         |

Source: Field Survey, 2022

International Journal of Novel Research in Life Sciences

Vol. 11, Issue 4, pp: (32-39), Month: July - August 2024, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

Table 3: Productive Resources Utilized by Feed Mills (n=151)

| States                          | EKITI      | LAGOS      | OGUN       | ONDO       | OSUN       | OYO         | OVERALL MEAN |
|---------------------------------|------------|------------|------------|------------|------------|-------------|--------------|
| <b>Sample size</b>              | 45         | 60         | 55         | 51         | 55         | 58          |              |
| <b>Siting of feed-mill:</b>     |            |            |            |            |            |             |              |
| Aggregation of Livestock farms  | 12 (26.6%) | 25 (41.7%) | 27 (49.1%) | 25 (49.1%) | 27 (49.1%) | 11 (19.0%)  | 39.2%        |
| Presence of Infrastructures     | 06 (13.4%) | 09 (15.0%) | 07 (12.1%) | 09 (17.6%) | 07 (12.5%) | 07 (12.1%)  | 13.9%        |
| Availability of Raw Materials   | 22 (48.9%) | 22 (26.7%) | 12 (21.8%) | 09 (17.6%) | 12 (21.8%) | 12 (20.7%)  | 27.5%        |
| Cheap Land                      | 05 (11.1%) | 04 (6.6%)  | 03 (16.4%) | 08 (15.7%) | 09 (16.4%) | 08 (13.8%)  | 11.4%        |
| Other Factors                   | --         | --         | --         | --         | --         | 16 (27.6%)  | 4.9%         |
| No Response                     | --         | --         | --         | --         | --         | 04 (6.9%)   | 1.2%         |
| <b>Sources of Finance:</b>      |            |            |            |            |            |             |              |
| Personal Savings                | 28 (62.2%) | 35 (58.3%) | 30 (54.6%) | 22 (43.1%) | 30 (54.6%) | 33 (56.9%)  | 54.9%        |
| Family Fund                     | 08 (17.8%) | 04 (6.7%)  | 09 (16.4%) | 07 (13.7%) | 09 (16.4%) | 14 (24.1%)  | 15.7%        |
| Grants from Government          | --         | --         | --         | --         | --         | --          | --           |
| Grants from NGO's               | --         | --         | --         | --         | --         | --          | --           |
| Commercial Bank Loans           | --         | 06 (10.0%) | 06 (10.9%) | 06 (11.8%) | 06 (10.9%) | 08 (13.8%)  | 9.9%         |
| Agric Bank Loan                 | --         | --         | --         | --         | --         | --          | --           |
| Cooperative Loan                | 09 (20.0%) | 15 (25.0%) | 10 (18.1%) | 16 (31.4%) | 10 (18.1%) | 03 (5.2%)   | 19.4%        |
| <b>Support from Government</b>  |            |            |            |            |            |             |              |
| Yes                             | --         | --         | --         | --         | --         | 06 (10.3%)  | 1.9%         |
| No                              | 45 (100%)  | 60 (100%)  | 55 (100%)  | 51 (100%)  | 55 (100%)  | 52 (89.7%)  | 98.1%        |
| <b>Feed millers Association</b> |            |            |            |            |            |             |              |
| Yes                             | 45 (100%)  | 60 (100%)  | 55 (100%)  | 51 (100%)  | 55 (100%)  | 33 (56.90%) | 92.3%        |
| No                              | --         | --         | --         | --         | --         | 21 (36.2%)  | 6.5%         |
| No response                     | --         | --         | --         | --         | --         | 04 (6.9%)   | 1.2%         |
| <b>Major Customers</b>          |            |            |            |            |            |             |              |
| Feed-millers own farm           | 07 (15.6%) | 10 (16.7%) | 12 (21.8%) | 09 (17.6%) | 12 (21.8%) | 25 (43.1%)  | 23.1%        |
| Local Livestock farms           | 27 (60.0%) | 40 (66.6%) | 34 (61.8%) | 34 (61.8%) | 34 (61.8%) | 21 (36.2%)  | 58.6%        |
| Commercial feed for the public  | 11 (24.4%) | 10 (16.7%) | 03 (16.4%) | 03 (16.4%) | 09 (16.4%) | 12 (20.7%)  | 16.4%        |

