Availability of Agricultural Processing Industries for Sustainable Development in Benue State Nigeria

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Abstract: The purpose of the study is to determine the availability of agricultural processing industries for sustainable development. Descriptive survey research design was adopted for this study. Three objectives and three research questions were answered for the study. The target population was five hundred and fifty six registered mixed farmers (556). To determine the sample size of each senatorial zone, the population was divided into the three senatorial zones using proportionate sampling techniques in the ratio of 1:2:3 which give 93 to Zone A, 185 to Zone B and 278 to Zone C respectively. Therefore, the sample size for the study was five hundred and fifty six (556). The questionnaire for data collection was validated by two experts in agricultural Education and one expert in measurement and evaluation. The reliability of the instruments was determined through trial testing conducted in Kogi State Using twenty (20) farmers. Therefore, the reliability was calculated using Cronbach Alpha procedure and the value were 0.78. The result of the findings indicated that most of the fruits processing industries are not available except for oil palm processing industry. Also all the animal processing industries are not available. Finally, tuber crops processing industries are not available except for cassava processing industry. It was concluded that fruits processing, animal processing and yam and tubers processing industries are not available except for cassava and oil palm processing industry. It was therefore recommended that Looking at the quantity of fruits in Benue State, there is a need for private organizations to partner with the farmers as a means of establishing processing industries to prevent wastage and loss of income.

Keywords: Agricultural Processing Industries, Availability and Sustainable Agriculture

Introduction

The agricultural sector plays a critical role in the overall economic growth and development of Benue state and Nigeria at large. Agriculture is expected to lead to a significant transformation of the economy of Benue State through improvements in the sector's productivity as a food basket of the nation but these can only happen with the presence of agricultural processing industries. Agro-based processing is seen as a set of techno-economic activities, applied to all the products, originating from agricultural farm, aqua cultural sources, livestock and forests for their

conservation, handling and value addition to make them usable as food, fiber, feed, fuel, or industrial raw material (Soni et al. in Vahedi and Moradnezhadi, 2017). Food processing can be understood as postharvest activities that add value to the agricultural product prior to marketing (John, 2015). In addition to the primary processing of food ingredients, it includes, therefore, final food production while preparation and packaging of fresh products, especially fruit followed immediately after harvest. The widespread adoption of export-led growth strategies has drawn attention to the economic potential of their food processing industries, most especially in the light of the crisis facing many traditional primary commodity export markets (Fretz, 2015).

These market depend largely on the commodity available. Availability in this context is the degree to which a system or equipment is in a specified operable and committable state at the start of a mission. Therefore, in a state like Benue where there is abundance of fruits, availability of processing industries is necessary to avoid wastage and losses because most of the fruits are highly perishable. It is also important in the sense that those industries will encourage the farmers to produce more while providing the youths with the needed competencies to become agricultural educators and equip them with necessary knowledge and skills for self-reliance. In other words, availability of processing industries will provide revenue for the state government, the community to which the industry is located, farmers and also employment to the people. (Boone and Boone, 2014). Apart from providing employment, processing industries has the following objectives: such as: to motivate the food processing for adoption of food safety and quality assurance mechanisms, prepare them to face global competition in post Word Trade Organization Regime, enable adherence to stringent quality and hygiene norms and enhance product acceptance by oversea buyers (Carlton & Max (2015).

Guang , (2014), there are many reasons why food is being processed some of them are: preserve the nutritive quality of food by preventing them from spoilage due to microbes and other spoilage agents, prolong the shelf life (preservation), as process food is more stable than the raw food, enhance the quality, ensure that food is safe for future consumption, ensure availability of many food products throughout the year and ease of storage, transportation and distribution system. All the above are essential as long as food processing is concerned.

The processing industries for non-traditional exports have become the focus of considerable debate (John, 2015). For some, they represent a strategic opportunity for developing countries not only for new sources of revenue but also for employment generation and the internalization of new knowledge and technology. Others argue that they are the reflection of the outsourcing tendencies of global value chains dominated by Internationals taking advantage of low wages and less stringent environmental regulation, with little potential for internal upgrading. According to Ekele (2019), processed food exports from the developed countries were accompanied in the 1990s by waves of foreign direct investment (FDI) into the food processing sectors of developed and developing countries alike. On the one hand, they are seen as a driving force behind the surge of nontraditional food exports from developing countries. The major aim of processing industries therefore, is to ensure that agricultural production is sustained (Williams, 2010).

Sustainable agriculture is the management and conservation of the natural resources base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations Therefore, sustainable agriculture has emerged as a system that recognizes the necessity for both environmental soundness and economic viability (Ikerd, 2014). McIsaac (2016) defined sustainable agriculture as "one that, over the long-term, enhances the environmental quality and

the resource base alternative agriculture. Hamilton (2013) believed that the principles of sustainability have great potential in addressing the concerns facing the agricultural industry and society.

