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Smallholders socio-economic characteristics of oil palm value chain: Constraints and prospects

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Abstract

The study on the Smallholders Socio-Economic Characteristics Oil Palm Value Chain: Constraints and Prospects was conducted in the Littoral region of Cameroon with the used of multi-sampling technique. The study made used of secondary and primary data sources. Data that were collected through survey involved the distribution of structured questionnaires to a sample of 400 smallholders who were purposively selected from two sub-divisions. The data collected through these questionnaires were analysed using Statistical Package for Social Science and Micro Soft Excel, and the interpreted resulted were presented using descriptive method, pie charts and in tables. Results indicated actors in the value chain were faced the constraints of inadequate capital, inadequate storage facilities, and fluctuation in market prices, inadequate roads, among others. Results further indicated that the activity was important as it provided opportunities such as job creation, health enhancement, education enhancement, income amelioration among others to the actors in the value chain.

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Introduction

The oil palm (*Elæis guineensis* Jacq.) is a perennial tree crop of the Arecaceae family. It is native to the countries bordering the Gulf of Guinea with the main belts running through the southern latitudes of Cameroon, Ivory Coast, Ghana, Liberia, Nigeria, Sierra Leone and into the equatorial region of Angola and Congo (Hoyle and Levang, 2012, Bakoume and Mahbob, 2006; Carrere, 2006). In the wild, the oil palm fruit occurs in two forms, dura and pisifera. Tenera is a hybrid from dura and pisifera, and the most cultivated variety because it produces fruits with higher oil content (Rieger, 2012). It is the preferred commercial variety cultivated by agro-industries in Cameroon and smallholders close to the agro-industrial areas (Hoyle and Levang, 2012).

For centuries, oil palm has provided local communities with a large number of benefits. Its primary purpose until now has been the extraction of palm oil (from the flesh of the oil palm fruit) and palm kernel oil (from its kernel or seed) for the production of edible and industrial oils (Carrere, 2006). Palm kernel waste is also used as animal feed and in co-firing in electricity generation. The palm oil industry is worth at least USD 20 billion annually The oil palm is an important tree crop with almost all parts being useful, has economic value with very high potential to create added value both in terms of products and energy (Hoyle and Levang, 2012).

According to the ministry of Agriculture and Rural Development (MINADER, 2012), Cameroon produced 230,000tons of crude palm oil in 2010, across an estate of approximately 190,000 hectare. Production of palm oil in Cameroon is distributed across three plantation type of scale; Agro-industrial plantations (58,860 ha producing 120,000 tons), Supervised smallholder plantation (35,000 ha producing 30,000 tons), and Independent smallholdings (occupying an estimated 100,000 ha producing approximately 80, 000 tons of palm oil (Hoyle and Levang, 2012). Despite the presence of this three groups, the national production is not sufficient to cover the domestic consumption (Ngom, 2011). Smallholders account for the greater percentage of palm oil but their output cannot satisfy local demands both quantitatively and qualitatively as the move along the value chain. Smallholders with less than 5ha of palm represent more than 75% of the oil palm growers but provide only half of the production due to constraints faced in the value chain, (Aboubakar *et al.*, 2014).

Cameroon is ranked the world's 13th largest producer of palm oil. Oil palm production in Cameroon increased following the drop in the prices of cocoa and coffee in the early 1990s, which at that time were the major commercial farming crops in the country. This caused many smallholders in the ecologically suitable areas to switch to planting oil palm (Ngando *et al.*, 2011). The increase in the number of oil palm smallholders and oil palm plantations has resulted in an increase in the number of artisanal oil palm presses in the palm oil production basins in Cameroon.