Source: Field Survey, 2022

Table 4: Processing Practices of Feed Mills in the Study Area (n=151)

| States                         | EKITI      | LAGOS      | OGUN       | ONDO       | OSUN       | OYO        | OVERALL MEAN |
|--------------------------------|------------|------------|------------|------------|------------|------------|--------------|
| <b>Sample size</b>             | 45         | 60         | 55         | 51         | 55         | 58         |              |
| <b>Scale of Operation:</b>     |            |            |            |            |            |            |              |
| Large Scale                    | 02 (4.5%)  | 10 (16.7%) | 06 (10.9%) | 01 (1.9%)  | 06 (10.9%) | 04 (6.9%)  | 8.9%         |
| Medium Scale                   | 15 (33.3%) | 20 (33.3%) | 20 (36.3%) | 20 (39.2%) | 20 (36.3%) | 38 (65.5%) | 41.0%        |
| Small Scale                    | 28 (62.2%) | 30 (50.0%) | 29 (52.8%) | 30 (58.9%) | 29 (52.8%) | 16 (27.6%) | 50%          |
| <b>Production Capacity:</b>    |            |            |            |            |            |            |              |
| Less Than One Tonne            | 27 (60.0%) | 15 (25.0%) | 22 (40.0%) | 23 (45.1%) | 22 (40.0%) | 07 (12.1%) | 35.8%        |
| 1-10 Tonnes                    | 14 (31.2%) | 25 (41.7%) | 17 (30.9%) | 16 (31.4%) | 17 (30.9%) | 35 (60.3%) | 38.3%        |
| 10 Tonnes                      | 04 (8.8%)  | 20 (33.3%) | 16 (29.1%) | 12 (23.5%) | 16 (29.1%) | 16 (27.1%) | 25.9%        |
| <b>Source of Raw Materials</b> |            |            |            |            |            |            |              |
| Contract Supplies              | 17 (37.8%) | 32 (53.4%) | 24 (43.6%) | 20 (39.2%) | 24 (43.6%) | 32 (55.3%) | 45.9%        |
| Local Markets                  | 22 (48.8%) | 28 (46.6%) | 20 (26.4%) | 21 (41.2%) | 20 (36.4%) | 19 (32.8%) | 40.1%        |
| Feed Miller's own farm         | 06 (13.4%) | --         | 11 (20.0%) | 10 (19.6%) | 11 (20.0%) | 04 (6.9%)  | 12.9%        |
| <b>Source of Equipment</b>     |            |            |            |            |            |            |              |
| Imported                       | 08 (17.8%) | 20 (33.3%) | 12 (21.8%) | 10 (19.6%) | 12 (21.8%) | 11 (19.0%) | 22.5%        |
| Local Fabricators              | 31 (68.8%) | 30 (50.0%) | 30 (54.6%) | 31 (60.8%) | 30 (54.6%) | 32 (55.2%) | 56.8%        |
| Through Improvisations         | 06 (13.4%) | 04 (6.7%)  | 10 (18.2%) | 10 (19.6%) | 10 (18.2%) | 12 (20.7%) | 16.0%        |
| Others                         | --         | 06 (10.0%) | 03 (5.4%)  | --         | 03 (5.4%)  | 01 (5.2%)  | 4.0%         |
| <b>Hammer Mill Present</b>     |            |            |            |            |            |            |              |
| Yes                            | 45 (100%)  | 60 (100%)  | 55 (100%)  | 51 (100%)  | 55 (100%)  | 40 (69.0%) | 94.4%        |
| No                             | --         | --         | --         | --         | --         | 11 (19.0%) | 3.4%         |
| No Response                    | --         | --         | --         | --         | --         | 07 (12.1%) | 2.2%         |
| <b>Type of Hammer Mill</b>     |            |            |            |            |            |            |              |
| Giant Type                     | 02 (4.5%)  | --         | --         | 02 (3.9%)  | 18 (32.8%) | 22 (37.9%) | 13.6%        |
| Medium Sized                   | 17 (37.8%) | --         | --         | 22 (43.1%) | 24 (43.6%) | 29 (50.0%) | 28.4%        |
| Small Sized                    | 26 (57.7%) | --         | --         | 27 (52.9%) | 13 (23.6%) | 04 (6.9%)  | 21.6%        |
| No Response                    | --         | --         | --         | --         | --         | 03 (5.2%)  | 0.9%         |

