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Gender analysis of technology utilisation among small scale oil palm fruits processors in Ondo State, Nigeria

Análisis de género en la utilización de tecnología entre procesadores de frutos de palma de aceite a pequeña escala en el estado de Ondo, Nigeria

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Abstract

The study identified the types of improved technologies utilised, tracked gender involvement at the various stages of oil palm fruits processing activities with a view to highlighting differences in the utilisation of these technologies among male and female processors. Multistage sampling technique was used to select 240 (120 males and 120 females) oil palm fruits processors using structured interview schedule. Focus Group Discussion (FGD) and Gender Mapping (GM) were used to elicit qualitative data. Data collected were summarised with the aid of descriptive statistics while t-test was used to test the hypothesis. Results showed that sterilizer, digester and hydraulic hand press were utilised by both male and female processors. Results of t-test revealed that at $P \leq 0.01$, significant differences were found between male and female processors level of utilisation of oil palm processing technologies with male having a higher mean score than the female. The study concluded that gender differences exited in the level of utilisation of oil palm processing technologies among male and female processors in Ondo State, Nigeria.

Key words: Utilisation, small scale, oil palm, technology, processors, Nigeria.

Resumen

En el estudio se identificaron los tipos de tecnologías mejoradas utilizadas y se hizo seguimiento a la participación por géneros en las diversas actividades de procesamiento de frutos de palma de aceite, encontrando diferencias en la utilización de las tecnologías entre hombres y mujeres. Se utilizó una técnica de muestreo de multiestrato para seleccionar 240 individuos (120 hombres y 120 mujeres) procesadores de frutos de palma de aceite usando un formato estructurado de entrevista personalizada. Se usó el método de foco de la discusión en grupo (FGD) y el mapeo de género (GM) para interpretar los datos cualitativos. Los datos recolectados analizaron por estadística descriptiva y para probar la hipótesis se empleó la prueba de 't'. Los resultados mostraron que el esterilizador, el digestor y la prensa de mano hidráulica fueron los implementos más utilizados por ambos géneros. Los resultados de la prueba 't' mostraron ($P < 0.01$) diferencias entre el nivel de utilización de las tecnología por parte de ambos grupos (hombres y mujeres). El estudio concluyó que existieron diferencias de género en el nivel de

utilización de las tecnologías de procesamiento de frutos de palma de aceite entre ambos géneros en el estado de Ondo, Nigeria.

Palabras clave: Niger, palma de aceite, pequeña escala, procesamiento, tecnologías, utilización

Introduction

Oil palm is an important food and cash crop in Nigeria. Its major product palm oil, which is used for food, is rich in carotene, which is a precursor of vitamin A. It is also used in the manufacture of soaps and other detergents. Palm kernel oil which is extracted from the nut is used in the manufacture of margarine and oil based confectioneries (Agwu, 2006). According to Usoro (1974) the production and processing of oil palm production constitute important sources of employment to many rural dwellers that own plantation of less than 2 hectares. Iwena (2002) stated that about 85 percent of rural dwellers in Nigeria are engaged in small scale processing of oil palm fruits.

Generally, in Nigeria, small scale agricultural processors constitute about 90 percent of the farming households but processing rarely provide sufficient means of survival in many rural areas (Abalu, 1986; Adesina, 1991; Owolarafe *et al.,* 2002, Umar, 2008). In the palm produce industry, the small scale processors contribute well over 80 percent of Nigeria's total output (Orewa *et al.,* 2009). However, they rarely provide sufficient means for survival in terms of the quantity of palm oil produce due to the use of crude and local technologies (Olaguju, 2008). The low productivity in oil palm industry had made Nigeria to depend on importation of palm oil from Malaysia and Indonasia in order to supplement the local production for household consumption as well as for the various agro-allied industries that use palm oil in the country.

