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## **TRANSITIONING FROM DOMESTIC TO INDUSTRIAL PALM OIL PRODUCTION: ANALYSIS OF STAKEHOLDERS' PERCEPTION IN NIGERIA**

**Okorie Victor\*, Fadodun Abiodun**

Department of Agricultural Extension and Rural Development,  
Obafemi Awolowo University, Ile-Ife, Nigeria

**Owolarafe Oseni, Ogunsina Babatunde**

Department of Agricultural and Environmental Engineering,  
Obafemi Awolowo University, Ile-Ife, Nigeria

**Obayopo Sirajudeen**

Department of Mechanical Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria

**Morakinyo Tunde**

Department of Food Science and Technology, Obafemi Awolowo University, Ile-Ife, Nigeria

**Binuyo Gbonjubola**

African Institute for Science, Policy and Innovation, Obafemi Awolowo University,  
Ile-Ife, Nigeria

**Olaoye Isaac**

Department of Agricultural and Civil Engineering, First Technical University, Ibadan, Nigeria

**Badmus Ganiyu**

Nigerian Institute for Oil Palm Research, Benin, Edo State, Nigeria

\*E-mail: [vicokoria@yahoo.com](mailto:vicokoria@yahoo.com)

### **ABSTRACT**

This study investigated stakeholders' perspectives on the viability of transitioning from domestic to industrial palm oil production in Nigeria. The analysis encompassed the views of key players in the palm oil value chain, including oil palm farmers, processors, and fabricators. A multi-stage sampling approach was used to select respondents from six states – Akwa Ibom, Edo, Imo, Ondo, Osun, and Kogi – based on their significance in the oil palm value chain. Farmers exhibited a positive inclination towards producing palm fruit for Special Palm Oil (SPO), emphasizing the economic benefits such as increased employment and contributions to local and national economies. However, challenges like cost implications, operational difficulties, and the perception that SPO is exclusive to large commercial farmers emerged as potential barriers. Processors showed optimism about SPO production, highlighting its potential for employment creation and economic growth. Yet, skepticism lingered, particularly regarding formal literacy requirements and economic viability compared to Technical Palm Oil (TPO). Concerns about cultural compatibility and marketing challenges were also raised. Fabricators expressed favorable perceptions of technologies related to SPO production, emphasizing the employment and economic opportunities linked with fabricating equipment for SPO. However, concerns about machine demand and potential marketing difficulties surfaced. The study underscores the importance of understanding and addressing stakeholders' perceptions for a successful transition. It suggests that heightened awareness, coupled with an emphasis on the economic and cultural benefits of SPO production, can facilitate a smooth shift from domestic to industrial palm oil production in Nigeria.

### **KEY WORDS**

Industrial production, special palm oil, perception, domestic production and supply chain.



The Nigerian oil palm industry is a vital component of the nation's agricultural landscape, endowed with expansive arable land and favorable climatic conditions [1]. In recent years, however, there has been a discernible gap between the demand and supply of palm oil and its derivatives. The Federal Ministry of Agriculture and Rural Development (FMARD) reports that while Nigeria's demand for palm oil hovers around three million metric tonnes, the domestic production is only approximately 1.02 million metric tonnes, predominantly in the form of Technical Palm Oil (TPO) used for domestic cooking. The limited availability of palm oil for industrial use has sparked intense competition for TPO, impeding local households' access to this essential commodity and subsequently affecting their intake of vital nutrients such as Vitamins A and E [1]. This makes Nigeria spends about \$500 million annually on importing Special Palm Oil (SPO), a key component in industrial applications [1]. Re-evaluation of the oil palm industry, with a growing consensus among scholars and policymakers on the need to transition from predominantly domestic palm oil production to a more industrial-oriented approach. This transition is not only economically imperative but also crucial for addressing nutritional deficiencies and enhancing the overall sustainability of the oil palm sector.

Amidst this context, the research problem arises from the imperative to bridge the gap between domestic and industrial palm oil production in Nigeria. The core issue lies in the perception and utilization of technologies among small-scale oil palm fruit processors, a critical link in the production chain. While previous studies have introduced various technologies to improve traditional processing methods [2], the key challenge persists – the technologies employed by small-scale processors are not sufficiently geared toward meeting the specific demands of industrial palm oil production. This research seeks to delve deeper into the stakeholders' perceptions of this technology utilization gap and its ramifications. Understanding and addressing the perceptions and challenges faced by stakeholders will be pivotal in devising sustainable strategies for enhancing the utilization of technologies that align with the industrial requirements of the oil palm sector in Nigeria.

