Analysis of Groundnut Value Chain in Hong Local Government Area of Adamawa State in North Eastern Nigeria

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Abstract: The study analyzed the value chain of groundnut in Hong Local Government Area of Adamawa State in North Eastern Nigeria. It described the socioeconomic characteristics of value chain actors, determined the cost and returns along the groundnut value chain and identifies the constraints faced by the actors along the groundnut value chain. Multi-stage sampling technique was used to sample 144 respondents which served as sample size and the data obtained were analyzed using gross margin and descriptive statistics. The results of the socio-economic characteristics shows majority (83%) of the actors involved their falls between 21-40 years were at active age, 70.14% were female, 58.33% were married , most (97.23%) attended one form of formal education or the other and their major sources of capital to actors obtained capital from personal savings (73.61%). The average gross margin of the actors shows that processor of cake, processor of roasted groundnut, producers of groundnut and marketers of groundnut earned ₦17,720.00, ₦8,893.00, ₦ 12,900.00 and ₦6,450 per 100kg of shelled groundnut respectively. It was also found that inadequate capital. pest and disease and poor verities of groundnut were the major constraints limiting groundnut production in the study area. It was concluded that value chain of groundnut is profitable though the actors faces some challenges. The study therefore, recommend both government and non-governmental organizations should provide soft loan to the actors to enable them to expand their ventures, to boost up activities along the groundnut value in the study area there is need to provide them with modern processing technologies so as to add more value to the products along the chain. There is need to gear in providing subsidizing input prices to the actors by governmental and non-governmental organization.

Keywords: Value, Chain, Groundnut and Hong

I. INTRODUCTION

Groundnut (*Arachis hypogeal*) originated from South America, but is now widely cultivated throughout the tropical, sub-tropical and temperate countries, and in Africa, Asia, North and South America. Optimum mean daily temperature to good growth is 3000C and growth ceases at 1500C and cool temperature delay flowering (Asongwa *et al.,* 2011). It is commonly called the poor man's nut is an important oilseed and food crop for millions of people in the semi-arid tropics. It generates employment on the farm during cultivation and during processing. According to Food and Agriculture Organization (FAO, 2011) and Girei *et al.* (2013),

it is grown in nearly 100 countries with China, India, U.S.A, Indonesia, Nigeria, Myanmar and Sudan as major producers. Nigeria is among the world's groundnut producers, accounting for 10%, 39% and 51% in the world, Africa and West Africa, respectively (ICRISAT, 2011).

The crop is important both as a cash crop and food crop. It is the 13th most important food crop of the world and the 4th most important source of edible oil. Its seeds contain high quality edible oil (50%), 40-50% protein and 10-20% carbohydrates (Taphee and Jongur, 2014). The kernels are consumed directly as raw, roasted, salted or boiled forms. However, oil is the most important product used for both domestic and industrial purposes. The crop is used as industrial materials for producing oil-cakes and fertilizer (Nnamdi, 2010). Its seeds contain high quality edible oil (50%), easily digestible protein (25%) and carbohydrates (20%) (FAO, 2011). As such, it is an essential food product that enjoys good patronage in both the domestic and international market as a veritable source of edible oil, animal feed and also consumed as snacks (Nnamdi, 2010).

Groundnut is a high-value crop with potential to create employment and improve the living standards of the rural poor. It contributes to ensure the food security and nutritional needs across all social classes. It is produced mainly for domestic consumption in the form of products that are a key ingredient in local dishes such as groundnut paste, snacks (roasted), oil, flour, and kulikuli (fried cake). Leaves, stems and roots are used to feed animals during the dry season. Rotated with maize, the crop is an integral part of the mixed cropping- livestock system (Value Chain Analyses for Development (VCAD,2020). In Nigeria, groundnut is process into various products either for home consumption or for commercial purposes. It is a source of income and employment to large proportion of rural women in northern Nigeria as they are transformed into other finished commodities such as groundnut oil, cake and animal feed among others. Processing of groundnut is perhaps the best area an investor can engage in with maximum utilization of the product. The milling of the product would yield edible oil which can be refined to get vegetable oil and groundnut cake which is a valuable input in the preparation of animal feed and as such can be sold to animal feed millers (Ibrahim *et al.,*

