

## Opportunities in Nigerian cashew nut value chain

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### Abstract

The demand for cashew nuts is on the rise compared to other tree nuts due to the increase in consumption and utilization of cashew nut products and by-products, respectively. Data from FAO and Review of past literatures was used and this study evaluated the Nigerian cashew value chain as product moves along the stages. It gives information to intending individuals along the value chain. The activities of the actors in the cashew nut value chain are expected to generate employment opportunities for teeming Nigerian youth.

**Keywords:** Opportunities; Cashew nut; Valuechain; Investors

### 1. Introduction

Cashew (*Anacardium occidentale*) is a multipurpose crop which is mainly cultivated for the nuts' consumption, medicine and source of income for top producing countries of the world [1]. Cashew is a nut tree found in the tropics. It originated from Central Brazil [2]. The tree is estimated to live up to 50 to 60 years and it starts bearing fruits within the third and the fifth year. The return on investment of cashew ranges between 30 to 40 percent within 3-5 years of cultivation [3]; this shows that cashew farming is a profitable business. The average yield of the nuts of a mature cashew tree ranges from 7-11kg per annum [4]. The most relevant characteristics of cashew are sizes of the nut, tree height, apple colour, resistance to disease and nut yield [5]. Adeigbe *et al* [6] suggested that increasing production of cashew should be paramount in Nigeria as the demand for cashew in European confectionary industries is increasing. The farmers should have access to improved varieties with better quality and yield from research institutes in order to benefit from the growing cashew nut industry. Aliyu [7] reported that India, Tanzania and Mozambique introduced G-series cashew which has the potential to increase production to 1000kg/ha. The potentials of Nigerian cashew nut value chain have not been fully utilized despite the fact that it is a profitable enterprise. There is need for more research funding in the use of cashew nut product and by-products as it can fetch more income to the nation. This study intends to create awareness on investment potentials of cashew nut processing and products. Data from FAO and Review of past literatures on production, processing, marketing of cashew nut was done to achieve the objective of this study.

### 2. Value chains in cashew Production

Value chain is a set of value-adding activities through which a product passes from the initial production to final delivery to the consumer [8]. The cashew value chain shows how value is added and products are being transformed from the farmer to the final consumer. The main objectives of processing of raw cashew nuts perhaps are to give it more economic value and better acceptability in the export market. Discovering the potential benefits of agricultural export

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development for poverty reduction requires careful analysis of trends in global markets and the policies that will unlock the potential for growth and poverty reduction [9].

## 2.1. Propagation

Cashew can be propagated by seed, air layering and softwood graft. Cashew is majorly propagated from seeds in Nigeria. Usually, a good mature large or jumbo size nut is recommended for propagation. A planting spacing of 7.5m by 7.5m, 8m by 8m and 9m by 9m with plant population of 175, 156 and 123 plants respectively per hectare is recommended for cashew. African cashew alliance [10] reported that 1.8 million tons of raw cashew nut was produced by 3.06million farmers. Cashew farmers spread across Nigeria but the cultivation is prominent in the south and the middle belt region of Nigeria [11].Other management practices to maintain the propagated cashew are mulching, weeding, pruning, pest control, inter-cropping and disease control. Meanwhile, existence of old trees and active deforestation, low yield varieties, high population of small holder farmers are part of problems of cashew production in Nigeria [5].

## 2.2. Harvesting

Judge and Azam-Alli [12] reported that apples are harvested for immediate consumption and juice extraction. The nuts are removed when the ripe fruits drop and during harvesting of the apple. The cashew harvesting is labour intensive and it involves majorly women and children. Post-harvest process is done immediately so as to ensure quality by reducing the moisture content of the raw cashew nut [13].National Agricultural Extension and Research Liaison Services [11] advised important to ensure that all nuts are properly cleaned of the fleshy parts because cleaned nuts ensure quality and better revenue.

## 2.3. Processing

Post-harvest processing is done immediately after harvesting so as to ensure quality by reducing the moisture content of the raw cashew nut [13].The main processing involves the extraction of the kernel from the shell. The raw cashew nut consists of 50 percent shell, 20-25 percent cashew nut shell liquid (CSNL) contained in the shell and 25 – 30 percent kernel including the testa [15]. The processing of cashew nut products and by-products provide opportunities for value addition and diversification of income of producers and processors. The main objectives of processing of raw cashew nut are to give it more economic value and better acceptability in the export market [13].

## 2.4. Marketing

Marketing is one of the vital activities in the value chain and it extends to the final consumer. The cashew farmers usually supply the nut to rural markets or sell at farm gate. The middlemen or the local buying agents buy in urban market and in turn supply big companies or cooperative buyers that export to international markets. The acceptable standard for cashew nut in the international market involves; cashew nut being of large size and dried to below 8.5 percent moisture content, the nuts must also be matured and pest free [16].