The use of technologies in farming has become a potent force in transforming social, economic, and political life globally (Robert, 2001). There is little chance for countries or regions to develop without their incorporation into the information age. More and more, development strategists see the need for developing countries to embrace information technology both as a way to avoid further economic and social marginalization as well as to offer opportunities for both growth and diversification of their economies (Hovorka *et al.,* 2009). In oil palm industry, utilisation of validated and gender responsive processing technologies could enhance production capacity in oil palm industry and reduce wastage the major challenge facing the processors in this industry. Gender responsive processing technologies are those technologies that pay due attention to both men and women's needs (Deji, 2011). The manufacturer usually, considers both men and women as the end user right from the developmental stage. Thus, putting men and women into consideration in oil palm fruits processing technologies developmental process is expected to have significant effect on the productivity of this sector and holds great potential for export and domestic supply knowing fully that women contribute to food security more than their men counterparts in Nigeria.

Apart from the oil palm industry, women have been marginalised in all aspects of agriculture. Ukpabi (2004) noted that agricultural extension services still did not attach much importance to reaching women on the farm. Policy makers, technology developers and administrators typically assume, in the face of empirical data, that men were the farmers and women played only a 'supportive role' as farmers' wives. ´Therefore, whenever policies are made or technologies are developed, men tend to be considered as the only end users with little or no consideration for women.

In oil palm industry, it has been established that women were more involved in the use of traditional or local technologies in processing oil palm to get palm oil. However, there has been considerable advancement in palm oil extraction technology in the last few years. Most of these recent works have been done in Asian producing countries of Malaysia and Indonesia that naturally have the economic imperative to do so. Nigeria has lagged behind not only in palm oil production but

also in researches into all aspects of oil palm processing. It has been established in literature that the use of ICT in farming has the potential for stimulating growth and economic development but the benefits have not been distributed evenly between genders (Torimiro *et al.,* 2007). The seriousness of the challenge is illustrated by the current world palm oil production statistics which shows that Nigeria remains a pitiable third largest producer of palm oil (after Malaysia and Indonesia) for the past four decades with no export (MPOB, 2002; Owolarafe *et al.,* 2007). Apart from the fact that the status of Nigeria's palm oil output is astonishing, the production figures are embarrassing. While Malaysia and Indonesia produce in the range of 8 - 12 million tonnes per year, the production from Nigeria is estimated at less than a million tonne. The low output has led to the importation of palm oil from other countries to supplement local production in order to meet the domestic and industrial needs (CBN, 1998). The foregoing arouses the quest to analyse the level of technology utilisation among small scale oil palm fruits processors on the basis of gender in the study area.

Specifically, the study identify the types of oil palm fruits processing technologies utilised and track gender involvement at the various stages of oil palm fruits processing activities, with a view to identifying the various gender issues associated with the low productivity in oil palm industry in Nigeria, as Soyebo *et al.* (2005) reported that women traditionally produce the bulk of palm oil using local technologies in Nigeria.

Methodology

The study area

The study was conducted in Ondo State of Nigeria. The state was carved out of the old Oyo state on the 3rd February, 1976 with the capital in Akure. The state covers an area of approximately 15,500 square kilometers and it is bounded in the south by the Bight of Benin and Atlantic Ocean; north by Ekiti and Kogi States; east by Edo and Delta States and west by Osun and Ogun states. The state lies between longitude 5° 45´ and 7° 52´ on the North – South Pole, and longitude 4° 20´ and 6° 5´ on the East – West Pole. According to analytical report of the National Population Commission (NPC, 2006), Ondo State has 3,441,024 million people with 18 local government areas. (Figure 1).