2010). Hence, little or none of the study have been conducted on value chain of groundnut in the study area which necessitate the study. The broad objective of the study was to analyze the value chain of groundnut in Hong Local Government Area of Adamawa State. Specifically, it described the socioeconomic characteristics of value chain actors, determined the cost and returns along the groundnut value chain and identifies the constraints faced by the actors along the groundnut value chain

II. METHODOLOGY

Study Area

The study was conducted in Hong local government area of Adamawa state, Nigeria. Hong is located in northern part of Adamawa State, it lies between latitude 7^0-11^0 N and longitude 11^0-14^0 E. The Local Government Area has a land area of about 117,240 square kilometers with a projected population of 226,100 (Media Nigeria, 2018). The area falls within Sudan savanna zone and have a tropical wet and dry climate. Dry season lasts for a minimum of five months (November to March), while the wet season lasts from April to October. The major occupation of people in the area is farming and there are few traders, civil servants and transportation. The major crops grown in the area include groundnut, sorghum, maize, rice and millet. The area has seven districts. Fishing activities is mostly carried out by the residents along some Rivers as River Yadzaram, while Fulani are mostly settled cattle herders (Cosmas, 2020).

Sampling Procedure

Primary data were used for the study through structured questionnaire administered to the respondents and multi stage random sampling technique was used to sample the respondents. In the first stage, four out of the seven Districts namely; Kulinyi, Hildi, Pella, Ndzukwaba, Uba, Hong and Gaya Districts in the Area were sampled using random sampling; namely, Hildi, Pella, Ndzukwaba and Uba. The second stage involved proportionate sample of villages in each of the sampled district using random sampling. In third stage, a sample size of 144 of groundnut actors were randomly sampled using proportionate sampling technique from the sampled areas. The sample size was determined by the used of Yamane (1967) for finite population, respectively as used by Yaro (2020).

Method of Data Analysis

The data obtained were analyzed as follows:

- Gross margin was used to analyze profitability. GM = TR-TC
  Where GM is gross margin, TR is total revenue and TC is Total cost
- Descriptive statistics such as mean, frequency and percentage was used to explain socioeconomic characteristics and constraints faced by actors along value chain.

III. RESULTS AND DISCUSSION

Socio-Economic characteristics of Actors along Value Chain of Groundnut

The results in Table 1 show socio-economic characteristics involved in a value chain of groundnut in the study area. It shows majority 83% of the actors involved their falls between 21-40 years followed by those with less than 20 years (13%) and the least were 41 years and above. This implies most of the respondents are at active age. The Table further shows that most of the respondents 70.14% were female made up the actors (farmers, processor and marketers). It also revealed that majority 58.33% of the respondents were married. The educational qualification of the respondents shows that most (97.23%) attended one form of formal education or the other and 2.78% did not attend any formal of education or the other. This implies that most of the actors in the study area are literate. The sources of capital to actors involved in the value chain of groundnut indicates majority (73.61%) obtained capital from personal savings followed by family and friends (17.36%), others (5.56%) and the least were banks (3.47%).These findings collaborate with the study of Ishaya *et al.* (2018) and Girei *et al.* (2013).

Table 1: Socio-economic characteristics of actors along Value Chain of Groundnut (n =144)

Items	Frequency	Percentage
Age (Years)		
≤20	16	11.11
21-40	123	85.42
41and above	05	3.47
Gender		
Male	43	29.86
Female	101	70.14
Marital status		
Single	43	29.86
Married	84	58.33
Widower	05	3.47
Widow	11	7.63
Divorced	01	0.69
Qualification		
Primary	28	19.44
Secondary	87	60.42
Tertiary	17	11.81
Informal	08	5.56
None	04	2.78
Sources of Capital		
Personal savings	106	73.61
Bank	05	3.47
Family and friends	25	17.36
Others	08	5.56