In the intricate web of Nigeria's oil palm industry, three pivotal stakeholders will take center stage in our study: the oil palm farmers, the oil palm fruit processors, and the oil palm fruits technology fabricators. Unveiling their perception in shaping the technological landscape for the production of SPO which is the industrial output of will be key to understanding the dynamics of the oil palm industry's journey from domesticity to industrial prominence.

## **METHODS OF RESEARCH**

Multi-stage sampling procedure was used to select the respondents. At the first stage, purposive sampling technique was used to select the following 6 states based on the population of oil palm value chain actors and palm oil production volume: Akwa Ibom, Edo, Imo, Ondo, Osun and Kogi. At the second stage, 20% of the total Local Government Area (LGA) in each selected state was purposively selected based on the concentration of processing centers, making 29 LGAs in all. At the third stage, Slovin's formula was used to calculate the sample size to be 299 processors, 350 oil palm farmers and 60 fabricators. A structured interview schedule was used to collect quantitative data while Key Informant Interviews guide (KII) was used to collect qualitative data. Collected Data were analyzed with percentage, frequency, mean and standard deviation. Inferences were drawn with correlation, regression analyses and ANOVA.

Perception was measured by making the respondents to choose their preferred response to perceptual statements from Strongly Agreed, Agreed, Undecided, Disagreed and Strongly Disagreed. A list of twenty (20) perception statements that relate to production of special palm oil was generated for the three categories of stakeholders and measured on a 5 point Likert-type scale. The respondents' perception was indicated and measured as Strongly Agree (5), Agree (4) Undecided (3), Disagree (2), and strongly disagree for a positive statement while the negative statements were scored in a reverse manner. The total obtainable maximum score for every respondent was hundred (100) while minimum was



twenty (20). Equal interval was used to categorize respondents' perception into favorable, indifference and unfavorable perception about special palm oil. The first cut-out point was  $80/3+20=46.67$ , therefore, percentage of respondents with scores from 46.67 and below was categorized as respondents with unfavorable perception about SPO. The same way, respondents with scores between 46.67 and 73.34 were categorized as those with indifferent perception about SPO while those with 73.35 and above were categorized as those with favorable perception about SPO for all the categories of respondents.

The mean age of the oil palm farmers, processors and fabricators were  $47.10\pm 12.53$ ,  $44.72\pm 14.25$  and  $44.15\pm 10.691$ , respectively. This implies that key stakeholders in oil palm value chain in Nigeria are still young as [3] also found out. The results are also in agreement with that of [4] which indicated that the mean age of main actors in oil palm value chain especially the processors in Ondo state was 46.8 years but misaligned with assertion of [5] that oil palm processors were aged. On the whole, the findings imply that the respondents are still within the active age bracket when positive perception about industrial oil palm is expected to be at peak [6].

Majority (86.0 %) of the oil palm farmers were male while 14.0 percent were female, 65.9 percent of the processors were male and 34.1 percent were female whereas, all (100%) the fabricators were male. This report is different from those of [7] and [8] that there are more women in oil palm processing due to limited mechanization of the sector. This dissonance maybe explained observed from field that not all persons who owned processing center work as processors; some hire people to render the service while some women use the service of the processing centers. This study focused on the real owners of the processing centers, hence the difference in reports. Unlike the finding of [9] that processing technology are only owned by men in Osun state, this finding reveals that women also own oil palm processing technologies in Nigeria. However, the finding does not completely negate [9]'s claim about gender inequality concerning the ownership of processing technologies in the sector. Rather, it reveals that the gap is getting narrower. Besides, the finding from this study covers the entire country meanwhile, [9] reported only for Osun state.

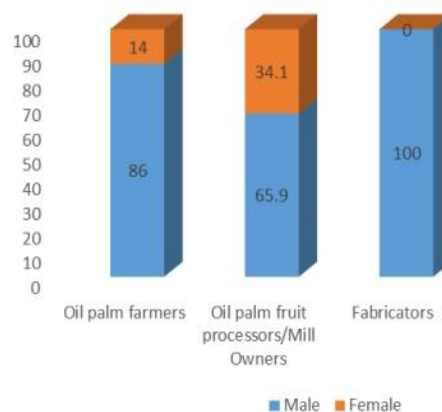


Figure 1 – Distribution of respondents by gender (Source: Field survey, 2023)

All of the stakeholders sampled for this study were members of different organizations like the Plantation Owners' Forum for oil palm farmers in each selected states. Their level of participation in form of position was considered. For the farmers group, 24.9 percent were ordinary members of the association while only 7.7 percent and 20.6 percent were committee and executive members, respectively. Among the processors, 31.1 percent were ordinary members, 5.0 percent were committee leader and 19.1 percent of them were executive members. Also, many (66.7%) of the fabricators were ordinary members of their association while 6.6 percent were committee members and the remaining 26.7 percent were members of the executive. Membership of associations is known to be associated with perception of an individual. The significance of membership of organisations and associations is the facilitating opportunities for information exchange and networking [10] which influence



perception. It provides platform for the utilisation of group methods in pushing agricultural extension message.

