



## **PERCIEVED CONSTRAINTS TO SOYA BEAN VALUE ADDITION AMONG PROCESSORS IN GOMBE STATE, NIGERIA**

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### **ABSTRACT**

The study examines the perceived constraint to soya bean value addition among processors in Gombe state, Nigeria. This study mainly used primary data. This study has the objectives of determining the socioeconomic factors that influenced the choice of technologies used and the constraints to small scale soybean processing firms. Using well-structured questionnaire, multi stage random sampling technique was used to select 240 soya milk and soya cake processing firms in three (3) agricultural zones of Gombe State. Data were analyzed using descriptive statistics in the form of percentages, mean, frequencies and Likert scale type (strongly agreed, agreed, disagree and strongly disagree with assigned nominal value of 4, 3, 2, and 1 respectively, were used to assessed the constraints in the soya bean value addition. In assessing the cut of points for decision, any item that received a mean score of 3.0 was regarded as serious constraints. The study found that the age, household size. Lack of capital, lack of credit facilities, inadequate power and water supplies, high and multiple taxation were constraint to soya bean processing in the study area the factors that the processors experienced as constrain in soya bean processing at an average rating of 3.5% for soya milk and soya cake on a 4-point Likert rating scale respectively. Further it was showed that there was significant difference in the participation of men and women in soybean processing into soya cake and soymilk. Provision of credit facilities, granting of tax incentives and provision of adequate power and water supply to soybean processors were some of the policy recommendations proffered. It is therefore necessary that various stakeholders and government to encourage and mobilized male to actively participate. This will boost soya bean processing and value addition; High governmental levies and taxation is hindering the soya bean value addition and processing. It is therefore necessary for the government to waiver for soya bean processing and value addition.

**Keywords:** Perceived Constraints, Soya bean, Gombe, Value Addition.

### **INTRODUCTION**

Soya bean is a leguminous vegetable of the pea family that grows in tropical, subtropical and temperate climates. Soya bean was domesticated in the 11<sup>th</sup> century around northeast of China. It was introducing to Africa and Nigeria in the 19<sup>th</sup> century traders along the east coast of Africa. Soya bean consist of more than 36% protein, 30% carbohydrates and excellent amounts of fiber, vitamins and minerals which makes it the most important crop for the producing edible oil.

Nigeria is the largest producer of soya bean in sub- Saharan Africa followed by South Africa. Low yield (< 1t/ha in tropical Africa) and shortage of fertilizer constrain the ability of some countries to increase production. (International Relief and Development 2009) In Nigeria, the haulms and post pulp serve as important sources of animal feed. (IITA, 2013).



Soybean is a cheap source of quality protein that is superior to all other plant foods because it has good balance of the essential amino acids. Its seed has a close protein content and fairly close amino-acids with cow milk (Belewu and Belewu, 2007). The clear justification in the country is that we are now in an era where the country's economy is going toward agribusiness. Project like this can be used to enlighten the Government and public on the importance of value chain addition and to invest more on agribusiness. Nigeria and Gombe state in particular can create employment to the teaming farming populace, youth and women and generate more income from the soybean value chain, which will improve upon their standard of living, curb youth restiveness and reduce crimes. The most important domestic processing forms are Dadawa, soy milk, soya Ogi and soya cheese (Awara). The soy-based products produced by commercial processors are soya oil, soya cake and meal, infant foods, instant foods, soya flour, soya gum and flax. (Babayo *et al.*2020). The infant and instant foods industries also utilize the bean in producing soya flour, baby foods, breakfast foods, snacks and other confectioneries. In addition, feed mills utilize between 8.5 - 11 per cent soy for poultry mash and between 18-49 per cent for poultry concentrates; instant food companies utilize between 20 - 80 per cent soya depending on the products while infant food companies utilize 30 per cent soya in their products (Amusat and Ademola, 2013). The informal sector continues to play a important role in the economy of developing countries, in terms of resource mobilization, employment generation or production and distribution of goods and services. One significant contribution which the sector also makes to the economic growth and development is in terms of apprenticeship training and entrepreneurship which are developed within value chain of most commodities (United Nations, 2020).