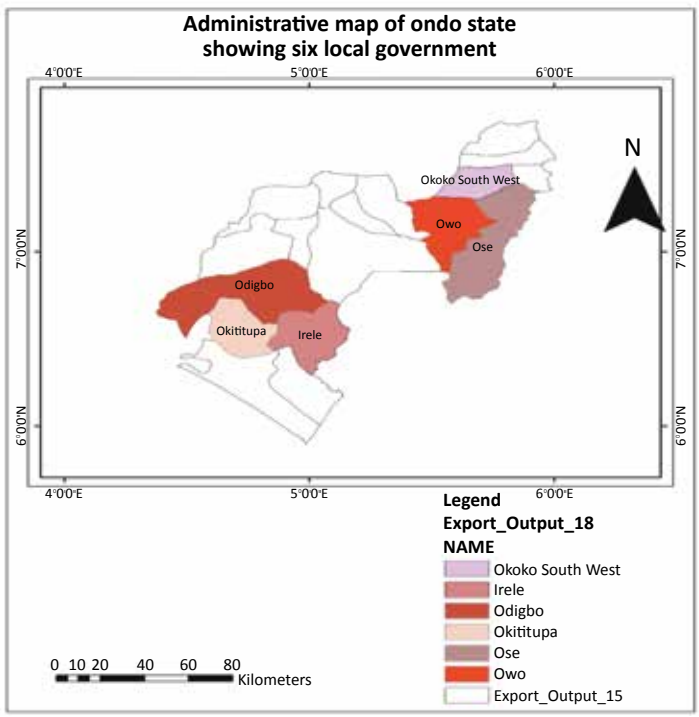

Figure 1. Map of Ondo State showing the six local government areas where the study was conducted.

Sampling procedure and sample size

The study employed primary data. Multi-stage sampling procedure was used in selecting respondents for the study. In the first stage, Ondo state was stratified into two Agro-ecological zones based on the state Agricultural Development Programme (ADP) clasification. The zones are: Owo and Ondo. Each zone comprises nine local government areas. In the second stage, three LGAs were purposively selected in each of the zones based on the predominance of the oil palm fruits processing activities, making a total of six Local Government Areas (LGAs) in all. Owo zone comprises of Owo, Ifon and Akoko which are situated within the derived savanah and Ondo zone comprises Akure, Ondo and Okitipupa which are situated within the rainforest. In the third stage, two villages were randomly selected in each of the LGAs, making a total of 20 villages. In the final stage, 20 respondents (10 males and 10 females) who are oil palm fruits processors were randomly selected in each of the villages making a total of 240 respondents. Questionnaire and interview schedules were used for data collection. Focus Group Discussion (FGD) and Gender Mapping (GM) were also used to obtain qualitative data and the quantitative data were analysed using descriptive statistics such as frequency counts, percentages, mean, standard deviation and charts while t-test was used to make deductions from the hypothesis stated.

Results and discussion

Personal and socio-economic characteristics

Results in Figures 2 and 3 show the disaggregated ages of respondents according to gender. About 30 percent of the male respondents indicated that they were aged 30 years and below, 59 percent of the respondents were found within the ages of 30 - 60 years while few (11%) of the respondents indicated that they were 61 years and above. The mean age of the male processors was 35.57 with a standard deviation of 1.29. Among the female respondents, about 27.6 percent were less than 30 years in age, 60.6 percent were found between 30 and 60 years old while 11.8 percent were 61 years and above with a mean age of 35.58 and a standard deviation of 1.30.

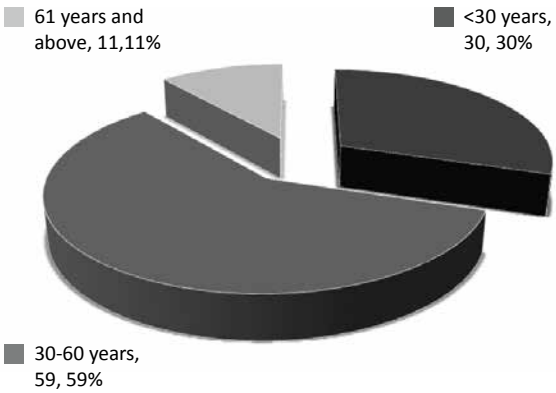

Figure. 2. Age distribution of male respondents. 2012
Mean= 35.5732. Standard deviation= 1.30.
Field survey (2012).

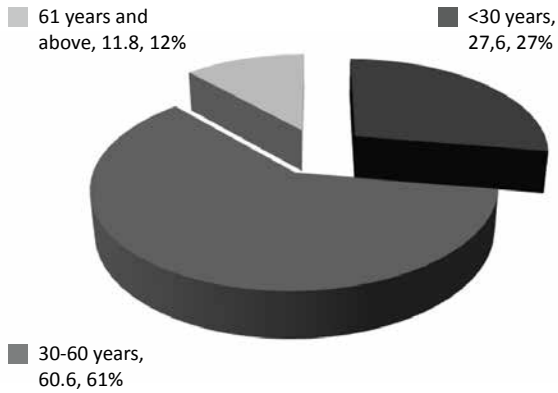

Figure 3. Age distribution of female respondents. 2012.
Mean=35.5789
Standard deviation=1.30.