The oil palm farmers, processors and fabricators with no formal education were 14.0 percent, 12.4 percent, and 8.3 percent, respectively. However, those who had their first school leaving certificate included 27.4 percent of the farmers, 31.4 percent of the processors and 30.0 percent of the fabricators. The secondary school certificate holders comprised of 38.9 percent oil palm framers, 38.5 percent of processors and 43.3 percent of fabricators. Also, 5.4 percent of the farmers, 7.0 percent of the processors and 8.3 percent of the fabricators had ordinary National Diploma. However, 13.2 percent of the farmers, 9.4 percent of the processors and 5.0 percent of the fabricators had higher National Diploma or first university degree. Interestingly, it was recorded that 1.1 percent of the farmers, 1.0 percent of the processors and 3.3 percent of the fabricators had master's degree while 0.3 percent of processors and 0.7 percent of the fabricators had Ph.D.

It can be seen from the findings that relatively; the oil palm stakeholders have fair formal education compared to some other agricultural value chain actors. This finding disagrees with previous reports by [5] and [11] that there is very low formal education among oil palm value chain actors especially the processors in Nigeria and the report concluded that this could be a limiting factor that affects their ability to adopt and utilize improved palm oil extracting techniques and facilities. This finding records an improvement in the educational status of the actors especially the processors, hence, there is high expectation and tendency of adopting and utilising improved processing technology.

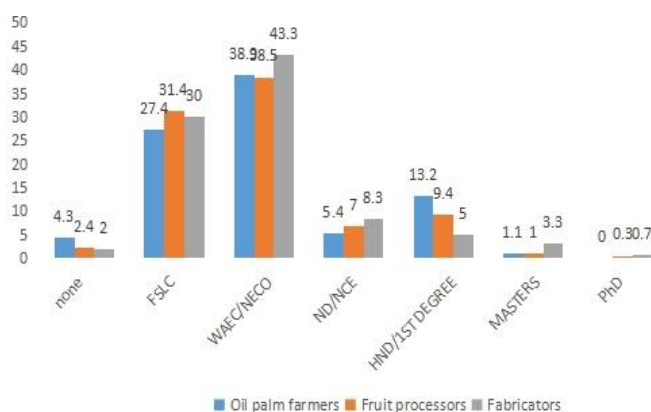


Figure 2 – Distribution of respondents by highest level of formal education  
 (Source: Field survey, 2023)

Although, majority (77.7%) of the oil palm farmers primarily are crop farmers, few (4.6%) were also oil palm fruit processors who have processing facilities and 4.6 percent were also fabricators who also sell oil palm fruits processing technology. Few (3.1%) of the oil palm farmers were also civil servant while 10.3 percent were involved in trading. Among the processors, about 37.1 percent were also into farming especially oil palm while 54.2 percent of them focus on oil palm fruit processing only. Very few (2.3%) were also civil servant and 5.4 percent had trading as their secondary occupation. For the fabricators' category, almost all (88.3%) focused only in fabrication of technology while just few (8.3% and 3.3%) diversified into farming and civil service, respectively. This finding reveals that some of the processors also have oil palm plantations; hence, they had access to constant supply of fruits though not in sufficient quantity. Also, most stakeholders interviewed were not solely involved in a singular activity in the chain. This is in line with the findings of [12] and [13] that an actor can be involved in more than one activity in the value chain although some activities are gender-specific. Additionally, multiple occupations may be a surviving strategy given that oil palm and palm oil value chain is seasonal.

This challenge of peak and off season is one factor that is affecting the productivity of oil palm farmers, hence the supply of fruits for industrial production of SPO maybe in



adequate. This challenge can be tackled if oil palm plantation can be established across the country as it was done in countries like Malaysia and Indonesia [14].

The mean income for oil palm farmers, processors and fabricators were ₦1,181,631.69 ± ₦168,332.92, ₦915,779.27 ± ₦123,821.71, and ₦2,285,733.33 ± ₦239,373.98. This report is very different from that of previous studies like [15], [16] and [13] which gave a range of annual income of oil palm farmers and processors less than ₦500, 000. The disparity may be because this particular study focused on the owners of processing centers not the operators and some of the processors have more than one milling center. Also, some of the farmers interviewed had processing centers making their income to be more robust. For the fabricators, some of them fabricate and sell more than oil palm fruit processing technologies. The implication of this finding is that relatively, farmers had fair income needed to produce required palm fruits for the production of SPO.