Source: Field Survey, 2022

Table 5: Feed Mill Operation in the Study Area (n=151)

| States                      | EKITI      | LAGOS      | OGUN       | ONDO       | OSUN       | OYO        | OVERALL MEAN |
|-----------------------------|------------|------------|------------|------------|------------|------------|--------------|
| <b>Sample size</b>          | 45         | 60         | 55         | 51         | 55         | 58         |              |
| <b>Possession of Mixer:</b> |            |            |            |            |            |            |              |
| Yes                         | 45 (100%)  | 60 (100%)  | 55 (100%)  | 51 (100%)  | 55 (100%)  | 54 (93.1%) | 98.8%        |
| No                          | --         | --         | --         | --         | --         | 04 (6.9%)  | 1.2%         |
| <b>Type of Mixer:</b>       |            |            |            |            |            |            |              |
| Giant Type                  | 02 (4.5%)  | --         | --         | 16 (29.1%) | 20 (33.3%) | 08 (13.8%) | 13.6%        |
| Medium Type                 | 16 (35.5%) | --         | --         | 21 (34.5%) | 25 (41.7%) | 42 (72.4%) | 32.1%        |
| Small Type                  | 27 (60.0%) | --         | --         | 14 (25.4%) | 15 (25.0%) | 04 (6.9%)  | 18.5%        |
| No Response                 | --         | --         | --         | --         | --         | 04 (6.9%)  | 1.2%         |
| <b>Other Equipment:</b>     |            |            |            |            |            |            |              |
| Pelletizer                  | --         | 05 (8.3%)  | 03 (5.4%)  | 05 (9.8%)  | 03 (5.4%)  | 12 (20.7%) | 9.3%         |
| Dryer                       | --         | 05 (8.3%)  | 02 (3.6%)  | 01 (1.9%)  | 02 (3.6%)  | 19 (32.8%) | 8.9%         |
| Sheller                     | 02 (4.5%)  | 05 (8.3%)  | 03 (5.4%)  | 05 (9.8%)  | 03 (5.4%)  | 17 (29.3%) | 10.8%        |
| Weighing Machine            | 39 (86.6%) | 03 (5.0%)  | 45 (81.8%) | 37 (72.5%) | 45 (81.8%) | 07 (12.1%) | 54.3%        |
| No Response                 | 04 (8.90%) | 03 (5.0%)  | 02 (3.6%)  | 03 (5.9%)  | 02 (3.6%)  | 07 (12.1%) | 6.5%         |
| <b>Level of Automation:</b> |            |            |            |            |            |            |              |
| Modern                      | 02 (4.5%)  | 10 (16.7%) | 08 (14.5%) | 05 (9.8%)  | 10 (18.0%) | 12 (20.7%) | 14.5%        |
| Semi-modern                 | 16 (35.5%) | 30 (50.0%) | 31 (56.4%) | 30 (54.5%) | 25 (41.7%) | 36 (62.1%) | 51.9%        |
| Not Automated               | 27 (60.0%) | 20 (33.3%) | 16 (29.1%) | 16 (29.1%) | 20 (33.3%) | 10 (17.2%) | 33.6%        |
| <b>Source of Power:</b>     |            |            |            |            |            |            |              |
| National grid               | 29 (64.5%) | 15 (25.0%) | 21 (38.2%) | 39 (70.9%) | 45 (75.0%) | 19 (32.8%) | 51.9%        |
| Electric generator          | 16 (35.5%) | 45 (75.0%) | 34 (61.8%) | 16 (29.1%) | 10 (18.0%) | 36 (62.1%) | 48.5%        |
| Solar Power                 | --         | --         | --         | --         | --         | --         | --           |
| No Power Supply             | --         | --         | --         | --         | --         | --         | --           |
| No Response                 | --         | --         | --         | --         | --         | 03 (5.2%)  | 0.9%         |