Source: Field Survey, 2021

Gross Margin of Actors Along Value Chain of Shelled Groundnut

In Table 2 it shows the average gross margin of the actors involved in the value chain of groundnut. The total variable cost (TVC) incurred by the processor of cake was ₦39,980.0 out of which cost of groundnut constitute 89.04% and the total revenue was ₦48,450 per 100kg of shelled groundnut with a profit of ₦17,720.00. The processor of roasted groundnut incurred an expenditure of ₦39,752.00 as total variable cost, where cost of groundnut accounted 90.56%, the total revenue was ₦48,645.00 and they earned a gross margin of ₦8,893.00. The Paste processors incurred a total variable cost of ₦39,752.00 and the cost of groundnut was ₦ 36,000 which constitutes 90.56% of the total variable cost and the business was viable as the earned a gross margin of ₦7,936. Furthermore, the producers of groundnut incurred a total variable cost of ₦26,600.00 in the production of 100kg of shelled groundnut and earned a total revenue of ₦39,500.00 with the gross margin of ₦12, 900.00. Finally, the marketers of groundnut incurred a total variable cost of ₦ 40,459.00 per 100kg of shelled groundnut where cost of groundnut constitutes 97.98% and the revenue realized was ₦46,909.00 with the gross margin of ₦6450.00 per 100kg of shelled groundnut in the study area. This agreed with the study of Ishaya *et al.* (2018) who examined the profitability analysis of groundnut oil processing among women in Zuru Emirate of Kebbi State and foundout that the venture is profitable.

Table 2: Average Gross Margin of Actors Along Value Chain of Shelled Groundnut (n = 144)/100kg

Cake Processors		
Items	**Amount (N)**	**Percentage**
Cost of groundnut	35600.00	89.04
Cost of fire wood	1800.00	4.50
Cost of frying	1200.00	3.00
Cost of Milling/extraction	700.00	1.75
Cost of salt	100.00	0.25
Cost of pepper	100.00	0.25
Cost of packaging	480.00	1.200
Total variable Cost (TVC)	**39,980.0**	**100.00**
Revenue from oil	29,250.00	
Revenue of cake	28,450.00	
Total revenue(TR)	**57,700.00**	
Gross margin (TR-TVC)	**17,720.00**	
Roasted processors		
Cost of groundnut	36000.00	90.56
Cost of fire wood	1600.00	4.02
Cost of frying	1500.00	3.77
Cost of packaging	552.00	1.39
Cost of salt	100.00	0.25
Total variable Cost (TVC)	**39,752.00**	**100.00**
Revenue	48,645.00	
Gross margin (TR-TVC)	**8,893.00**	
Paste Processors		
Cost of groundnut	36852.00	92.23
Cost of fire wood	1522.00	3.81
Cost of grinding	1200.00	3.00
Cost of packaging	384.00	0.96
Total variable Cost (TVC)	**39,958.00**	**100.00**
Revenue	47,894.00	
Gross margin (TR-TVC)	**7,936.00**	
Producers		
Total Variable Cost	**26,600.00**	
Sales	39,500.00	
Gross Margin	**12,900.00**	
Marketers		
Cost of groundnut	39,640.00	97.98
Cost of Transportation	354.00	0.87
Cost of Packaging	465.00	1.15
Total Variable Cost	**40,459.00**	
Revenue	46,909.00	
Gross Margin	**6450**	

Source: Field Survey, 2021

Constraints Faced by Actors along Value Chain of Groundnut

The results in Table 3 revealed that majority (100%) of the producers disclosed inadequate capital , pest and disease and poor verities of groundnut are the major constraints limiting groundnut production in the study area. Also, most of the processors disclosed that inadequate capital, high transportation cost and high cost of packing materials as revealed by 71% of the respondents affect the activities along the value chain. Finally, marketers of groundnut revealed that their major problems were inadequate capital (71%), storage facilities (57%), transportation cost (71%) and inadequate packaging materials (71%). Hence, major challenges that face actors along the value chain were inadequate capital, transportation and poor varieties which has effect on the earning from their products as it reduces gross margin. This is in line with the findings of Ishaya *et al.* (2018) and Amolegbe and Abubakar (2018).

Table 3: Constraints Faced by Actors along Value Chain of Groundnut in the Study Area

Constraints	Producer (n= 71)		Processor (n= 48)		Marketer	(n= 25)
	Frequency	%	Frequency	%	Frequency	%
Inadequate capital	71	100	135	94	18	71
Poor variety	71	100	0	0	0	0
Storage facility	58	40	52	36	14	57
Pest and diseases	71	100	0	0	0	0
Transportation cost	58	40	48	100	18	71
Packaging materials	52	36	48	100	18	71

Source: Field Survey, 2021

IV. CONCLUSION AND RECOMMENDATIONS

Conclusion

Conclusively, groundnut value chain is profitable and the actors provide different forms of utility to consumers thereby making various products from groundnut in the study area. It was confirmed that majority of the actors were female, at active age ,were married, attended one for of formal education or the other and most of them gain capital from personal savings. Similarly, major constraints faced by the actors include inadequate capital, poor varying, pest and disease, transportation cost storage facilities and packaging materials.