This implies that majority (59% and 60.6%) of male and female respondents, respectively were in their active ages of between 30 - 60 years. The result agreed with Deji *et al.* (2012) who found that the mean age of oil palm processors in Ondo state was 46.8 years but in disagereement with the assertions of Akangbe *et al.* (2011) that oil palm processors in Nigeria were aged. The average ages of 35.57 and 35.58 years for male and female respondents indicated that oil palm processors in the state were still ac-

tive. Hence, this is expected to have positive contribution to palm oil production level in the state if processing technologies were appropriately used.

Higher percentage (53.3%) of the male respondents were married, 14.2 percent were single while 15 percent and 17.5 percent of male respondents were separated and widowers, respectively. In the female category, majority (67.5%) were married, 17.5 percent were widowed, 10 percent were separated while about 15.8 percent were single. This analysis revealed that oil palm processing activities in Ondo State absorbed more of married male and female processors. The age of the processors also confirmed this as majority of male and female processors were found between 30 and 60 years. The mean household size among the male respondents was 6.02 persons with a standard deviation of 2.07, while the mean was 4.1 persons and the standard deviation of 1.7 for the female respondents. The finding reveals that male respondents had higher household size than the female respondents. Polygamy among male respondents might influence the size of the household. The finding agreed with the assertion of Muhammed-Lawal *et al.* (2009) and Akpomuvia (2010) that a range of 4 – 6 members constitute the modal household size among the rural farmers in Nigeria. Majority (71.7% and 69.2%) of male and female respondents, respectively were christians while about 22.5 percent and 27.5 percent of male and female respondents, respectively were muslims and very few (5.8% and 3.3%) of male and female respondents, respectively, practised traditional religion. This implied that christianity is the major religion practised in the study area.

In addition, 85 percent of male respondents indicated farming as their major occupation, while 80 percent of the female respondents indicated farming as their major occupation. Also, (15.0% and 20.0%) of male and female respondents, respectively indicated artisanship as their major occupation. This implies that majority of male and female respondents, respectively practiced farming as their major occupation. Among the female respondents, majority (78.3%) indicated trading as their minor occupation, while 14.2 percent and 7.5 percent indicated hairdressing and tailoring as their minor occupation respectively. However, none of the male respondents indicated any minor occupation as shown in Table 1. The mean processing experience in years of male and female processors were 12.9 ± 5.77 and 14.3 ± 6.03 years, respectively, while the standard deviation were 5.77 and 6.03 respectively. The findings revealed that female had relatively higher farming experience than their male counterparts. The finding is in agreement with Agwu (2006) and Deji *et al.* (2012) that reported that the mean years of the processing experience among oil palm processors in South-western and in Ondo State Nigeria, as 13 years and 14.5 years, respectively. The mean annual income of male and female respondents from oil palm processing activities were ₦264,500 ($1653.125) and ₦231,097 ($1444.36), respectively but the mean income from other sources for male and female respondents were ₦241,842 ($1511.51) and ₦255,500 ($1596.88), respectively. Although, income is a difficult characteristics to measure, given the fact that most farmers in Nigeria do not keep proper records of their farming activities and couple with the fact that sometimes they deliberately refuse to disclose the amounts they actually realized for fear of taxation and other security reasons. Howevr, this findings revealed that female respondents make higher income from other sources than their male counterparts. This could be due to their ability to engage in other income generating activities such as petty trading, hairdressing and tailoring.
The average years of formal education had by male and female respondents were 6.84 and 4.57, respectively, with standard deviation of 6.22 and 2.83 for male and female respondents, respectively. The finding agrees with Akangbe *et al.* (2011) assertion that there was a low level of education among women palm oil extractors in Nigeria and that this could be a limiting factor affecting respondents' ability to adopt and use improved palm oil extracting techniques and facilities.