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## 3. Global cashew nut

Latest trend in cashew nut shows a global growth rate of 7-10 % annually [17] and it is projected to reach 730,000 metric tons and projected demand by 2023 /2024 is estimated to reach 4,500,000 metric tons. The main consuming countries are India, United States of America, Countries of European Union, China and Middle East. Africa is responsible for 55 percent of world cashew nut production while India and Vietnam are the top cashew processing countries [10].Vietnam has recently introduced new technologies, thus becoming highly competitive against African producers [18]. Nowadays, consumers regard nuts as a healthy snack option. Besides, cashew nuts are well-placed in terms of price as compared to other tree nuts for a variety of reasons ranging from increase in consumption patterns to economic growth in developed countries. The consumption of cashew kernels is projected to continue to grow at increasing rate, providing great opportunities for existing and new investors into the cashew processing sector [17]. Certain factors may be attributed to the recent trend some of which are; use of improved planting materials, better yield, higher reward for farmers, better application of recommended good agricultural practices (GAP) and increasing cashew cultivation areas [19].

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## 4. Trends in Nigerian cashew nut Production

Data from Food and Agriculture Organization [20] ranked Nigeria second among the top ten producers of cashew nut in the world with 675,266 tons. However, from 2010, there has been a decline with the latest volume of production of 100,000 tons in 2019 despite the increase in world production. Agada and Sule [21] reported that a ton of Nigerian

cashew nuts in the world market was sold for N24,753.00 in 1993 and overtime rose to N180,011.00 in 2003. The current price of cashew is N552,757.24 per ton according to [22]. Table 1 below shows that in volume of Nigerian agricultural export of 2018, cashew nut ranked 5<sup>th</sup>.

**Table 1** Trend in Nigerian cashew production from 2008-2019.

Year	Production value (tons)	Ranking
2008	675,266	1 <sup>st</sup>
2009	8000,000	1 <sup>st</sup>
2010	791,721	1 <sup>st</sup>
2011	562,572	2 <sup>nd</sup>
2012	412,755	3 <sup>rd</sup>
2013	192,660	5 <sup>th</sup>
2014	99,010	11 <sup>th</sup>
2015	97,149	11 <sup>th</sup>
2016	98,291	11 <sup>th</sup>
2017	100,000	14 <sup>th</sup>
2018	100,000	15 <sup>th</sup>
2019	100,000	14 <sup>th</sup>

Source: [23]

**Table 2** Nigerian Agricultural export of 2018

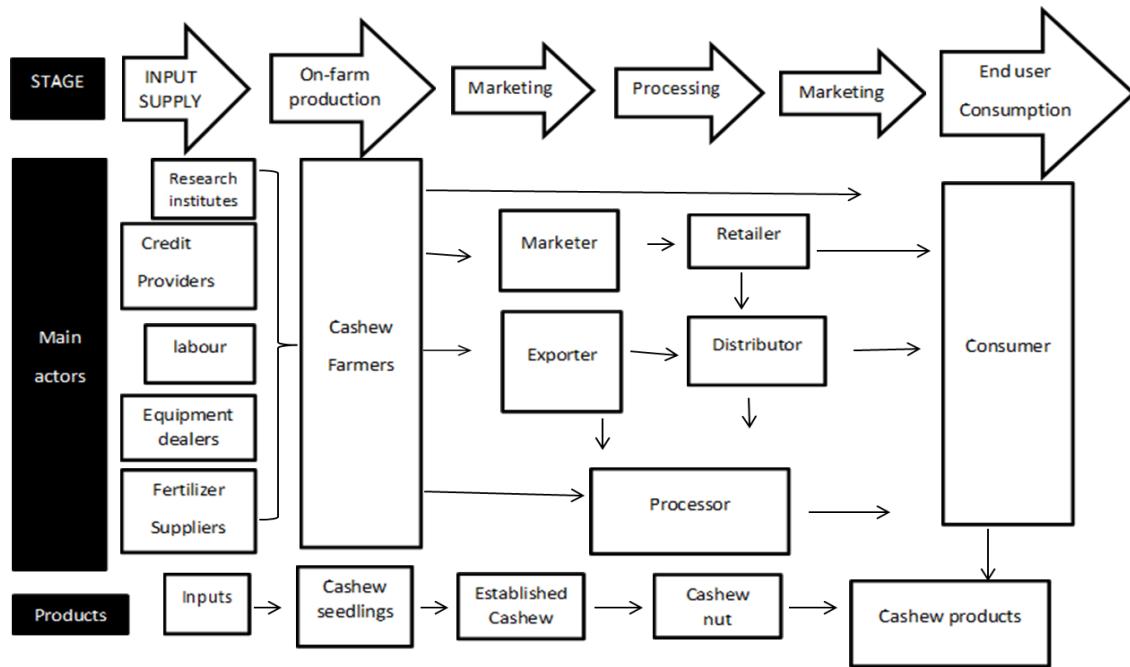
Item	Value (tons)	Ranking
Cocoa, beans	294,661	1
Sesame seeds	150,000	2
Bran, wheat	129,922	3
Cake, palm kernel	77,000	4
Cashew nuts, with shell	61,867	5
Rubber natural dry	40,773	7
Soybeans	34,587	8
Cake, soybeans	34,553	9
Ginger	31,530	10