The major constraints of palm oil production according to Olagunju (2008) are the supply of inputs, the inefficiency of processing methods, the low quality of the output, the lack of infrastructure and inefficient distribution. With regards to production methods, the traditional method is dominant, so yields remain low. Beside low yields, this method is very tedious and laborious compared to mechanical methods and requires a substantial proportion of labour force. Milling cost of production is high, which results in high prices. The inadequate of infrastructure such as storage facilities, transportation systems, roads accessibility, and communication channels are also sources of inefficiencies in the value chain. However, the government considers the oil palm sector both artisanal and industrial as an important tool to alleviate poverty and to generate national revenues (Aboubakar *et al.*, 2014). The reason for this study was to identify the smallholder constraints and prospects in the oil palm value chain in the Littoral region of Cameroon.

Method and material

The study was conducted in the Littoral Region which is one of the ten regions of Cameroon considered as the economic heart of the nation. It differs from other parts of the country by its geographical location,

demography and economy. The Region has four divisions including the Wouri which coincides almost to the city of Douala its headquarters; the Nkam Division with Yabassi as its capital; Mungo Division with Nkongsamba as its capital; and the Sanaga-Maritime Division with Edea as its capital. The region is located between 4.25° N and 9.351° East, and covers a surface area of 20,248 km² or 4.4% of the national territory.

The study was conducted with the use of a multi-stage sampling survey method. A purposive sampling technique was used to select two divisions known for its oil palm production (Mungo, and Sanaga-Maritime). From these two divisions, five subdivisions were purposively selected from each division. 240 Growers/Processors and 160Marketers were randomly selected from each subdivision using a snow balls sampling technique, making a total number of 400 respondents.

More so, two data sources were used for this study; the secondary sources obtained from journals, articles, newspapers, documented materials, textbooks, past thesis and dissertations related to various oil palm projects, further information was obtained from IRAD and SOCAPALM located in the study area, and primary sources which were gotten through the use of questionnaires, interviews, group meetings and field observation.

The descriptive statistical methods of data analyses were employed with the use of Statistical Package for Social Science (SPSS), and Microsoft Excel, and the analysed results were presented in tables.

Results and discussions

Demographic Information

Demographic Information of actors such as gender, age, educational level,marital status, main occupation, household size, and experience in production and marketing of oil palm by-prfoducts were presented in table 1 as shown in the appendix.

Results from table 1 indicated that majority of the respondents were males with a percentage of 71. Males recorded a higher percentage reasons being that women were limited by land tenure and acquisition right to own an oil palm plantation, as well as capital and skills needed to own and manage such activities since its requires time and energy. Despite the fact that women do not have access to land, they are still the ones that occupy in the selection and the cooking of the palm fruits after being harvested by men. This result is in line with Kwasi, (2002) whose findings revealed that 86% of men own oil palm plantation Nigeria. These results also agrees with the work of Ndalama *et al.* (2015) whose observation was based on the fact that men are involved in farming since rural lands in most of African countries are owned by men.

Table 1. Demographic Information of growers/processors.

Gender	Frequency	Percentage
Male	170	71
Female	70	29
Age group in years	Frequency	Percentage
Below 25 years	18	07.5
25-44 years	81	33.75
45-64 years	94	39.17
Above 64 years	47	19.58
Educational level	Frequency	Percentage
No formal education	55	22.92
Primary	56	23.33
Secondary	65	27.08
High School	33	13.75
University	31	12.92
Marital Status	Frequency	Percentage
Single	41	17
Married	131	54
Divorce	11	5
Widow (s)	57	24
Main Occupation	Frequency	Percentage
Student	10	04.17
Farmer	139	57.92
Civil Servant	44	18.33
Trader	32	13.33
Others	15	06.25
Transport means	Frequency	Percentage
Motorcycle	127	53
Bicycle	5	2
Car	39	16
Trekking	60	25
Others	9	4
Total	240	100

Still from table 1, majority of the respondents were those aged 45-64 years (39.17%). The age range between 25-44 years (33.75%) and 45-64 years (39.17%) in the selected study areas indicated that majority of the oil palm actors were mostly handle by

the youthful middle aged persons who still have energy for work and were very daring when it comes to risk taking. This scenario ties with that of (Adebo *et al.,* 2015) where most of the respondents were between the age 41-56 years old in the United Nation's middle age category which is considered still active and so expected to make substantial contribution to enhance family livelihood, hence they may be very easy to convince when it comes to innovation and adaptation of new modern innovation.