Source: Field Survey, 2022

Table 6: Constraints to Feed Mill Operation in the Study Area (n=151)

| States                            | EKITI      | LAGOS      | OGUN       | ONDO       | OSUN       | OYO        | OVERALL MEAN |
|-----------------------------------|------------|------------|------------|------------|------------|------------|--------------|
| <b>Sample size</b>                | 45         | 60         | 55         | 51         | 55         | 58         |              |
| <b>Staff Strength:</b>            |            |            |            |            |            |            |              |
| 1-10                              | 35 (76.8%) | 27 (45%)   | 21 (38.2%) | 32 (62.8%) | 19 (33.1%) | 46 (79.3%) | 55.5%        |
| 11-15                             | 05 (11.1%) | 14 (23.3%) | 13 (34.5%) | 09 (17.6%) | 12 (21.8%) | --         | 16.4%        |
| 16-20                             | 03 (6.7%)  | 15 (25.0%) | 10 (18.2%) | 06 (11.8%) | 19 (34.5%) | 04 (6.9%)  | 17.6%        |
| Above 20                          | 02 (4.4%)  | 04 (6.7%)  | 05 (9.1%)  | 04 (7.8%)  | 10 (18.2%) | 08 (13.8%) | 10.2%        |
| <b>Sourcing for the Staff:</b>    |            |            |            |            |            |            |              |
| Through Advertisement             | --         | 17 (28.3%) | 07 (12.7%) | 02 (12.7%) | 17 (28.3%) | 04 (6.9%)  | 14.5%        |
| Employment Agencies               | --         | 10 (16.7%) | 12 (21.8%) | 12 (21.8%) | 10 (16.7%) | 08 (13.8%) | 16.0%        |
| Social Media                      | --         | 15 (25.0%) | 05 (9.1%)  | 02 (3.9%)  | 07 (12.7%) | --         | 8.9%         |
| Direct Contact with the Applicant | 45 (100%)  | 18 (30.0%) | 31 (56.4%) | 14 (27.5%) | 12 (21.8%) | 39 (67.2%) | 16.4%        |
| Other Means                       | --         | --         | --         | 09 (17.6%) | 05 (9.1%)  | --         | 4.3%         |
| No Response                       | --         | --         | --         | 26 (50.9%) | 31 (56.4%) | 07 (12.1%) | 19.8%        |
| <b>Major Challenges:</b>          |            |            |            |            |            |            |              |
| Finance                           | 18 (40.0%) | 20 (33.3%) | 24 (43.6%) | 19 (36.3%) | 24 (43.6%) | 18 (31.0%) | 37.9%        |
| Electricity Supply                | 17 (37.8%) | 31 (51.7%) | 25 (45.5%) | 24 (46.1%) | 25 (45.5%) | 10 (17.2%) | 40.7%        |
| Raw Materials                     | 56 (13.4%) | 04 (6.7%)  | 03 (5.4%)  | 05 (9.8%)  | 03 (5.4%)  | 23 (39.7%) | 13.6%        |
| Labour                            | 02 (4.4%)  | 05 (8.3%)  | 01 (1.8%)  | 01 (1.9%)  | 01 (1.8%)  | 04 (6.9%)  | 4.3%         |
| Market                            | --         | --         | --         | --         | --         | --         | --           |
| Infrastructure                    | 02 (4.4%)  | --         | --         | 02 (3.9%)  | 02 (3.7%)  | --         | 13.6%        |
| Others                            | --         | --         | 02 (3.7%)  | --         | --         | 03 (5.2%)  | 1.5%         |

Source: Field Survey, 2022

#### 4. CONCLUSION

This study provides a comprehensive overview of the feed milling industry in the South Western States of Nigeria, highlighting its socio-economic characteristics, operational practices, and constraints. Predominantly managed by educated men in their productive years, the feed mills primarily operate on a small scale. Challenges include high production costs, limited access to credit, and reliance on manual and semi-modern methods. Significant barriers such as financial constraints and electricity supply issues hinder growth. The study underscores the need for government support, strategic initiatives, and investments to address these challenges and unlock the industry's full potential.

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