Among the farmers, few (14.3%) had travelled outside their community but within their local government area for business purpose in the past 5 years while 22.9 percent travelled outside their local government area of operation within their state. Many (62.8%) of the farmers have travelled outside the state of their operation. The results for the processors indicated that majority (70.3%) travelled outside their local government area but within their states while 19.7 percent had gone outside their state of operation and 0.3 percent had gone outside the country for business purpose. Only 1.7 percent of the fabricators had not gone outside their local government of operation while 33.3% had travelled outside their local government of operation in the past five years. Also, 63.3 percent indicated that they had travelled outside their states in the past 5 years. Only 1.7 percent of the fabricators had gone outside the country in the past 5 years for business purpose. The findings indicated that the oil palm industry stakeholders exhibited a significant degree of mobility, which might potentially have advantageous implications on their perception and their operations. It is expected that there is possibility of increased awareness about industrial production of palm oil from external sources. Essentially, there might be influx of ideas from other areas about improved processing and marketing practices and it is probable that the entrants come with technologically informed strategic production activities usually facilitated by the degree of their exposure to information outside the community which the perpetual residents may not be exposed to. Furthermore, the oil palm value chain extends beyond the confinement of their respective communities, external orientation may therefore, enable the respondents have access to formation of a larger value chain. This view is in line with [13]'s claim that external orientation improves the perception of user about innovation by influencing an individual to take decisions beyond the confinement of his/her location.

Out of the positive perceptual statement provided for the farmers about industrial production of palm oil, production of palm fruit for processing into SPO creates more employment (mean = 4.74) ranked highest, followed by 'production of palm fruits for the processing of SPO will boost community economy' (mean = 4.61), 'availability of credit facility will make production of palm fruit for processing SPO possible' (mean = 4.42), production of palm fruits for SPO will boost economy at national level (mean = 4.29), benefits of SPO are enough motivation for me to be trained on how to produce oil palm for its production (mean = 4.19). Moreover, availability of extension service delivery would make production of palm fruits for SPO possible (mean = 3.63) ranked 6th, 'Production of oil palm fruits for processing into SPO is compatible with extant culture' (mean = 3.58) followed, 'Cooperative farming will make production of oil palm fruits for processing into SPO easier' (mean = 2.28), production of oil palm fruits for processing into SPO is more economical than processing into technical palm oil (mean = 2.25) and 'Production of oil palm fruits for processing into SPO helps in re-establishment of plantation' (mean = 1.44) ranked 10th. The high ranking of economic consideration shows that the farmers had entrepreneurial mindset. This claim stands at variance with the modernist view of small-holder farmers [17]. The cultural compatibility of processing palm fruits into SPO is an indicator that the farmers may be open to profitable and relevant innovation in the oil palm value chain [18].

Comparing the perceptual grand mean score of 3.54 each of the individual mean score of the positive statements, the result shows that oil palm farmers had favorable



perception towards the following statements: production of palm fruit for processing into SPO creates more employment, production of palm fruits for the processing of SPO will boost community economy, availability of credit facility will make production of palm fruit for processing SPO possible, production of palm fruits for SPO will boost economy at national level, benefits of SPO are enough motivation for me to be trained on how to produce oil palm for its production, availability of extension service delivery will make production of palm fruits for SPO possible, production of oil palm fruits for processing into SPO is compatible with extant culture. However, oil palm farmers had unfavorable perception towards the following positive perceptual statements: cooperative farming will make production of oil palm fruits for processing into SPO easier; production of oil palm fruits for processing into SPO is more economical than processing into technical palm oil and production of oil palm fruits for processing into SPO helps in re-establishment of plantation. The implication of this result is that all the positive perceptual statements with mean score above the grand mean score are statement that could favor the transition from domestic to industrial production of palm oil.

Table 1 – Distribution of oil palm farmers by responses to positive perception statements about special palm oil

Positive Perceptual Statements	Mean	S/D
1. Production of oil palm fruits for processing into SPO will create more employment	4.74	1.06
2. Production of oil palm fruit for processing into SPO will boost economy at micro level that is community level	4.61	0.95
3. Availability of credit facility will make production of oil palm fruits for processing into SPO possible	4.42	0.78
4. Production of oil palm fruits for processing into SPO will boost economy at macro level that is national level	4.29	0.67
5. Benefits of SPO are enough motivation for me to be trained on how to produce the oil palm fruit for processing into the oil.	4.19	0.58
6. Availability of extension service delivery will make production of oil palm fruits for processing into SPO possible	3.63	0.08
7. Production of oil palm fruits for processing into SPO is compatible with extant culture	3.58	0.14
8. Cooperative farming will make production of oil palm fruits for processing into SPO easier	2.28	1.12
9. Production of oil palm fruits for processing into SPO is more economical than processing into technical palm oil	2.25	1.15
10. Production of oil palm fruits for processing into SPO requires re-establishment of plantation	1.44	1.86

Source: Field Survey, 2023. Note: Grand mean score= 3.54; S/D= standard deviation.