Table 1. Distribution of respondents' personal and socio-economic characteristics.

	Male n=120				Female n= 120			
Variable	**F**	**%**	**Mean**	**SD**	**F**	**%**	**Mean**	**SD**
Marital status								
Single	17	14.2			6	5.0		
Married	64	53.3			81	67.5		
Separated	18	15.0			12	10.0		
Widowed/widowered	21	17.5			21	17.5		
Household size								
2-4	14	11.7			19	15.8		
5-7	48	40.0	6.02	2.07	67	55.8	4.1	1.7
8-10	42	35.0			17	14.2		
11 and above	16	13.3			17	14.2		
Religion								
Christianity	86	71.7			83	69.2		
Islam	27	22.5			33	27.5		
Traditional	7	5.8			4	3.3		
Occupation								
(a) Major								
Farming	102	85.0			96	80.0		
Artisans	15	15.0			24	20.0		
(b) Minor								
Hairdressing	-	-			17	14.2		
Tailoring	-	-			9	7.5		
Trading	-	-			94	78.3		
Processing experience			12.9				14.3	
Income from oil palm			₦264,500				₦231,097	
Other income			₦241,842				₦255,500	
Formal education (yrs)			6.84				4.57	

Source: Field survey (2012)
F= frequency, %=percentage, SD=standard deviation
Naira to US dollar conversion rate: ₦160 to $1 US dollar.

Types of oil palm fruits processing technologies available and used

Results in Table 2 show that 75.8 percent of male and 61.7 percent of female respondents indicated that malaysian knife (for harvesting) was available. Further analysis reveal that about 67.5 percent of male and very few (3.3%) of female used malaysian knife for harvesting while majority (96.7%) of female and just about 32.5 percent of male did not use malaysian knife. The findings revealed that malaysian knife is not gender responsive as very few (3.3%) female used the technology in the study area. Findings from FGDs revealed that malaysian knife was not made for women.

'...not even all men can use it. Most of us in this village employ cutters who work with the government as you can see that we have a very big government plantation here. We cannot allow our women to handle it. It is too long and can be dangerous if not properly handled, so most of us still use cutlass to harvest our fruits when they are ripe...' (Participant from Ayadi in Irele LGA).

In addition, results of gender mapping revealed that most women used malaysian knife for harvesting. Although, it was not too common among them. Though brave women among them regularly use it to harvest palm fruits that are not too tall. The finding agreed with Rahaman (2008) assertion that women equally carry out the same task as men in farming.

More so, none of the respondents (male and female) indicated the availability of rotary stripper for fruits removal in the study area. FGDs and Gender Mapping findings reveal that manual fruits extractions from the bunches were still practised in the study area.

'... we use hands and sticks to remove the oil palm fruits from the bunches. After harvesting, we leave it covered for 5 - 8 days after which the fruits get loosen. We can then use hands to remove and in cases where we still have some fruits that don't come out easily, we

use sticks and cutlass to remove them. Here in Ugborogho, we have not seen any machine that can remove fruits and if we see, we will but...' (Participants in Ugborogho in Irele LGA)

Results in Table 2 also show that all (100%) of the male and female respondents indicated that sterilizer was available for steaming palm fruits. Further analysis revealed that 84.2 percent of male and 81.7 percent of female respondents used sterilizer for for cooking their palm fuits while about 15.8 percent of male and 18.3 percent of female respondents did not use sterilizer. The findings revealed that oil palm fruits processors in the study area still use local drums in steaming the palm fruits before digesting them. Findings from FGDs further revealed that sterilizers are used when the palm fruits are much.

Table 2. Distribution of respondents by types of improved oil palm fruits processing technologies available.