Nigeria with a population estimated at over 150 million is rapidly urbanizing, but the majority of Nigerians still live in rural areas where agriculture forms the basis of their livelihoods. Though the economy is more driven by oil revenues, agriculture is still seen as the pivot of economic development and rural transformation. The era of agricultural commodities and marketing boards are over due to the fact that Nigerian agriculture commodities are no longer competitive in regional or international markets (Federal Ministry of Agriculture and Rural Development, (FMARD) 2018). For an economy that wants to be listed as a leading economy in the next 10 years (National Bureau of Statistics, (NBC) 2018), it becomes imperative that food security; income diversification; increased national productivity as well as job creation should be given the necessary attention it deserves.

Between 2016 and 2019, the countries total agricultural exports were driven by export of sesame seeds, fermented cocoa beans, cashew nuts, ginger, crude palm kernel oil, frozen shrimps, prawns and soya beans (NBS, 2018). Also, Nigeria is said to be losing about \$10bn worth of export in agriculture annually due to the absence of value addition to our agricultural produce (Saraki, 2014). This is discouraging given the country's comparative competitive advantage in agriculture and human capital. Value addition is the key to industrialization and diversification of our economy. According to United Nations Industrial Development Organization (UNIDO, 2009), the concept of value chain addition is defined as the full range of activities which are required to bring a product or a service from conception through the intermediary phases of production (involving a combination of physical transformation and the input of various producer services), and delivery to final consumers and final disposal after use. A value chain exists when all of the actors in the chain operate in a way that maximizes the generation of value along the chain. It can also be described as a series of sequential activities, where at each step in the process, the product passing through this chain of activities gains some value or differential transformation. (Adekayode, 2011). The farm and all the intermediary processes constitute the agricultural sector. Value chains develop rural-urban



linkages through which agricultural production in the rural areas provide the growing cities with affordable and quality food and raw materials for industries (Gebre and Gebremedhin2019). Value chain also provides potential benefits for both rural producers and urban consumers. Value chain promotion is an effective way of fostering rural urban linkages for several reasons: The concept provides a useful analytical framework for market and sub-sector analysis and describes productive processes around a product from the provision of inputs to production, transformation, processing, transportation, marketing, trading, and retailing to final consumption (International Relief and Development, 2009).

Also, value chain emphasizes that most goods are produced by a sequence of interlinked actors and activities. The approach focuses on the analysis of the institutional arrangements that link the various economic players (vertical and horizontal integration, organization and contracts). (Ponsian, 2012).

However, it highlights the importance of private sector development by providing a holistic framework which can encompass a number of different development activities for the purpose of fostering agricultural growth (UNIDO, 2009). Hence, agricultural value chains link urban consumption with rural production. Urban driven demand, emergence of modern consumption patterns or new trends in international trade, impacts on rural areas along value chains and spills over to marketing and production systems. These rural-urban linkages bear challenges but also mutual benefits for producers and consumers; and can be entry points for development through income and employment generation and poverty reduction. (Food and Agricultural Organization (FAO), 2014)

Soya bean production and processing in most part of the developing world often terminates at the first stage of transformation to the crude level for further sale to middlemen at cheap prices without substantial value addition. (Shea *et al.* 2020). At this crude level of disposal by farmers from the developing nations, the level of profit is quite low compared with when sold to developed nations for further transformation to several derivatives known as value addition. In the developed world, industries that transform the crude agro-produce constitute the mainstay of their economy through employment and income generation to greater population of the country. In Nigeria, some form of value addition exists at some level of agricultural production, thus generating some form of employment and income to the people. Being one of the soybeans producing state there is need for this research. Considering the level of food production in the country coupled with high level of unemployment among the youth, it is very difficult for the public and private sectors of the economy alone to bail the country out so easily. Utilization of value chain of some common crops like soya beans produced locally will definitely contribute towards alleviating the unemployment problem by participating at one level or the other within the value chain. Researches have been carried out on soybean production, processing and marketing but little or no information is available on the value addition aspect of it in Gombe State. Therefore, in view of that, this research was designed to fill this gap with a view of unveiling the armful opportunities therein. It is a known fact that Nigeria is endowed with a lot of potential resources that could be harnessed through effective planning to achieve socio-economic development. These potentials have been expressed in various development plan documents since independence but these proved difficult to achieve. Soybean as one of the crops produced almost in all ecologies in Nigeria is generally considered as a highly versatile grain which has numerous uses and applications in the formulation of both human and animal foods and other industrial uses (Omotayo *et al.*, 2007) either consumed when cooked or after being processed in powdered form.



