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ASSESSMENT OF SOURCES OF INFORMATION AND CONSTRAINTS ASSOCIATED WITH GROUNDNUT PRODUCTION AND POST-HARVEST VALUE-ADDITION AMONG FARMERS IN GOMBE STATE.

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ABSTRACT

The study was conducted to assess sources of information and constraints associated with groundnut production and post-harvest value-addition among farmers in Gombe State, Nigeria. Multistage, purposive and simple random sampling techniques were used to select a sample size of 159 respondents. Data collected using a structured questionnaire were analyzed. Descriptive and inferential statistical tools like frequency, percentages and logistic regression were used for analysis. The result showed that 43.4% of the respondents had Grade 11/ Secondary education About 43% had household size of 5 -10 persons and 34.6% had farming experience of 6 -10 years. About 71% of the respondents had annual income of less than ₦100,000 from sales of groundnut and its products per annum. Result on skills acquired on value-addition of groundnut production and processing shows that 30.2% of the respondents acquired skills on toasting peanut. Result on products obtained from processing groundnut shows that 61.6% obtained oil as their product. The study concludes that if farmers' level of education and experience are increase there will be increase in value-addition. Based on the findings, it is recommended that skills on groundnut value –chain should be taught to the farmers by the extension agents and government agencies.

Keywords: Assessment, Information, Constraints, Groundnut, Value-addition.

INTRODUCTION

Agriculture has been an important sector in Nigerian economy in the past decades despite the oil boom. It provides employment opportunities for the teeming population, eradicates poverty and contributes to the growth of the economy (Oji, 2011). Majority of the world's poor people live in rural areas and depend upon agriculture for their livelihood. Hence, agriculture is critical for both economic development and poverty reduction (Armas, Osorio, Moreno-Dodson & Abriningrum, 2012; Ibrahim, Ayinde, Dauda & Mukhtar, 2012; Omigie, 2013).

Groundnut or peanut commonly called the poor man's nut, is an important oilseed and food crop which is a native of South America. The botanical name for groundnut is *Arachis hypogeal L.* It is derived from two Greek words, Arachis meaning a legume and hypogaea meaning below ground, referring to the formation of pods in the soil (Dauna, 2012; Taphee, Jongur, Giroh & Jen, 2015).

It is a legume that ranks 6th among the oilseed crops and 13th among the food crops of the world, it has about 50% edible oil, 25% easily digestible protein, 20% carbohydrate 5% and nearly half of the 13 essential vitamins and 7 of the 20 essential minerals necessary for normal human growth and maintenance, (International Crop Research Institute for Semi-Arid Tropics (ICRISAT, 2010).

Groundnut has contributed immensely to the development of the Nigerian economy through the sales of seeds, cakes, oil and haulms (Mustapha, Mohammed, Adeosun, Mathew, Muhammed and Ibn-Aliyu.,2015). In terms of oil production, available statistics from FAOSTAT (2015), showed that between 1993 and 2013, on the average, Africa contributed approximately 1.1 million (21.3%) tons of her groundnuts to oil production and in 2013, Nigeria contributed approximately 312 thousand tons of her groundnuts to oil production. These statistics highlights the importance of groundnut to the Nigeria economy particularly for smallholder farmers.

Groundnut production requires more management skills just like many other crops because it is highly susceptible to rosette epidemics and folia diseases, afloxacin contamination from the seed to planting to harvesting (Ajeigbe, Waliyar, Echekwu, Ayuba, Motagi, Eniayeju & Inuwa, 2014; Owosu-Adjei, Baah-Minah & Salifu, 2017). Some of these management skills include use of viable seeds, seeds treatment, proper application of fertilizer, crop rotation, planting date, weeding, pest and disease control, harvesting and processing.

Food processing and preservation is a set of physical, chemical and biological processes that are performed to prolong shelf-life of foods and at the same time retain the features that determine the quality such as colour, texture, flavor and especially its nutritional value. Food processing removes toxins, preserves the product, ease marketing and distribution tasks and increases food consistency (Getahun & Tefera, 2017).

Benefits of food processing include toxin removal, preservation, easing marketing and distribution task and increasing food consistency. In addition, it increases yearly availability of many foods, it enables transportation of delicate perishable foods across long distances, makes many kinds of food save to eat by de-activating spoilage and pathogenic micro-organisms. Modern supermarkets would not exist without modern food processing techniques and long voyages would not be possible. Processed foods are usually less susceptible to early spoilage than fresh foods and are better suited for long distance transportation from the source to the consumer (Gabriella, 2016).