As indicated in table 1 on the level of education, 27.08% of the respondents had access to secondary education. These persons had a basic knowledge on how to producer, processor and market oil palm by-products and could give accountability of their activities. More so these groups of respondents were able to interpret production activities better than those who had less or no education. According to Lockheed (1987), differences in educational level is an important aspect of capacity building that influences labour productivity with regard to investment decision making. He found out that four years of schooling will help increase the producer's output by 8.7% and therefore encourage children to go to school. Based on the sample of this study the level of education is quite applicable as majority of the respondents could at least read and write which was enable them carry out their activities.

Still from table 1, 54% of the respondents were married and reported that children born in to the family helped in carrying out production activities and other activities when need arises. Accroding to Enwelu *et al.,* (2014), the fact that majority of the respondents are married implies that the families may provide part of labour highly needed in oil palm production.

More so, table 1 shows that the main occupation of the respondents in the selected study areas was farming which stood at 56.92%, this was in line with the report given by Oino and Magure (2013) that farming is the main income generating source of rural areas in Africa. It is therefore seen in the selected study areas that most of the population rely mostly on farming for their source of livelihood. It from farming that many are able to send children to school and acquire household needs after making sales from their oil palm activities.

Furthermore, fig. 1 in the appendix gave brief explanations of the household size of respondent in the selected study areas. The medium size (5-10) dominated with a percentage of 59%. According to the study conducted by Kayunze (2000) in Tanzania, he observed that large household size is an important asset in working together in household economic activities. However, this occurs where almost all of the household members take part in production and or service provision to contribute to the economy of the household which was evident in the selected study areas.

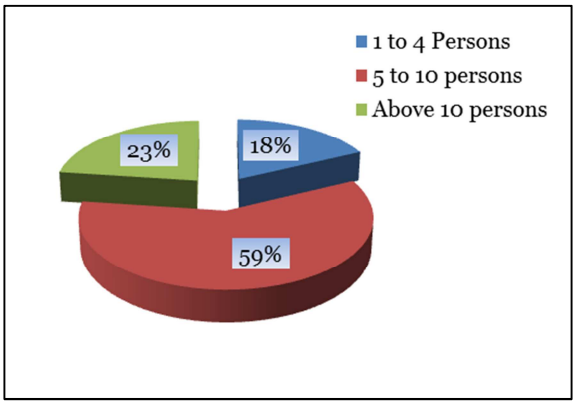

Fig. 1. Household size.

Socio-economic characteristics of Actors

Palm species mostly used by the farmers in the study area were both dura and pesifera (57%) reason being that dura has large kernel with small shelll and does not produced oil as when compared to pesifera with small kernel covered by large shell which produces oil. More so, extracted oil from dura stays longer than that of pesifera and due to this the growers prefer mixing these two species of palm in order to ensure a duration which last for over a year and plus. 91.8% of the actors were independent smallholder who grow their crop, maintain, harvest, process and sell without any contractual obligation to sell to any estate or mill. This group of actors tends to sell to the highest paid buyer. With regard to planting distance, 50% of the respondent claimed to have had a planting distance of 9m as they inter-plant crops within palms such as cassavas and plantains, and those with short planting

distance had only palms. 55.2% of the respondent reported to had used fertilizers in their farms in order to increase on their yields. 50.8% of actors reported to have been using ropes to climb before harvesting their palm fruits and Monthly harvest recorded the highest percentage (67%), 65.9% of actors used manual machine, 60.9%, of the actors used gallons to store their products. 60.9%, of actors carried out their activities using their personal savings and labour were mostly provided by family members using traditional tools which made production inadequate. In addition, 35.4% of actors used motor-bikes for their activities. 56.6% claimed to have processed their products along the river banks because processing activities requires enough water.