## **MATERIALS AND METHODS**

The study area is Gombe State, located between latitude 9°30' and 12°30'N and longitudes 8°45' and 11°45'E of the Greenwich Meridian. It lies within the Northeast region of Nigeria and occupies a total land area of about 20,265sq. Km. The State had, by 2006, an estimated population of around 2,353,000 inhabitants and projected to have a population of 4,343,000 using an annual growth rate of 3%. It is a confluence of economic activities, by its position as the meeting point for business people from the surrounding states. The states include: Borno to the north and Yobe to the east; Taraba and Adamawa to the south and Bauchi to the west. This advantage has made the state vibrant in all aspects of socio - economy. (Dabara *et al.* 2014) In addition, the land is blessed with natural resources, while the people are highly industrious and enterprising. Thus, within the short period of its existence, it has made tremendous progress. Gombe State comprised eleven Local Government Areas (LGAs) with 3 senatorial zones and 6 federal constituencies. The LGAs are Akko, Balanga, Billiri, Dukku, Funakaye, Gombe, Kaltungo, Kwami, Nafada, Shomgom, Yamaltu-Deba. The state, historically, corresponds largely to the Gombe Emirate under the Emir of Gombe, and made up of five chiefdoms, viz. Cham, Dadiya, Kaltungo, Tangale and Waja. The crops grown are maize, groundnut, cowpea, soya bean, sorghum, millet and livestock are goat, sheep, cattle, and poultry. (Babayo *et al.*, 2020).

### **Sampling Techniques**

A Multi-stage sampling technique was used in selecting the respondents for this study. In the first stage, Gombe state was purposively selected due to concentration of soya bean processors. In the second stage, random sampling was used to select 3 L.G.A, one from each Senatorial Zone of Gombe State except Gombe Central which has two L.G.A. because of its land mass. In the third stage, two (2) extension blocks of soybean value chain actors were selected from each of the eight (8) L.G.A. giving a total of sixteen (16) blocks of soybean producers. In the fourth stage, fifteen (15) circles of respondents were randomly selected from the blocks. Finally, a total of two hundred and forty (240) farmers were selected by way of balloting and questionnaire were administered to soybean value chain actors for this research, this was achieved with help of extension agents in the study area, who are more familiar with the respondents.

The sources of data used in this research include both the primary and secondary sources of data. Primary source was from the questionnaire and interviews employed, while the secondary sources of information were from the relevant text books, monographs, reputable journals and internet.

The procedure adopted for the purpose of collecting information for this research was through the use of structured questionnaire. Structured questionnaire with many questions and multiple opinion answers were administered to the respondents with the help of agricultural extension agents in the sampled local government areas. In all, a total of two hundred and forty (240) questionnaires were administered to respondents all were retrieved with the help of the extension agents.

### **Methods of Data Analyses**

Data generated were analyzed using descriptive statistical in the form of percentages, mean frequencies as appropriate. Descriptive statistics such as percentages, means and frequency were used to analyze the data collected. Mean from Likert type scale of strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD) with assigned nominal values of 4, 3, 2 and 1 respectively was used to assess the constraints in the soybean value addition. In determining the cut-off point for decision, any item that received a mean score of 3.0 was





regarded/adjudged as a ‘serious constraint’ while the item that received a mean score lower than 3.0 was regarded as ‘not a serious constraint’.

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of Respondents

These characteristics as they relate to the respondents are presented in Table 1. Table 1 presents the result of the socio-economic characteristics of the respondents. The results showed that about 4.2% of the respondents were below 20 years of age, 20 – 30 had 16.70%, 31- 40 had 33.30%, 41 – 50 had 37.5% while 50 years and above had 8.30%. The mean age of respondents is 39.5 years which implies that majority of the respondent were in their youthful and active age. The table also showed that majority (74.20%) of the respondents was female while 25.80% were male. The results indicated that female dominate soya bean processing in the study area, as most of the operations involved in value addition of soybean processing were carried out by women. The results confirm similar studies of (UNIDO, 2009) where they averred that woman are major player in the agricultural sub sector of the economy of developing economies.

The table also revealed the results of the educational qualification of the respondents: FSLC – 2.50%, SSCE – 43.30%, National Diploma – 15.40%, NCE -31.70%, BSc/HND – 7.10%. The survey showed that the majority of the respondents interviewed were literate and can easily manage their business successfully. The survey shows that most of the respondents are married which accounted for 93.80% while 6.20% were singled

The result of the household size showed the following: 4-6 household members have the highest percentage of 58.3%, 7 -9 had 25.00% while 9 and above household represented 16.70% of the respondent. Majority of the actors involved in farming or input supply in the value addition are represented by these values: 62.90% were farmers, followed by traders representing 23.30% while 13.80% were civil servants. This shows that both civil servant and traders do actively participate in the value addition process of the soybean business with cumulative 37.10% of the respondents.