According to Hartwich, Mongo, Ampuero and Soto (2010), value-chain is a mechanism that allows producers, processors, buyers and sellers separated by space and time to add value to products and services as they pass from one segment of the chain to the next until the products gets to the final consumers (Mustapha, Mohammed, Adeosun, Matthew, Muhammed & Ibn-Aliyu, 2015). Products that can be obtain from groundnut processing are (groundnut butter, groundnut paste, confectionaries, candy, ice cream, paints, margarine, peanut snacks, lubricants, abrasives, cosmetics, roasted and shelled nuts among others). Moreover, higher income can be obtained through value addition activities of groundnut as it will reduce poverty and improve the standard of living of farmers in the rural areas (Usman, Ayinde, Dauda & Mukhtar, 2013; Ahmed, Yusuf & Dunah, 2016). Also, the socio-economic characteristics of groundnut farmers such as level of education, farmer's experience and family size could affect the production and processing of groundnut (Samuel, Deborah & Abubakari, 2014). The aim of this study is to describe the socio-economic characteristics, ascertain value-addition skills and the products obtained from processing groundnut among rural farmers in Gombe State, Nigeria.

The null hypothesis for the study was stated as:

1. Socio-economic characteristics of the respondents do not have any significant

influence on groundnut value- addition skills in the study area.

MATERIALS AND METHODS

Study Area

This study adopted public opinion survey design which made use of questionnaire for data collection in Gombe State, Nigeria. The State is located in the North-Eastern Nigeria. Gombe State is located between latitude 9º3'' and 12º3'' North and longitude 8º45" and 11º45" East (Nigerian metrological agency NIMET, 2014). It lies in the centre of North East Goegraphical zone of Nigeria and shares boundaries with all the states in the zone: Adamawa and Taraba States in the South, Bauchi State, in the West, Borno State in the East and Yobe State in the North. It occupies a land area of about 20265sq km. Gombe State has a population of 3.3 million (National Broadcasting Company NPC, 2019).

Population and Sample Size

The population of this study consisted of all groundnut farmers and processors in the eleven Local Government Areas (LGAs) of Gombe State. A total of one hundred and fifty-nine respondents were selected as a sample size using multistage sampling technique, involving stratified, purposive and simple random sampling techniques. Data were collected from primary source with the use of a well-structured questionnaire (Field survey, 2021).

Techniques of Data Analysis

Data for this study were analyzed using descriptive statistics, such as frequency, percentages and mean as well as inferential statistic like logistic regression. While frequency, percentage and mean were used to analyze the aim of the study logistic regression was used to test for the stated hypothesis.

RESULTS AND DISCUSSION

Research Question One:

Describe the Socio-Economic Characteristics of the Respondents in the Study Area

Table 1 showed that most of the farmers (67.9%) were within the age bracket of 25-50 years. This implies that majority of the respondents were in their productive age, active and strong enough to participate effectively in agricultural activities especially groundnut value-chain. The finding agrees with that of Umeh and Atabor (2006) who found that young farmers who are still strong and full of energy are more likely to make meaningful impact in agricultural production. Odoemenem and Obinne (2010) reported that middle aged farmers are relatively more open to risk taking and have longer planning horizon than older people.

Results on sex showed that majority of them (83.0%) were males while 17.0% were females. The results indicated that males were more engaged in groundnut value- chain activities than females. The dominance of males can be attributed to the fact that groundnut value –chain activities is laborious and its operations are very tedious for females. The finding agrees with Anonguku (2014) who reported that males are more actively involved in agricultural activities than females.

The marital status of the respondents showed that many (56.0%) of them were married, while singles were 28.3%, widows/widowers were 11.3%, divorcees were 4.4%. This implies that most of the respondents in the study area were married and stable and thus, can receive help from their spouses and children in carrying out their farming activities, thereby reducing the cost of hired labour. This result is in line with that of Hussaini, Napoleon and Hassan (2010) that married people are involve in agriculture

because it is a venture through which people make enough money to support their families.

The results on the respondents' level of education show that 43.4% of them had either Grade 2 / Secondary education while 22.0%, 21.4%,10.7% and 2.5% had non- formal, tertiary, no education and primary education respectively. It can be seen that a reasonable portion of the respondents in the study area were literate and could read and write. This could serve as an impetus in engaging in the value- chain activities of groundnut as this will increase their income and improve their standard of living and livelihood. The finding is in line with that of Ibrahim et al (2012) who reported that education has been discovered to be highly related to effectiveness of work and economic function. They reported that education helps a farmer adopt new technology easily and assimilate fast. Inadequate knowledge of a groundnut farmer limits his ability to use improved varieties and new technologies.