Source: [24]

#### 4.1. Opportunities in the value chain

The conceptual framework of the cashew value chain shows the various actors in the value chain and how intending participants can partake and the roles to play in order to further strengthen the value chain. The adaptability of cashew to harsh climatic condition and poor soils provide farmers the opportunities of establishment of new plantations and expansion of old ones. Producers can explore the opportunities in processing by establishing on-farm processing units as a value addition activity which will in turn improve their earnings. Processing of cashew nut focuses on income generation and employment opportunities which can be exploited. Exporters and marketers can explore the opportunities in the growing demand for raw cashew nut in the international markets. Establishment of cashew processing business in Africa will give opportunities to development of a sustainable supply chain with direct business linkage to local farmers, cooperatives and exporters. Studies showed that with worldwide production yield of 1.7 million tons, 450,000 jobs can be created which will result in stable income and better food security [25]. The market has been

strong for centuries due to the considerable potential of the cashew market for high-value by-products such as CNSL, broken nuts, and cashew shell cake [26]



**Figure 1** Conceptual framework of cashew value chain

Source: Author's concept, 2020.

#### 4.2. Cashew nut products and by-products

Cashew nut products and by-products that can be exploited by adding value as listed by Bianca and Stefano [27] are as follows

- Cashew nut kernel is the main production target. It is majorly consumed in form of snack when roasted and salted. Other usage is in the food industries as substitute for other nuts [12]
- Cashew Seedlings: This involves transplanting seedlings from nurseries although it has been reported to have a delicate root system to which transplanting may have a negative impact [12]. However, Abdulsalam and Peter [28] opined that when cashew is propagated by transplanting, seedlings with good tap-roots and lateral roots strive better during transplanting shock and drought.
- CNSL is the top by-product gotten from cashew nut processing because of its unique chemical properties [29]. The 30-35 % of the raw nut shell is the nut shell liquid [30]. The main utilisation of the CNSL is in the polymer sector, where it is the raw materials for brake production, varnishes and surface coating [31].
- Cashew Skin Extract is the reddish brown testa that covers the kernel and it is rich in hydrolysable tannins and polyphenols namely cardol, anacardic acid and cardanol [32].
- Cashew Shell Cake is derived after the removal of the nutshell liquid. The final product is utilized as fuel in cashew nut processing factories and in shell liquid extraction (Nair, 2010). Mohod *et al* [33] reported that the calorific value is higher than saw dust. Other minor products reported by [2] are cashew kernel oil, cashew kernel powder, cashew kernel butter and cashew kernel milk.

#### 4.3. Agent, function, products and stages in the value chain

The various stages in the value chain of cashew as shown in table 3 below describes how the different agents are engaged in the value chain from the production through various marketing and processing channels to the final market. The Nigerian stakeholders include members of African Cashew Alliance (ACA), National Export Promotion Council (NEPC), Small and Medium Enterprises (SMEs), Small and Medium Enterprises Development Agency (SMEDAN).

**Table 2** Function of key actors in the cashew nut value chain

S/N	Stage of chain	Agent	Function (value addition)	Output
1	Input supply	Credit providers, Cocoa research institute of Nigeria (cashew researchers), Agrochemical companies representatives.	Marketing, Supply and transportation.	Inputs delivered, training and support services to farmers.
2	On-farm production	Farmers, research institutes and other stakeholders( University)	Establishment, maintenance, management, harvesting and selling.	Cashew nuts and cashew apple
3	Post-harvest handling	Farmers research institutes and other stakeholders( University)	Primary processing (3-day drying)	Dry cashew nut (low moisture content)
4	Post management intermediate trade.	ACA, Licensed buying agents, Local buying agent, National association of cashew Nigeria.	Marketing and transportation.	Graded and sorted cashew nut to be exported in good condition.
5	Product transformation	Cashew nut Processing firms.	Processing	Roasted Cashew and CNSL
6	Export trade	NEPC, SMEDAN,SMEs, Export firms and cashew processing firms	Export	Cashew nuts
7	Consumption	Buyers and consumer (end user)	Consumption	Cashew nut products and bye-products

Source: Author's concept, 2020

## 5. Conclusion and Recommendation

The paper examined opportunities in Nigerian cashew nut value chain. It was revealed that cashew production in Nigeria is on the decline, therefore, to scale up production, revitalization of old plantation and establishment of new plantations are recommended. Similarly, given the numerous opportunities identified in the chain, investors are encouraged to harness these opportunities by investing in cashew business as the trend shows that international demand is on the rise. Also, the activities of the actors in the cashew nut value chain are expected to generate employment opportunities for teeming Nigerian youths. Furthermore, a standard cashew nut marketing board is highly recommend to help position Nigeria cashew nut in international markets which will attract more foreign earnings to the country. Thus, Government should motivate more research on cashew nut utilization both in local and international market as it will help strengthen the industry and stimulate production which would help boost the Gross Domestic Product (GDP).

## Compliance with ethical standards

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### Disclosure of conflict of interest

The authors declared that there is no conflict of interest.

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