The perception of oil palm farmers about a list of negative statements related to industrial production of palm oil. It shows that there is no need for production of palm fruit to process into SPO, its importation should continue ranked the highest negative statement with mean score of 4.77, followed by production of fruits for SPO production requires inputs that cannot be locally sourced' (mean= 4.64), production of palm fruit for processing into SPO can only be done by very big commercial oil palm farmers' (mean= 4.31), production of oil palm fruit for processing into SPO is not possible with the available facilities (mean= 3.24), the agronomy practices required for the production of oil palm fruits for SPO is very difficult' (mean= 2.48), marketing of the fruit maybe difficult due to higher price resulting from higher production cost required to produce fruits to meet quality needed for SPO (mean= 2.25), production of Palm fruits for processing into SPO is more costly (mean= 2.03), the demand for the fruit may not be readily available because there are no large processing facilities in this community (mean= 1.65), production of oil palm fruits for processing into SPO is more laborious (mean= 1.58), and lastly, production of oil palm fruit for processing into SPO requires high technicality which ranked 10th, the least with mean score of 1.23.

Comparing the individual mean scores with the grand mean score of 2.82, the result shows that the oil palm farmers had unfavorable perception to the following statements: there is no need for production of palm fruit to process into SPO; importation should continue, production of fruits for SPO production requires inputs that cannot be locally sourced, production of palm fruit for processing into SPO can only be done by very big commercial oil palm farmers, production of oil palm fruit for processing into SPO is not possible with the available facilities. However, they had favorable perception toward these following statements: marketing of the fruit maybe difficult due to higher price resulting from higher production cost required to produce fruits to meet quality needed for SPO, production of Palm fruits for processing into SPO is more costly, the demand for the fruit may not be readily available because there are no large processing facilities in this community, production of oil palm fruits for processing into SPO is more laborious, and production of oil



palm fruit for processing into SPO requires formal education. The implication of this is that, for the oil palm farmers, all perceptual statements with mean scores above the grand mean score would not favor the transitioning of oil palm production from domestic into industrial technique.

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Table 2 – Distribution of oil palm farmers by responses to negative perception statements about special palm oil

Negative Perceptual Statements	Mean	S/D
1. There is no need for production of oil palm fruits for SPO, we can continue to import as a nation	4.77	0.42
2. Production of oil palm fruits for processing into SPO requires input that cannot be sourced locally	4.64	0.70
3. Production of palm fruit for processing into SPO can only be done by very big commercial oil palm farmers	4.31	0.48
4. Production of oil palm fruit for processing into SPO is not possible with the available facilities	3.24	1.81
5. The agronomy practices required for the production of oil palm fruits for SPO is very difficult	2.48	1.48
6. Marketing of the fruit maybe difficult due to higher price resulting from higher production cost required to produce fruits to meet quality needed for SPO	2.25	1.81
7. Production of Palm fruits for processing into SPO is more costly	2.03	0.73
8. The demand for the fruit may not be readily available because there are no large processing facilities in this community	1.65	0.82
9. Production of oil palm fruits for processing into SPO is more laborious	1.58	0.19
10. Production of oil palm fruit for processing into SPO requires formal education	1.23	0.07

Note: Grand mean score= 2.82.

Very few (6.9%) of the oil palm farmers had favorable perception about special palm oil while 14.2 percent had unfavorable perception. However, majority (78.9%) were indifferent about the special palm oil. The implication of the findings is that most of the farmers are used to producing their palm fruit for the production of technical palm oil which is commonly demanded.. It was obvious from the field that although many of the farmers were interested but they do not have adequate knowledge to inform their decisions about special palm oil.



Improvement in awareness of the importance of SPO through extension service can boost the perception, hence productivity of oil palm farmer in the country. This was achieved in Indonesia some years back. The current state in Indonesia involves the recognition of oil palm as a crucial component in ensuring local food security and promoting economic prosperity among smallholder farmers. This recognition has been achieved through increased awareness facilitated by extension services in the previous decade [19, 20].