Recommendations

On the basis of the findings, we recommended: -

i. Both governmental and non-governmental organizations should provide soft loan to the actors to enable them to expand their ventures.

ii. To boost up activities along the groundnut value in the study area there is need to provide them with modern processing technologies so as to add more value to the products along the chain.

iii. There is need to gear in providing subsidies inputs to the actors by governmental and non-governmental organization.

REFERENCES

[1] Amolegbe, K. B. and Abubakar, N A. (2018). "Value Chain Analysis Of Groundnut Sub Sector In Kwara State, North-Central, Nigeria. Selected Poster prepared for presentation at the 2018 Agricultural & Applied Economics Association Annual Meeting, Washington, D.C.

[2] Asongwa, P., Ihemeje, M. and Ezihe, W. (2011). Economic Analysis of Groundnut Processing. Journal of ABU Zaria, 1(2):23-29.

[3] Cosmas, W. (2020). Efficiency Analysis of Maize Production Systems in Hong Local Government Area Of Adamawa State, Nigeria. A Thesis Submitted to the Post Graduate School Modibbo Adama University,Yola.

[4] Food and Agricultural Organization (FAO) (2011).Nigeria at a glance on Food Production. Retrieved May, 15th , 2019 from: http://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/

[5] Girei, A. A., Dauna, Y. and Dire, B. (2013). An Economic Analysis of Groundnut (Arachis hypogea) Production in Hong Local Government Area of Adamawa State, Nigeria. J. Agric. and Crop Res., 1(6): 84-89.

[6] Havard Business School (2021). Value Chain Analysis. Retrieved October, 7th 2021 from www.online.hbs.edu/blog/post

[7] Ibrahim, R.I., Muhammad, A.I. and Ahmad, H. K. (2010). Effect of Extraction Methods in Some Small Scale Industries in Kano State. Bayero Journal of Pure and Applied Science, 12(1): 73-69.

[8] International Crop Research Institute for the Semi Arid Tropics (ICRISAT) (2011). Groundnut Varieties.

[9] Ishaya, R; Ngaski, A. A; Maikasuwa, A; Abubakar, B.Z. and and Gona, A. (2018). Profitability Analysis of Groundnut Oil Processing Among Women in Zuru Emirate of Kebbi State. International Journal of Advanced Academic Research, Sciences, Technology and Engineering. 4(2): 14-27.

[10] Media Nigeria (2018).Adamawa State Population. Retrieved November, 28th November, 2019 from www.medianigeria.com/what-is-adamawa-state-population/

[11] Nnamdi, A. E (2010). Groundnuts Processing and Trading in Nigeria.

[12] Projectng (2021). Economic Analysis Of Groundnut Processing (oil And Cake) and Its Effects On Poverty Level Of The Processors In Zamfara State Nigeria

[13] Samuel , P. and Ocholi, A. (2017).Analysis of Costs And Returns of Groundnut Processing in Taraba State,Nigeria. Journal of Research in Business and Management, 5(6): 19-26.

[14] Taphee, G. B. and Jongur, A.A.U.(2014). Analysis of Profitability of Groundnut Productin in Northern Part of Taraba State, Nigeria. International Journal of Computer Applications, 125(1):34-39.

[15] Value Chain Analyses for Development (VCAD,2020). Groundnut Value Chain analysis in Ghana. Retrieved October, 7th 2021 from www.europa.edu/capacity4dev/value-chain-analysis.

[16] Yamane, T. (1967). Statistics: An Introductory Analysis, 2nd Edition; Hamper and Row.

[17] Yaro, M. (2020). Socio-transmitted Helminthiasis and Schistosomiasis among Residents along River Benue Adamawa State, Nigeria. A thesis Submitted to Zoology Department, Modibbo Adama University, Yola.