Table 1 shows the following trend in the range of years of experience of the respondents: < 1 is 8.4%, 1 -5 – 33.30%, 6 -10 is 41.6% while 10 years and above is 16.70%. the mean years of soya bean processing experience is about 6.5 years which indicated that the majority of the respondents have requisite on- the- job experience that will enable them succeed in the business. It can be regarded as an indication of expertise and specialization. This was similarly opined by Shehu *et al.* (2007) that there is a significant relationship between farmers’ productivity and farming experience.



**Table 1:** Socioeconomic characteristics of the respondents

Variables	Frequency	Percentage	Mean
(a) Age of the respondent			
< 20	10	4.20	39.5
21-30	40	16.70	
31-40	80	33.30	
41-50	90	37.50	
>50	20	8.30	
(b) Gender			
Female	178	74.20	
Male	62	25.80	
(c) Level of education			
FSLC	6	2.50	
SSCE	104	43.30	
National diploma	37	15.40	
NCE	76	31.70	
BSc	17	7.10	
(d) Marital status			
Married	225	93.80	
Single	15	6.20	
(e) House hold size			
0-3	140	58.30	6.6
4-9	60	25.00	
>9	40	16.70	
(f) Occupation			
Civil servant	33	13.80	
Farming	151	62.90	
Trading	56	23.30	
(a) Processing Experience			
< 1	20	8.40	6.5
2-5	80	33.30	
6-10	100	41.60	
>10	40	16.70	

Source: Field survey, 2021

### Experience and Preference of Soya Bean Value Addition

Table 2 presents the result of various actors in soya bean value chain which shows that 38.80% of the respondents were into soya bean marketing, 13.80% were into while most (47.50%) were into soybean farming. The survey shows that Soybean farmers are the most dominant participant, followed by marketers and processor in that order. The table also showed that majority (55%) of the respondents produced or processes the soya bean for Industrial. The activities involved processing in to flour, oil, recipes and other industrial uses.

This is followed by local production of soybean into cake, soymilk, soy soup etc. with 22.50%. Use as feed formula for household is 12.10% while household consumption represented 10.40% of the respondents. This result confirms similar study by Erfanian and Rasti (2019), wherein they asserted that, agro-industries convert commodities into processed foods which are usually more stable and more marketable than the raw, untreated commodities.



They can thus make available certain types of food, e.g., animal and soy protein, often at low prices to consumers who would otherwise not have access to them. They can also ensure all year-round availability of seasonal, perishable products and provide food in a more convenient form than the raw material.

**Table 2:** Distribution of respondents according to Participation and Preference of Soya Bean Value Addition

Variable	Frequency	Percentage
(a) Value chain participation		
Marketing	93	38.80
Processing	33	13.80
Soya bean farming	114	47.40
(b) Preference of soya bean value addition		
Feed formula for children	29	12.10
Household consumption	25	10.40
Industrial production	132	55.00
Local production	54	22.50

Source: Field survey, 2021

#### Sources of labor used and number of labor employed by the respondents

The result of the survey presented in Table 3 indicates that majority (60.8%) of the respondents used hired labor while family labor was used by about 39.2% of the respondents. This implies that most of the operations carried out in the processing industry are carried out by hired labour because it is of the availability of laborers.

Equally the staff strength of the respondents engaging in soybean value chain within the various technologies surveyed indicated the following: 3 - 4 person /firm has the highest representing 41.70% followed by 1-3 staffs representing 33.3% and least which is 3 staff and above representing 25% respectively. The average number of staff engaged by the respondents was 4, although this number is not much but considering the small-scale nature of the respondent's businesses it as indication of growth in the near future. Most (41.70%) of the respondents hired between 3 – 4 laborers, about 33.30% of the respondents engaged the services of 1 – 2 laborers, and 25% of the respondents used more than 4 laborers in the cause of their operations. This study is in agreement with the findings of Efranian and Ratsi (2019).