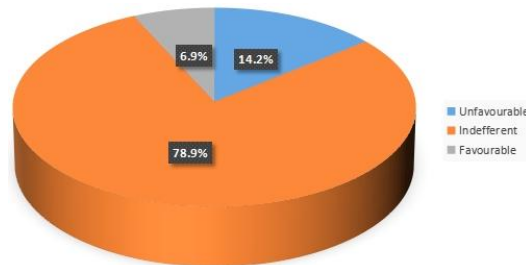


Figure 3 – Distribution of oil palm farmers by perception about special palm oil (Source: Field survey, 2023)

The ranked mean of the positive perceptual statements for oil palm fruit processors about SPO. The statement ‘processing into special palm oil will create more employment in Nigeria with mean score 4.75 ranked highest, followed by processing into special palm oil will boost economy at macro level that is national level (mean= 4.70), processing into special palm oil will boost economy at micro level that is community level (mean= 4.58), availability of credit facility will make processing into special palm oil possible (mean= 4.56), availability of extension service delivery will make processing into special palm oil possible (mean= 4.47), benefits of processing into special palm oil are enough motivation for me to be trained on how to process received palm fruits into the oil (Mean= 4.12), processing into special palm oil requires no formal literacy (Mean= 3.59), processing of oil palm fruits into special palm oil is more economical than processing it into technical palm oil ( Mean= 3.37) and lastly, cooperatively owned processing center would find processing into special palm oil easier (Mean = 3.32).

Table 3 – Distribution of processors based on their responses to positive perception statements about special palm oil

SN	Positive Perceptual Statements	Mean	S/D
1	Processing into special palm oil will create more employment in Nigeria	4.75	0.72
2	Processing into special palm oil will boost economy at macro level that is national level	4.70	0.66
3	Processing into special palm oil will boost economy at micro level that is community level	4.58	0.49
5	Availability of credit facility will make processing into special palm oil possible	4.56	0.47
6	Availability of extension service delivery will make processing into special palm oil possible	4.47	0.35
7	Benefits of processing into special palm oil are enough motivation for me to be trained on how to process received palm fruits into the oil	4.12	0.11
8	Processing into special palm oil requires no formal literacy	3.59	0.80
9	Processing of oil palm fruits into special palm oil is more economical than processing it into technical palm oil ( cooking oil)	3.37	1.09
10	Cooperatively owned processing center would find processing into special palm oil easier	3.32	1.16

Note: Grand mean score= 4.20.

Comparing the individual mean scores with the perceptual grand mean score of 4.20, results show that the oil palm fruits processors had favorable perception to the following statements: processing into special palm oil will create more employment in Nigeria, processing into special palm oil will boost economy at macro level that is national level, processing into special palm oil will boost economy at micro level that is community level, availability of credit facility will make processing into special palm oil easy, availability of extension service delivery will make processing into special palm oil possible. However, oil palm fruit processors had unfavorable perception towards some of the statements like: benefits of processing into special palm oil are enough motivation for me to be trained on how to process received palm fruits into the oil, processing into special palm oil requires no formal literacy, processing of oil palm fruits into special palm oil is more economical than





processing it into technical palm of and cooperatively owned processing center would find processing into special palm oil easier. All the perceptual statements with mean score above grand mean score of 4.20 are statements that would favor the production of special palm oil by oil palm processors.

The ranked mean scores for negative perceptual statements. The statement 'Processing into special palm oil is not compatible with extant culture' with mean score 4.39 ranked highest followed by 'there is no need for processing into special palm oil, we can continue to import as a nation (mean=3.88)', 'Marketing of special palm oil maybe difficult due to higher price resulting from higher production' (mean=3.87), procedure required for processing into special palm oil is too difficult to be carried out (mean=3.60), 'The demand for special palm oil may not be readily available' (mean= 3.14), 'processing into special palm oil can only be done by very big commercial processors' (mean=2.82), 'Processing into special palm oil will be more laborious' (mean=2.71), processing into special palm oil is not possible with the available facilities (mean=2.25), Processing into special palm oil requires large investment (mean= 1.56) and lastly, 'Processing into special palm oil is more costly' (mean=1.29). Comparing perceptual grand mean score of 2.95 with each of the individual mean scores, oil palm fruit processors had favorable perception with the following statement: processing into special palm oil is not compatible with extant culture', 'there is no need for processing into special palm oil, we can continue to import as a nation', 'Marketing of special palm oil maybe difficult due to higher price resulting from higher production', 'procedure required for processing into special palm oil is too difficult to be carried out', and 'the demand for special palm oil may not be readily available'. Moreover, they had unfavorable perception towards the following statements: processing into special palm oil can only be done by very big commercial processors', 'processing into special palm oil will be more laborious', processing into special palm oil is not possible with the available facilities, Processing into special palm oil requires large investment and 'processing into special palm oil is more costly'.