Technology	**Male**		**Female**	
	F	%	F	%
Malaysian knife (for harvesting)				
*Available				
Usage	91	75.8	74	61.7
Yes				
No	81	67.5	4	3.3
Rotary stripper	39	32.5	116	96.7
*Available				
Sterilizer (for cooking)	0	0.0	0	0.0
***Available**				
Usage	120	100.0	120	100.0
Yes				
No	101	84.2	98	81.7
Digester	19	15.8	22	18.3
*Available				
Usage	103	85.8	79	65.8
Yes				
No	97	80.8	73	60.8
Hydraulic press	23	19.2	47	39.2
*Available				
Usage	117	97.5	111	92.5
Yes				
No	109	90.8	100	83.3
Clarifier	11	9.2	20	16.7
*Available				
Usage	0	0.0	0	0.0
Yes				
No	0	0.0	0	0.0
	120	100.0	120	100.0

*Multiple Responses
Source: Field survey (2012).

'... sometimes, we may not have enough palm fruits especially during the off-season. At this period, we use our usual drums because the sterilizers are made in sizes. I have sterilizer that can produce 10 kegs of 25litres at one loading and that is the minimum that I have seen in this area...' (a participants at Ikoya in Okitipupa LGA)

Results of Gender Mapping showed that women equally use sterilizer like men in cooking palm fruits. Majority (85.8% and 65.8%) of male and female respondents, respectively indicated that digester was available in the study area. Further analysis on the usage revealed that higher proportions (80.8% and 60.8%) of male and female respondents, respectively, used the technology in digesting the palm fruits while just 19.2 percent of male and 39.2 percent of female were not using the technology. This technology replaced the traditional foot-matching of fruits to release the oil. Findings from FGDs revealed that everybody used digester to perform this operation but not everyone has access to it.

'...not that I don't use digester to digest my palm fruits but I do not have the technology myself. I give out my palm fruits for people to digest for me and I pay them. In this village

nobody is using the old footmatching again. Where do you want to get it? Even if we get it, me? I can't suffer myself...' (Participant from Lamudifa in Odigbo LGA).

Majority (97.5% and 92.5%) of male and female respondents, respectively indicated that hydraulic hand-press was available in the study area. Analysis on the usage revealed that about 90.8 percent of male and 83.3 percent of female respondents used the technology. However, few (9.2% and 16.7%) of male and female respondents, respectively, were found not to use it. Furthermore, none of the respondents (male and female) indicated that clarifier was available. Analysis of the usage revealed that all (100.0%) of both male and female respondents indicated that clarifier was not in use in the study area. FGDs reveals that clarifier was not available in study area. *'... we use our sense to separate the oil from the water. No machine for that one in our village here...'* Participant from Ikoya in Okitipupa LGA)

Gender involvement at the various stages of oil palm fruits processing activities

Results in Table 3 show that majority (89.2%) of male respondents were regularly involved in harvesting of oil palm bunches as the first stage of oil palm fruits processing while none of the female respondents involved at this stage. Also, majority (98.3%) of female respondents were not involved in harvesting. Further analysis revealed that majority (52.5%) of male respondents were involved personally while majority (85.8%) of female respondents hired labour to carry out this activity. FGDs further revealed that low involvement of female in harvesting has some cultural impedance among some ethnic groups in the state.

'... we mostly harvest the oil palm bunches from the wild which involves climbing the oil palm tree with ropes and our culture doesn't allow our women to climb but we also follow this even with the agric (improved) oil palm trees which do not involve much climbing. It is forbidden to see women harvesting oil palm fruits here in our village...' (participant from Ugborogho, Irele LGA)

Threshing involves the removal of oil palm fruits from the bunches using sticks or rotary stripper. Results in Table 3 reveal that majority (56.7%) of male respondents regularly involved in threshing, 22.5 percent involved sometimes, 15.8 percent rarely involved while just (5.0%) of respondents were not involved. In the female category, little below average (44.2%) were not involved, 34.2 percent rarely involved, 15.8 percent involved sometimes while about 5.8 percent were regularly involved. Further analysis on the forms of involvement also revealed that about 59.2 percent of male respondents were personally involved while majority (77.5%) of the female respondents were not personally involved as they hired labour for this operation. The findings revealed that male processors were more involved in threshing than their female counterparts as female employed labours to carry out this activity. It could be implied that the activity could tedious and tasky like most agricultural activities.