Actors' Constraints

Actors outline their different views with respect to the constraints and prospect faced in their activities in the value chain. These constraints and Prospects were discussed with respect to different actors in the littoral region as shown in table 2 and 3 in the appendix.

Table 2. Smallholders' Constraints in the Oil Palm Value Chain.

Constraints	Growers/ Processors	Marketers
➢ Inadequate capital	100%	94%
➢ High labour cost	45%	-
➢ High milling cost	16%	-
➢ Poor roads	57%	70%
➢ Storage facilities	70%	75%
➢ Price fluctuation	75%	80%
➢ Inadequate seedlings	57%	-
➢ Lack of government support	10%	-
➢ Inadequate customers	4%	30%
➢ Low yields	37%	-
➢ Inadequate product quality	-	6%
➢ Others	18%	11%

Growers/Processors' Constraints

From table 2, results indicated that 100% of growers/processors were faced with the challenge of inadequate capital. They were unable to get access to good seedlings; processing equipment such as machine, drums, gallons, buckets; fertilizers; high milling cost among other due to insufficient capital to purchase relevant inputs needed for production. This case is in line with the report presented by Olagunju (2008), in South Western Nigeria who indicated that smallholder farmers in the oil palm production were usually faced with the constraint of insufficient capital.

More so, accessibility is one of the major challenges to production in Cameroon. Table 2 indicated that 57% of the growers/processors in the Littoral region reported the problem of poor roads. Villages such as Isoko in Melong, Ntolo in Ebone, Bakwat in Manjo, Mouyouka in Mbanga, Kongue and Mbongo in Dizangue, Logbagex and Sikoum in Dibamba, Bissike and kakanzock in Edea 1, Herbah Pouma and Byba-bassa in Pouma among others produces much palm oil but due to the poor nature of roads, transportation are high and majority of these palm oil gets bad before buyers get to reach these areas. Also the poor nature of roads was a main problem to the farmers to transport palm nuts to the processing site.

Still on table 2, 45% of the respondents reported that they were faced with the problem of high labour cost. Smallholder growers/processors in these areas were faced with constraint of high labour cost due to the fact that labour there were high as little persons were involve in the production. Many youth had migrated to the city such as Douala, and Yaoundé in search of education and white-collar jobs and the ones who were left behind were mostly the aged persons who could not work and this situation therefore makes labour very expensive.

Also, 70% of respondents who reported of inadequate storage facilities such as gallons, drums, among others were due to the fact that they never had enough money to acquire them, and couple with the bad nature of the roads market for such inputs could not reach them easily. The storage facilities they used were too old and could not carry larger quantity of processed by-products.

Further, 75% of smallholder growers/processors complained of fluctuation in market prices especially in the peak season where in areas like Herbah –Pouma, Koukoue, Ntomba Kongue, Malike, Isoko Mantem among other, 22litres of palm oil was sold at 5000 FRS and they were forced to sell so as to avoid wastage.

57% of the smallholder growers/processors reported of other constraints such as high cost of seedlings, lack of group meetings, inadequate processing

equipment's, lack of extension services, inadequate fuel during peak season, insufficient water during the dry season, and pest which destroy palm thereby reducing yields.

16% of the respondents complained of high milling cost, season being that they do not own machines and were forced to pay for the palm nuts to be milled. In some areas of the Littoral region like Nlohe, Lala, and Kola in Manjo; Manengole, Ntolo in Ebone; among others made payment after the processing of palm nuts with the palm kernels extracted from the nuts if they were unable to pay with money.