The results show that 43.4% of the respondents had household size of 5-10 members, 30.8% had less than 5 members, 17.6% had 10-15 members and 8.2% had over 15 members. This implies that majority of farmers had a fairly labour provision in agricultural sector. This agrees with the finding of Awolade and Kayode (2012) that with a family size of five or more, there may be no need to employ outside paid labour to work on their farms and this reduces cost of production and processing.

The study also showed that 34.6% of the respondents had 6-10years of farming experience, 21.4% had 10 years and above, 17.0% for both 2 years and 3-5 years and 10.1% had 1 year experience. This implies that majority of the farmers had reasonable experience in groundnut value-addition process. This would influence their adoption of various skills in groundnut value-chain processes. This agrees with the findings of Ahmed, Yusuf and Dunah (2016) who reported that the level of productivity might be influenced by the number of years of farming in terms of skill acquisition and better farm practices.

The study showed that majority (70.5%) of the respondents earned below ₦100,000 from sales of groundnut and it products per annum, 20.1% earned from ₦ 100,000-₦200,000, 6.3% earned between ₦ 200,001 and ₦ 400,000 and 3.1% earned between ₦ 400,001 and ₦600,000 per annum. This implies that most farmers do not earn much. High income earned from the agriculture and other activities can increase farmers' financial capacity and the probability of investing in new agricultural technologies thereby, increasing their standard of living.

The study indicated that some (30.2%) of the respondents had farm size of less than one hectare, 23.9% of them had 3 hectares, 22.6% of them had 2 hectares, 4.4% of them had 1 hectare and 1.9% of them had above 3 hectares.

Table 1: Socio- Economic characteristics of groundnut farmers (n = 159)

Variable	Frequency	Percentage	Mean
Age (years)			
< 25 years	21	13.2	1.43
26 – 50	108	67.9	
51 above	30	18. 9	
Total	**159**	**100**	
Sex:			
Male	132	83.0	1.39
Female	27	17.0	
Total	**159**	**100**	
Marital status			
Single	45	28.3	2.33
Married	89	56.0	
Widow / widower	18	11.3	
Divorce	7	4.4	
Total	**159**	**100**	
Level of Education (years)			
No Education	17	10.7	1.26
Primary	4	2.5	
Grade ii / Secondary	69	43.4	
Tertiary	34	21.4	
Non formal	35	22.0	
Total	**159**	**100**	
Household size (numbers)			
1 - 5	49	30.8	1.85
6 – 10	69	43.4	
11 – 15	28	17.6	
> 15	13	8.2	
Total	**159**	**100**	
Farm size (hectares)			
<1	48	30.2	1.47
1	34	21.4	
2 – 2.99	36	22.6	
3 -- 4	3	1.9	
Total	**159**	**100**	
Farm experience (years)			
1-1.99	16	10.1	1.39
2- 3.99	27	17.0	
4 – 5.99	27	17.0	
6 – 10	55	34.6	
> 10	34	21.4	
Total	**159**	**100**	
Annual Income(Naira)			
< 100,000	112	70.5	
100,001 – 200,000	32	20.1	
200,001 – 400,000	10	6.3	
400,001 – 600,000	05	3.1	
Total	**159**	**100**	

Source: Data Analysis, 2021

Research Question Two:

Ascertain Value Addition Skills of the Respondents in the Study Area

Results on Table 2 showed that 6.3% of the respondents acquired the skills on hoeing, 8.3% acquired skills on planting, 23.3% acquired skills on oil cake production, 25.2% acquired skills on how to grind groundnut, 6.9% acquired the skills on making groundnut paste and 30.2% acquired the skills on frying groundnut. This implies that the respondents have acquired one form of skill or the other which shows that they can add value to their groundnut but the skills are traditionally based not modern. This agrees with the findings of Okello *et al.,* (2013), which stated that farmers are greatly constrained by a lack of knowledge and skills in post-harvest handling, processing and value addition to increase marketability of their produce. In the same vein, Taphee et al (2015) indicated that inspite of the availability of abundant land and human resources in Nigeria, groundnut production has been on the decline over the years due to the cost of transport, infrastructural facilities like road network, price of commodity and activities of commercial agents.