Picking involves selecting the fruits after threshing in preparation for boiling. Results in Table 3 show that majority (52.5%) of male respondents were not involved in pickking while about 40.8 percent of female respondents were regularly involved. About 34.2 percent of male and 25.8 percent of female respondents were rarely involved in picking, just (5.0%) of male and 30.9 percent of female were sometimes involved. Analysis on forms of involvement revealed that majority (65.8% and 89.2%) of male and female respondents, respectively, involved personally in this stage while about 34.2 percent of male and just (10.8%) of female hired labour for this stage. FGDs revealed that male usually allow female and children to perform this operation. *'... picking is a work of women and children if they are not in schools. It is very easy to do and we only assist if we have less work to do or if the oil needs to be produced timely...'* (Participant from Ode-Aye in Okitipupa LGA)

Results of Gender Mapping showed that men equally participate in picking of palm fruits. Many a times, men own the plantations and they process palm fruits without involving their wives. In some cases, their male and female children assist in picking the fruits. Majority (65.0% and 60.8%) of male and female respondents, were regularly involved in parboiling of fruits (steaming of palm fruits).

Table 3. Gender involvement at the various stages of oil palm fruits processing activities.

Variables	Male n=120		Female n=120	
	F	%	F	%
Havesting				
Not involved	-	-	118	98.3
Rarely involved	-	-	-	-
Sometimes involved	13	10.8	2	1.7
Regularly involved	107	89.2	-	-
Labour used				
Personal labour	63	52.5	17	14.2
Hired labour	57	47.5	103	85.8
Threshing (Fruits removing method)				
Not involved				
Rarely involved	6	5.0	53	44.2
Sometimes involved	19	15.8	41	34.2
Regularly involved	27	22.5	19	15.8
Labour used	68	56.7	7	5.8
Personal labour				
Hired labour	71	59.2	27	22.5
Picking of fruits	49	40.8	93	77.5
Not involved				
Rarely involved	63	52.5	3	2.5
Sometimes involved	41	34.2	31	25.8
Regularly involved	6	5.0	37	30.9
Labour used	10	8.3	49	40.8
Personal labour				
Hired labour	79	65.8	107	89.2
Parboiling	41	34.2	13	10.8
Not involved				
Rarely involved	16	13.3	0	0.0
Sometimes involved	14	11.7	0	0.0
Regularly involved	12	10.0	47	39.2
Labour used	78	65.0	73	60.8
Personal labour				
Hired labour	120	100.0	120	100.0
Digesting/pounding	0	0.0	0	0.0
Not involved				
Rarely involved	0	0.0	71	59.2
Sometimes involved	0	0.0	45	37.5
Regularly involved	44	36.7	4	3.3
Labour used	76	63.3	0	0.0
Personal labour				
Hired labour	99	82.5	29	24.2
Pressing	21	17.5	91	75.8
Not involved				
Rarely involved	0	0.0	111	92.5
Sometimes involved	2	1.7	6	5.0
Regularly involved	11	9.2	3	2.5
Labour used	107	89.1	0	0.0
Personal labour				
Hired labour	108	90.0	19	15.8
Clarification	12	10.0	101	84.2
Not involved				
Rarely involved	2	1.7	0	0.0
Sometimes involved	11	9.1	9	7.5
Regularly involved	23	19.2	31	25.8
Labour used	84	70.0	80	66.7
Personal labour				
Hired labour	103	85.8	120	100.0
	17	14.2	0	0.0

Source: Field survey (2012).

Also, about 13.3 percent of male but none of the female were not involved in parboiling of fruits. More so, analysis on the forms of involvemet further shown that none of the male and female respondents hired labour to perform this activity but all (100.0%) of both male and female respondents were personally involved in parboiling of fruits. The findings revealed that all the female respondents were involved in this stage but at different degrees.

Digesting/pounding involves grounding the palm fruits using digester to proper release the oil for easy extraction. Results in Table 3 show that none of the female respondent was regularly involved while majority (63.3%) of male respondents were regularly involved in this stage. Also, 36.7 percent and just 3.3 percent of male and female respondents, respectively, were sometimes involved, none of the male respondent was rarely involved but about 37.5 percent of female respondents were rarely involved. Further analysis of the forms of involvement revealed that majority (82.5%) male respondents were personally involved while majority (75.8%) of female respondents hired labour to carry out the activities at this stage. FGDs revealed that this stage involved more of male than female. *'... the machine may be difficult to start if the handle is not soft and once it starts, you need to be very fast in loading and off-loading the palm fruits or else, you waste a lot of fuel. Women may not be able to do this most times, so we do not allow them to do it...'* (Participant from Ikoya in Irele LGA).