**Table 3:** Distribution of respondents according to Sources of labor and number employed

Variable	Frequency	Percentage	Mean
(a) Sources of labor			
Family	94	39.20	
Hired	146	60.80	
(b) Number of staff employed			
1-2	80	33.30	
3-4	100	41.70	3.2
>4	60	25.00	

Source: Field survey, 2021



### Sources of Inputs Used by the Respondents

As evident on Table 4, the majority (62.9%) of the processors do get their raw materials (soybean seeds) from their personal farms while about 37.10% buys from the open market. This implies that the problem of raw materials is minimal among the processors because they are not affected by the vagaries of market forces to get the raw materials. This invariably helps in reducing the cost of production.

The sources of funding in the state among the soybean value chain participant indicated the following: 58.4.7% of the respondents got assistance from the bank, 33.30% source their fund from personal saving while 8.3% from friends and grants. The result shows the extent to which financial institutions has played a vital role in creating credit facilities for farmers that are involved in value addition of soybean. This study concurs with the findings of Rahmati *et al.* (2015).

Survey of the technology deployed in soybean value addition showed the following: 41.7% of the respondents are in to medium scale production, followed by small scale 33.3% while large scale - based processors comprised 25% of the respondents. This clearly indicates that small and medium scale technology is the most appropriate among the respondent in the State.

**Table 4:** Distribution of Respondents according to Sources of Input

Variable	Frequency	Percentage
(a) Source of soya beans		
Market	89	37.10
Personal farms	151	62.90
(b) Source of fund		
Bank loan	140	58.40
Personal saving	80	33.30
Friends and Grants	20	8.30
(c) scale of operation		
Small scale	80	33.30
Medium scale	100	41.70
Large scale	60	25.00

Source: Field survey, 2021

### Constraints to Soybean Value Addition

Results from Table 5 indicates that Inadequate credit facilities by the financial institutions to processors in order to boost their production. Most of the processors rely on local and cheaper machines that has lower production capacity because of high cost of the modern technology which the commercial and development banks are unwilling to give though their effort are commendable but respondent want high loan volume to acquire bigger machines; Epileptic power supply is also a challenge affecting the processors' capability. This is because most of the processing machine requires constant power to operate to optimum capacity; and also for it to bring the expected returns. Multiple taxation is also a constraint because both local, state, federal government and other agencies do collect tax on the same product at the same time. This makes it difficult for the processor to breakeven on time. Government, NGOs, individuals, research institutions and financial bodies should create a business friendly





environment for processors to produce as well as create job opportunities for the teeming populace.

**Table 5:** Processors constraints to soybean value addition

S/No	Items	SA	A	D	SD	W	Mean	Decision
1	Lack of Inadequate Capital	170	50	20	0	870	3.63	SC
2	Inadequate required technologies/machineries	150	70	15	5	845	3.52	SC
3	Inadequate power supply	200	30	10	0	910	3.79	SC
4	Low patronage	50	50	70	60	550	2.29	SC
5	High government levies/taxation	100	100	30	10	770	3.21	NS
6	Unavailability of Soybean seed	20	20	100	100	440	1.83	SC
7	Lack of credit	40	10	10	10	10	1.23	NC

SC: serious constraint NS: not a serious constraint

Source: Field survey, 2016 (W = weighted mean)

## CONCLUSION AND RECOMMENDATIONS

This study concludes that majority of the respondents were in their active, productive ages (37%), (41 -50 years). Female (74) dominated the soya bean possessing and value addition. The highest educational attainment in the study area among soya bean processing and value addition was SSCE (43.3%), followed by NCE (31.70%). The processing and value addition experience was fair as (41%) had (6 -10 years). The participation preferences of soya bean value addition were marketing as (38%) participated. For the preferences of soya bean value addition industrial production was the highest with (55%). The most utilized source of labour was the hired labour as (60%) used hired labour. The constrained that mostly hindered soya bean processing and value addition were inadequate power supply and governmental levies. Based on the findings of this research, the following recommendation was made:

- 1) Soya bean processing and value addition is dominated by female. It is therefore necessary that various stakeholders and government to encourage and mobilized male to actively participate. This will boost soya bean processing and value addition.
- 2) High governmental levies and taxation is hindering the soya bean value addition and processing. It is therefore necessary for the government to waiver for soya bean processing and value addition.
- 3) Hired labour was highly practiced by the respondents which will at the end of the day affects net profit negatively. The provision and subsidizing of soya bean processing machines will aid in saving a lot.

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