Many (67.9%) of the oil palm fruit processors had favorable perception while very few (16.4%) of them had unfavorable perception about special palm oil. Also, only 15.7 percent of them were indifferent about this type of palm oil. The implication of this finding is that most of the owners of the processing centers were aware and understood the importance of special palm oil although not many of them were producing it due to various factors. This shows that if they can be convinced of its marketing, many of them were ready to switch from the production of technical palm oil only to producing special palm oil also.

Table 4 – Distribution of processors based on their responses to negative perceptual statements about special palm oil

S/N	Perceptual Statements	Mean	S/D
1	Processing into special palm oil is not compatible with extant culture	4.39	1.33
2	There is no need for processing into special palm oil, we can continue to import as a nation	3.88	0.86
3	Marketing of special palm oil maybe difficult due to higher price resulting from higher production	3.87	0.86
4	Procedure required for processing into special palm oil is too difficult to be carried out	3.60	0.60
5	The demand for special palm oil may not be readily available	3.14	0.18
6	Processing into special palm oil can only be done by very big commercial processors	2.82	0.12
7	Processing into special palm oil will be more laborious	2.71	0.22
8	Processing into special palm oil is not possible with the available facilities	2.25	0.65
9	Processing into special palm oil requires large investment	1.56	1.29
10	Processing into special palm oil is more costly	1.29	1.54

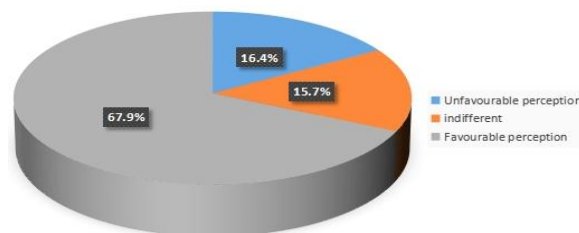


Figure 4 – Distribution of small scale fruit processors by their perception about special palm oil  
 (Source: Field survey, 2023)



The following statements ranked first to 10th using the mean scores: processing into special palm oil will create more employment in Nigeria (mean= 4.67), processing into special palm oil will boost economy at micro level that is community level (mean= 4.43), Processing into special palm oil will boost economy at macro level that is national level (mean= 4.18), benefits of special palm oil are enough motivation for me to be trained on how to fabricate equipment for its processing (mean=4.13), fabrication of equipment for processing of oil palm fruits into industrial palm oil is more economical than the ones needed to process into technical palm oil (mean=4.08), availability of extension service delivery can lead to high demand of these machines and this can serve as motivation to fabricate these machines (mean=4.07), availability of credit facility will make fabrication of these machine possible (mean= 3.38), and cooperatively owned fabrication workshop will make the fabrication of the SPO producing technology easier (mean=1.88).

Comparing the mean scores of each statement with the grand mean score of 3.91, the fabricators of palm fruit processing technologies had favorable perception about the following statements: processing into special palm oil will create more employment in Nigeria, processing into special palm oil will boost economy at micro level that is community level, processing into special palm oil will boost economy at macro level that is national level, benefits of special palm oil are enough motivation for me to be trained on how to fabricate equipment for its processing, fabrication of equipment for processing of oil palm fruits into industrial palm oil is more economical than the ones needed to process into technical palm oil, availability of extension service delivery can lead to high demand of these machines and this can serve as motivation to fabricate these machines. However, they had unfavorable perception towards these two statements: availability of credit facility will make fabrication of machine possible and cooperatively owned fabrication workshop will make the fabrication of the SPO producing technology easier.

Table 5 – Distribution of oil palm fruits technology fabricators based on their responses to positive perceptual statements about special palm oil

Perceptual statement	Mean	S/D
There is no need for processing into special palm oil, we can continue to import as a nation, hence no need for fabrication of the needed equipment	4.42	1.41
Procedure required for fabrication of the needed machine is too difficult to be carried out, it can only be imported	4.35	1.32
Marketing of these machines may be low due to the high cost of fabricating them	3.77	0.54
Processing into special palm oil is not compatible with extant culture, hence no need to fabricate the equipment needed	3.75	0.52
Fabrication of machines for SPO requires equipment that cannot be sourced locally	3.35	0.01
The demand for these machines may not be readily available	3.30	0.08
Fabrication for SPO can only be done by very big commercial fabricators	3.07	0.39
Fabrication for processing into special palm oil is not possible with the available facilities	3.02	0.45
Fabrication of equipment for processing into special palm oil requires high technicality and formal literacy	2.37	1.31
Fabrication of machines for special palm oil requires large investment	2.20	1.54

Note: Grand mean score= 3.91.