37% of respondent indicated that they suffer from low yields due to inadequate capital to acquire good inputs. In areas such as Melong, Mbanga, Manjo, Bonalea and Ebone , most of their palms spices were dura which hardly produces much oil and their trees also were very old (>25years) and could not produce enough fruits. Low yields in some of these areas also resulted from infertility of the soil, as many of the famers calmed not to have been fertilizing their farms due to inadequate capital to purchase fertilizers. Majority of the farmers in these areas still used the traditional method of nursery where by nuts are been selected from bunches and are covered with plantain leaves for a period of about 1-2months and later transferred to the field for planting. With this method of seed germination, even if the plant grows theirs yields are usually very little.

Furthermore, 10% of the respondents reported of lack of government supports. Governments do not give loans or subvention to assist farmers increased in their production. Farmers turn to depend only on the small amount of money that they have in order to carry out their activities, hence making production very difficult for them. The reason for government not assisting farmers in these areas was due to the fact that they don't work in groups.

More so, 4% of the respondent lack customers, and due to insufficient customers, production was slow because they could not produce without selling. People who produce had already contacted their customers who only comes and collect. Conclusively, oil palm production faced a lot of constraints as production move from one level to the other till reaches the finally stage. These oil palm production constraints however reduce the living standard of so many families since their livelihood has being tampered with.

Marketers' Constraints

Still from table 2, results indicated that 97% of the marketers were faced with the constraint of inadequate capital. Wholesalers and retailers said a good market can only be done when you have a huge capital. Marketers reported that due to inadequate capital they couldn't go further in to the hinterland to get palm oil and this situation therefore caused smallholder producers/processors wastage since they produced and were unable to sell.

Further reasons from table 2 indicated that 70% of the marketers reported with inadequate transport infrastructure such as roads. The wholesalers and the retailers were more involved on the constraint of poor road since they go down in to the hinterland to buy some oil palm derivatives from the smallholder growers/processors to distribute in markets around the main towns of the littoral region. The poor nature of roads makes it very difficult for them to carry out the activities smoothly and their profits also reduce due to high cost of transportation. Fogwe (2017) conducted a study on palm oil value chain analysis in Momo Division and his results indicated that 71% of the marketers were faced with the constraint of road infrastructure in this Municipality.

More so, inadequate clients were one of the constraints pointed out by the wholesalers and retailers in the study area. 30% of the marketers indicated that they were faced with the challenge of getting customers as majority of the population were involved in the business with a lot of competition. People who could survive so well in the business were those set of people who buys and sale in bulk especially to companies and out of the national territory.

Furthermore, 75% of the wholesaler and retailers reported of other constraints such as inadequate

storage facilities, 80% reported of fluctuation in price. The prices of palm nuts, palm oil and palm kernels were not stable throughout the year, and there exist a little bit of price variation between smallholder farmers. For marketers mainly during the peak season the prices of palm oil greatly falls, on average to 7000FCFA/22litres, and in the off season prices rises to 13000FCFA/22litres. Also with large quantity of palm oil, wholesalers were unable to buy due to inadequate storage facilities. In some cases where growers/processors do not produce their palm oil very well, the stored products get bad at the warehouses resulting to greater lost and wastage incurred by the wholesaler in particular.

In the Littoral region scramble for palm oil in a particular locality by the wholesalers and the retailers are mostly base on the quality produced. That explained why some of the localities were complaining of not having customers due to the quality of palm oil they produces. 6% of the marketers complain of not been able to get access to good quality palm oil. Those types of palm oil could only be sold to companies involved in soap making such as Mayor in Bonaberi, Douala since the quality was not good enough for household consumption.

Today, market constraints are much more common in the world of business. Any person struggling to get in to production or business or already in the business meets with these constraints on daily bases. The constraints helps in strengthen production and business and also makes competition high, thereby making many producers to improve on their quality and quantity of production in order to meet up with the demanding needs by the population. In the littoral region oil palm production is one of the most important and lucrative businesses for most of the inhabitants of Bassa, Bakoko, Boo among others. Despite the constraint as pointed out in table 1 wholesalers and retailers were still involved strongly in production, processing and marketing activities.