Society determines the level of agricultural devolvement in any given area. Agricultural development refers to "the increasing consolidation of farms and to vertical coordination (contracting and integration) among the stages of the food and fiber system" (Shiru, 2014). Agricultural development and agricultural sustainability processes and their associated policy concerns are being fueled by a common set of complex changes, including, among other things: increased consumer demands, institutional restructuring in the food and fiber system, new production and information technologies, increased efficiency goals, concerns about risk management and increased financial requirements in the food and fiber system (Anyeola, 2017). Therefore, the financial requirement of most individuals in the state is tired to the food produced. For Benue state to continue to be the leading state in Nigeria in term of food production the people must ensure there is availability of processing industries to prevent food wastage and loss hence, the study.

Statement of the Problem

It was observed that Benue State as a food basket of the nation is face with the problem of food wastage and postharvest losses as a result of the large quantity of fruits, animals and yams produced in the state. The researcher personal investigation from the farmers reveals that most of the farm produces get spoil due to inability to sell them on time. Further investigation from the communities' reveals that few of the processing methods are locally and as such does not meet the market demand. According to Boone and Boone (2014) the development of a sustainable agricultural system through the provision of processing industries will require both public and private input. It was also discovered that farmers only go to their farm to ensure these crops are being produced but to their greatest dismay only to discover that there are inadequate processing industries to finished product. To avoid food wastage therefore, there is a need to have enough processing industry to reduce it. However, it seems that the state lacks adequate processing industries to transform raw materials from bountiful harvests. Hence, the need to examine the availability of agricultural processing industries for sustainable development in Benue State, Nigeria.

Purpose of the study

The main purpose of the study is to determine the availability of agricultural processing industries for sustainable development in Benue State, Nigeria.

The specific objectives are to:
1. Determine the availability of fruits processing industries in Benue State
2. Determine the availability of animals processing industries in Benue State
3. Determine the availability of tuber crops processing industries in Benue State

Research Questions

The following research questions are set to guide the study:
1. What are the available fruits processing industries in Benue State?
2. What are the available animals processing industries in Benue State?
3. What are the available tubers crops processing industries in Benue State?

Methodology
Descriptive survey research design was adopted for this study. According to Emaikwu, (2019), descriptive survey design is a type of research in which an item is studied by collecting and analyzing data from a few people considered to be a representative of the entire population. The target population was five hundred and fifty six registered mixed farmers (556). To determine the sample size of each senatorial zone, the population was divided into the three senatorial zones using proportionate sampling techniques in the ratio of 1:2:3 which give 93 to Zone A, 185 to Zone B and 278 to Zone C respectively. Therefore, the sample size for the study was five hundred and fifty six (556). The instrument used for data collection was mean and standard deviation based on a 4 point scale. The validity of the instrument was given to two experts in agricultural Education and one expert in measurement and evaluation. The experts were required to check the correctness of the items in terms of clarity of language, coverage, relevance and suitability. The opinion and suggestion of the experts led to the emergence of the final instruments which were used for the study. The reliability of the instruments was determined through trial testing conducted in Kogi State Using twenty (20) mixed farmers. Therefore, the reliability was calculated using Cronbach Alpha procedure and the value were 0.78. The reliability coefficient for the instrument was considered well enough for the study. The instruments titled: Availability of Agricultural Processing Industries for Sustainable Development Questionnaire *(AAPIFSDQ* was self-developed by the researcher measured on Highly Available (HA), Available (A), Moderately Available and Not Availabl. A score of 4, 3, 2 and 1 were assigned respectively. The questionnaire is divided into two sections. Section A was design to give information about the respondents while Section B dealt with the Availability of Agricultural Processing Industries for Sustainable Development was design to answer research question one to three which was administer personally by the researcher by the help of two research assistants. Decision rule w 2.5 and above will be regarded as available while below 2.5 will be regarded as not available. The instruments were return 100%. The data collected were analysed using descriptive statistics (mean, standard deviation). Also Spss package perform analysis electronically.

Results
The results are presented according to the research questions that guided the study.
Research Question One: What are the available fruits processing industries in Benue State?
Table 1: Mean and Standard Deviation on the Available Fruits Processing Industries in Benue State?