The statement ‘there is no need for processing into special palm oil, we can continue to import as a nation, hence no need for fabrication of the needed equipment (mean=4.42) ranked highest of the negative statement about SPO, other statements with their ranked mean are: procedure required for fabrication of the needed machine is too difficult to be carried out, it can only be imported (mean=4.35), Marketing of these machines may be low due to the high cost of fabricating them (mean=3.77), processing into special palm oil is not compatible with extant culture, hence no need to fabricate the equipment needed (mean=3.75), fabrication of machines for SPO requires equipment that cannot be sourced locally (mean=3.35), the demand for these machines may not be readily available (mean=3.30), fabrication for SPO can only be done by very big commercial fabricators (3.07), fabrication for processing into special palm oil is not possible with the available facilities (mean=3.02), fabrication of equipment for processing into special palm oil requires high technicality and formal literacy (mean=2.37), and fabrication of machines for special palm oil requires large investment (mean= 2.20).

Furthermore, using the grand mean score of 3.36, fabricators had favorable perception of the following statements: there is no need for processing into special palm oil, we can continue to import as a nation, hence no need for fabrication of the needed equipment, procedure required for fabrication of the needed machine is too difficult to be carried out, it



can only be imported, marketing of these machines may be low due to the high cost of fabricating them, and processing into special palm oil is not compatible with extant culture; hence no need to fabricate the equipment needed. Meanwhile, they had unfavorable perception towards the following statements: fabrication of machines for SPO requires equipment that cannot be sourced locally, the demand for these machines may not be readily available, fabrication for SPO can only be done by very big commercial fabricators, fabrication for processing into special palm oil is not possible with the available facilities, fabrication of equipment for processing into special palm oil requires high technicality and formal literacy, and fabrication of machines for special palm oil requires large investment.

Table 6 – Distribution of oil palm fruits technology fabricators based on their responses to negative perceptual statements about SPO

Perceptual Statements	Mean	S/D
Processing into special palm oil will create more employment in Nigeria	4.67	0.72
Processing into special palm oil will boost economy at micro level that is community level	4.43	0.49
Processing into special palm oil will boost economy at macro level that is national level	4.18	0.26
Benefits of special palm oil are enough motivation for me to be trained on how to fabricate equipment for its processing	4.13	0.21
Fabrication of equipment for processing of oil palm fruits into industrial palm oil is more economical than the ones needed to process into technical palm oil	4.08	0.16
Availability of extension service delivery can lead to high demand of these machines and this can serve as motivation to fabricate these machines	4.07	0.15
Availability of credit facility will make fabrication of these machine possible	3.87	0.04
Cooperatively owned fabrication workshop will make the fabrication of the SPO producing technology easier	1.88	1.92

Note: Grand mean score= 3.36.

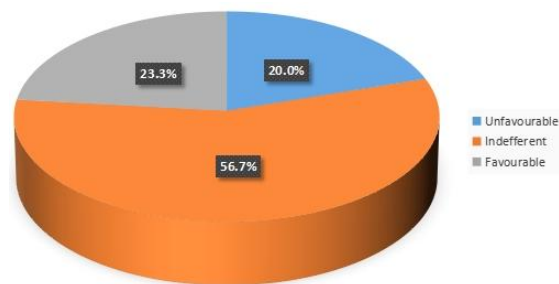


Figure 5 – Overall perception of oil palm fruit processing technology fabricators about special palm oil (Source: Field survey, 2023)

Cumulatively, about 23.3 percent of the fabricators had favorable perception about special palm oil while 20.0 percent had unfavorable perception. Moreover, over half (56.7%) of the fabricators were indifferent about the special palm oil. The implication of the findings is that many of the fabricators were not totally aware about the production of special palm oil; they mostly know about the technical palm oil and were neutral about the fabrication of technology that can produce special palm oil. Few of the fabricators who know about it had favorable perception towards its production. Therefore, awareness is always connected with the perception and attitude of actors especially in agricultural value chain [21].

## CONCLUSION

Increase in public knowledge and understanding of the concept of Special Palm Oil is very vital. Implementing awareness campaigns aimed at educating various stakeholders, with a particular focus on farmers and fabricators, regarding the advantageous attributes and commercial prospects associated with special palm oil (SPO) will go a long way in industrial transitioning. This has the potential to foster congruence in perceptions and stimulate curiosity, hence enhanced productivity. One of the key strategies to encourage transitioning from domestic to industrial production of palm oil among the small scale processors is to enhance collaboration and cooperation among them with the aim of strengthening regional partnerships. Cooperative ownership of capital intensive technologies like the whole bunch sterilizers could be encouraged among the processors especially those in close proximity.



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