For pressing to extract the oil, hydraulic hand press is used to press the digested fruits and palm oil is released in the process. Results in Table 3 show that majority (89.1%) of male respondents were regularly involved, about 9.2 percent of male respondents were sometimes involved and very few (1.7%) were rarely involved. However, majority (92.5%) of the female respondents were not involved while just (5.0% and 2.5%) of the female respondents were rarely and sometimes involved. Further analysis on the forms of involvement revealed that majority (90.0%) of male were personally involved while majority (84.3%) of female respondents hired labour to perform this stage. The low involvement of female at this stage of processing implies that pressing may involved a lot of energy, thus female may not be encouraged to do it regularly.

Finally, clarification involves the separation of oil from water. It is done in most cases traditionally using decantation method as the result of the FGDs reveals that the technology was not available in the study area. Results in Table 3 reveal that majority (70.0% and 66.7%) of male and female respondents, respectively, were regularly involved in this stage while just 1.7 percent and 0 percent of male and female respondents, respectively were not involved in this stage. Moreso, about 19.2 percent and 25.8 percent of male and female respondents, respectively involved sometimes. The findings revealed that majority (85.8%and 100.0%) of male and female respondents, respectively were personally involved in this stage.

Gender differential in the level of utilisation of available processing technologies

t-test analysis was used to show the differences between male and female oil palm fruits processors level of utilisation of available processing technologies. Results in Table 4 show that there was a significant difference between male and female processors' level of utilisation of available oil palm fruits processing technologies. t-test value was 12.996 and P< 0.03 which is less than 0.05. The male processors had a mean of 3.25 and standard deviation of 1.66 while female processors had a mean of 1.73 with a standard deviation of 0.96. This implies that male processors utilise more oil palm fruits processing technologies than their female counterparts. The mean difference was 1.52 which is of high significant effect. Therefore, this can obviously account for the significant differences that exist between male and female oil palm fruits processors in using the oil palm fruits processing technologies. This might be due to that fact that the technologies are not gender responsive.

Table 4. t-test showing the differences between male and female processors' level of utilisation of available improved oil palm fruits processing technologies.

Variables	No.of cases	Mean	SD	SE	MD	T-test	P	D
Male	120	63.25	16.66	0.152	20.525	8.996	0.03	S
Female	120	42.73	10.96	0.088				

Source: Field survey (2012).

SD=standard deviation, SE=standard error, MD=Mean difference, D=Decision

*significant at 0.01 level of significance

The significant differences observed among male and female oil palm fruits processors in technologies utilisation could be better explained by Florence (2009); Njoku (1990) and Deji and Parto (2010), FAO (2010); Techane (2002), Mulugeta *et al.* (2001), Aina (2012) and Robert (2001) assertions that gender differential is one of the important factors influencing adoption of improved technologies. Due to long lasted cultural and social grounds in many societies of developing countries, women have less access to institutional services than men.

Conclusion

- Among the six technologies identified, rotary stripper and clarification were not available in the study areas, thus, traditional techniques of stripping out oil palm fruits from the bunches and clarification or separation of palm oil from water were still in use by the processors, majority of who are females. However, higher percentage of male processors used all the available oil palm fruits processing technologies than female processors.
- Majority of male processors regularly involved in all the stages of oil palm fruits processing except in picking of palm fruits which was dominated by female. Stages such as boiling, digesting, pressing were mainly carried out using oil palm fruits processing technologies by both male and female processors.
- The study concludes that gender differential existed in the level of utilisation of oil palm fruits processing technologies among the processors in Ondo State. The study recommends that technology manufacturers should consider women when manufacturing processing technologies so as to produce gender responsive technologies that can be used by both male and female processors.

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