Actors' Prospects

Table 3 in the appendix shows the actors' Prospects in the Oil Palm Value Chain in the littoral region of Cameroon. Activities in the oil palm value chain served as a source of employment to the actors in the value chain thus enhancing their income. A similar situation was observed in the study conducted by Adebo *et al.* (2015), where report stated that 95.8% of those who were involved in the palm oil production gained full employment, 75% of the farmers were able to enhance on their standard of living while 66% of the farmers on the ability to meet their basic needs. Result from the data collected and analyzed showed that 40% of the growers/processors either cultivating other products or practice other profession, and 43% marketers' trade in other products, oil palm value chain is a greater employer of most villagers who never had mean to education, school dropout and a fall back activities to retired civil servants and other persons who were unable to manage city life.

Table 3. Smallholder Prospects in the Oil Palm Value Chain.

Prospects	Growers/ processor	Marketers
➢ Full employment	55%	75%
➢ Income enhancement	100%	100%
➢ Education enhancement	87%	92%
➢ Household enhancement	95%	90%
➢ Health enhancement	80%	90%
➢ Nutrition	100%	100%
➢ Consumption of by-products and waste	100%	-
➢ Income diversification activity	60%	40%
➢ Revenue	-	100%

More so, oil palm production produces many by-products like the palm oil, palm kernels which are raw material for the production of palm kernel oil and palm kernel soap. This palm kernel also produces kernel cake as one of the by-product which is used as component for feeding animals. Other by-products from oil palm production such as the last grade from palm oil are used to produce soap, feed animals, and the chaffs and sludge are used as fuel. More so, the oil palm tree produces palm wine, use for the construction for bridges and houses, the palm fronts are used as broom for sleeping. Some of the uses and benefits were clearly stated in the research conducted by Fogwe (2017) on palm oil value chain analyses in Momo division, North West region, where he went further to say palm as an important ingredient does

not only serve for its nutrition purposes but it also enhances health.

Furthermore, the production and commercialization of oil palm by-products such as palm oil is a very profitable activity in the littoral region. Palm oil is an inevitable ingredient in cooking and as a result there is always a ready market. These activities generated lots of income and boost the financial status and the wellbeing of actors in the value chain. With 40% of growers/processors either cultivating other products or practice other profession and 43% markers trade in other products, it shows that the activity is not only profitable but also it is an income diversification activity. The study conducted by Nchanji *et al.* (2013) in this light revealed that the income generated from the sales of crude palm oil (CPO) had a significant contribution to household livelihood as it was used in feeding, health care, education, management of oil palm farms among others.

In addition to the above mentioned oil palm production in littoral region also served as mains for the government to raise income through councils. Population using public places such as markets, warehouses, for their activities were obliged to pay market due based on the quantity of good sold every market days. The due receipt ranges from 100FCFA to 1000FCFA daily. These dues collected are used by the government through councils to carry out developmental activities in respective areas. The study is in line with that of Fientrenie *et al.*, (2010), and Bunyamin (2008) whose study indicated that oil palm plantations are important drivers of economic development because they contribute to state revenue.

Conclusion

Activities in the oil palm value chain served as a source of employment to the actors in the value chain thus enhancing their income, children's education, household needs, health, income diversification activity, as well as generate revenue to the society through market due collection. In same lights, actors faced challenges such as inadequate capital, inadequate storage facilities poor roads networks, fluctuation in prices, inadequate seedlings; low yields resulted from soil infertility among other. Looking at the oil palm value chain in the Littoral region, it was concluded based on analyzed results and field observations that the oil palm production was more of subsistence agricultural activity in which majority of the population where involved. Prices were determined by the forces of demand and supply where some traders negotiate their prices with buyers, and a few set up their prices. The was a very low degree of specialization in the value chain as one actor could do almost all the activities involved in the chain. Labour was mostly hired and family hands. However the smallholder oil palm sector in Cameroon and littoral region in particular need to be taken care of as the produce up to 75% of the palm oil consumed in the national territory, in order to alleviate poverty and improve on the living standard

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