Table 2: Distribution of the value addition skills of the respondents (n=159)

Skills	Frequency	Percentage (%)
Making ridges	10	6.3
Planting	13	8.2
Oil & Caking of groundnut	37	23.3
Grinding of groundnut	40	25.2
Making groundnut Paste	11	6.9
Toasting groundnut	48	30.2
Total	159	100.0

Multiple Responses
Source: Data Analysis, 2021

Research Question Three:

Products Obtained from Processing Groundnuts by the Respondents in the Study Area

Table 3 indicated that 61.6% obtained oil, 25.8% obtained animal feed and 12.6% obtained groundnut cake. This implies that the respondents are only limited to traditional method of processing (cake and oil). This practice does not meet international standard and does not compete favorably in the international trade, while other products like peanut snacks, confectionaries etc. are left untapped, in which if they are produced, more income will be gained as consumers have products preference and farmers' income will be increased, thereby leading to improve and high standard of living. This result agrees with that of Aboki (2015) that most of the processors obtained oil and groundnut as their products as they relied mostly on traditional tools and equipment for processing groundnut, hence earn low profit, low skill acquisition and less technology; even though mayonnaise, confectionary products such as snacks, sauce flour, cookies and peanut butter can be made from groundnut.

Table 3: Distribution of products obtained from processing groundnut by the respondents (n=159)

Products Obtained	Frequency	Percentage (%)
Oil	98	61.6
Cake	20	12.6
Animal feed(forage)	41	25.8
Total	159	100

Multiple Responses
Source: Data Analysis, 2021

Test of Hypothesis

Hypothesis 1. Socio-economic characteristics of respondents do not have on groundnut value-addition skills in the study area. The results (table 4) of Logistic regression showed that the level of education is significant at any significant 1%. This implies that increase in their level of education can likely increase the acquisition of skills in groundnut value addition. This results agrees with the apriori expectation that as the educational level of the respondents increases, there is increase in skills (education brings about the increase in skills) which leads to increase in groundnut value addition. The result in this study is also in agreement with the finding of (Awunyo-Vito et al, 2013) whose educational variable was positive and statistically significant at 1% implying educational level increase output of farmers.

Similarly, the years of farming experience bring about increase in value addition as in the result which showed that farming experience is significant at 5% thus having influence on value addition skills. This result disagrees with Samuel et al (2014) that hold the view that older farmers may be reluctant to change and sometimes their unwillingness or inability to adopt technological innovations could affect their production abilities leading to low level of outputs realized.

Conversely, the result on household size showed that increase in the household size results to a decrease in value addition (-0.088). The possible reason to this result could be attributed to the fact that if the household is comprised of non-productive members (i.e. if the ratio of the production members is less).

The implication of this result is that farmers do not add value to their groundnut because of their level of education, farming experience and household size. Therefore, we reject the null hypothesis that socio-economic characteristics do not have significant influence on their value addition skills and accept the alternative.

Table 4: Logistic regression for the influence of socio-economic characteristics in value-addition

Socio-economic characteristics	B	S.E	WALD	R^2 adjusted	X^2 value	Df	Sig.
Level of Education	1.58***	.226	.065	.128	.40811	1	.000
Sex	-.060	.072	.212			1	.410
Farming experience	.115**	.049	.121			1	.020
Age	.121	.080	-.060				.134
Marital status	-.059	.077	.760				.448
Household size	-.088***	.077	.3.82				.000
Farm size	.074	-023	-.1.945				.54
Constant	-.215	.038	1.460				.146

Source: Data Analysis, 2021

** and ***represent significant at 1% and 5% level of probability

Log likelihood ratio = 179.594; Nagelkerke R Square = 0.128

Chi-square statistics = 7.97

CONCLUSION

The study assessed skills in groundnut value – chain among farmers in Gombe State, Nigeria and concluded that most of the respondents were males, in their active age bracket and are predominantly educated, with fairly large household size, majority were married, with reasonable experience in groundnut value – chain activities and low annual income. The value addition skills acquired were mostly that of traditional processing (grinding, frying groundnut etc.). The major products obtained were oil, cake and animal feed. The socio-economic characteristics were found not to influence the value addition skills significantly at 5% and the conclusion is that if farmers will acquire more skills it will influence their income, leading to high standard of living.

Based on the findings of this study, the following recommendations are hereby made:

1. Agricultural Extension Agencies should ensure that farmers acquire the various skills in groundnut value-chain processes, which will increase their production and knowledge in adding value to their product as this will increase their income and standard of living.
2. Government should facilitate and link farmers to financial institutions to help them access credit facilities to enable them adopt improved groundnut production technologies for higher productivity.
3. Input providers should provide services such as fertilizer, improved seeds, pesticides, etc to the farmers in good time and at affordable prices.

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