S/N	Items	Mean	SD	Remark
`1	Edible oil refining and hydrogenation industry	2.07	1.22	Not Available
2	Coconut oil producing industry	2.46	.833	Not Available
3	Tomato processing industry	1.95	.998	Not Available
4	Pineapples processing industry	2.11	1.177	Not Available
5	Mango processing industry	1.27	.631	Not Available
6	Guava processing industry	2.48	.798	Not Available
7	Plantain cheeps and Banana processing industry	2.38	1.109	Not Available
8	Peas processing industry	2.44	.961	Not Available
9	Oil palm processing industry	3.10	.885	Available
10	Orange extractor industry	2.19	.593	Not Available

Table 1 above shows that processing industries such as edible oil refining and hydrogenation industry, coconut oil producing industry, tomato processing industry, pineapples processing industry, mango processing industry, guava processing industry, plantain cheeps banana processing industry, Peas processing industry, and Orange extractor industry are not available which has a mean score of 1.27 to 2.48, which are below the bench mark (2.50 on 4 point scale) and a standard deviation of .593 to 1.177 for available except for oil palm processing industry with a mean score of 3.10 which is above the cutoff point for available and standard deviation.

Research Question Two: What are the available animals processing industries in Benue State?

Table 2: Mean and Standard Deviation on the Available Animals Processing Industries in Benue State?

S/N	Items	Mean	SD	Remark
1	Meat processing Industry	1.62	.197	Not Available
2	Animal product processing industry	1.97	.452	Not Available
3	Meat preservation industry	2.31	1.115	Not Available
4	Fish processing industry	1.30	.637	Not Available
5	Fish preservation industry	1.56	.552	Not Available
6	Fish oil extraction industry	1.94	.462	Not Available
7	Meat/meat packaging industry	2.32	.968	Not Available
8	Milk processing industry	1.64	.976	Not Available
9	Fish meal processing industry	2.27	.880	Not Available
10	Egg processing industry	2.32	.968	Not Available

Table 2 indicates that all the items such as meat processing Industry, animal product processing industry, meat preservation industry, fish processing industry, fish preservation industry, fish oil extraction industry, meat/meat packaging industry, milk processing industry, fish meal processing industry, egg processing industry etc are not available which has a mean score of 1.30 to 2.32 less than the cutoff mark ((2.50 on 4 point scale) for available and a standard deviation of .452 to 1.115.

Research Question Three: What are the available tubers crops processing industries in Benue State?

Table 3: Mean and Standard Deviation on the available tubers crops processing industries

S/N	Items	Mean	SD	Remark
1	Yam flour industry	2.31	.805	Not Available
2	Potato-based food manufacturing industry	2.36	.982	Not Available
3	Pounded yam processing industry	1.62	.985	Not Available
4	Cassava processing industry	2.67	1.074	Available
5	Preservation industry	1.34	.820	Not Available
6	Packaging industry	2.47	.894	Not Available
7	Cocoyam processing industry	1.74	1.077	Not Available

Finally, the result in table 3 shows that industry such as yam flour industry, potato-based food manufacturing industry, pounded yam processing industry, preservation industry, packaging industry and cocoyam processing industry has a mean score of 1.34 to 2.47 less than bench mark of (2.50 on 4 point scale) for available, except for cassava processing industry that is available with a mean score of 2.67 above the bench mark (2.50 on 4 point scale) for available and a standard deviation of 1.074. This implies that apart from cassava processing industry others is a process locally as such does not meet the market demand.

Discussion of Findings
This study found that processing industries such as edible oil refining and hydrogenation industry, coconut oil producing industry, tomato processing industry, pineapples processing industry, mango processing industry, guava processing industry, plantain cheeps banana processing industry, Peas processing industry, and Orange extractor industry are not available except for oil palm processing industry. According to Bawden (2015) an industry can only be required base on the available raw materials which is an essential tool for the survival of every industry. But in the case of Benue State, the raw materials are not only available but in excess which should have attracted an industry to the state. While Henderson et al (2011) argued that raw materials some time does not determine the location of an industry but the environment in which such industry operate. The author also added that for an industry to be located in an area shows that the environment is friendly with good policies. In a place where raw materials are available but inadequate industry shows that the policies in such location are not in favour of the industries and such policies should be revisited (Hamilton, 2013).

The research findings on research question two revealed that all animals processing industries are not available. For sustainable development to take place in the state such industries are essential in Benue State. This is in line with Adenomon and Oyejola (2019) who opine that the absence of animal processing industries such as meat processing Industry, animal product processing industry, meat preservation industry, fish processing industry, fish preservation industry, fish oil extraction industry, meat/meat packaging industry, milk processing industry, fish meal processing industry, egg processing industry does not encouraged to diversification its economy from oil to agriculture. Secondly, the none availability of processing industries in the area have prevented the continue production into finish goods which in turn provide revenue to the farmers, state and Nigeria at large thereby preventing wastage and boosting the economy of the State. In addition, Carlton and Max, (2015) asserted that provision of industries encourages the farmers to work hard knowing fully well that their product would get to the finishing point and at the same time provide income to the farmers as well as development to the communities in which such industries are located. The authors also suggested that the only way to stop importation of frozen chicken, eggs, and cow and so on from other countries is to ensure that required industries are cited where necessary to reduce the cost of production and encourage more people to go into the sector.

This study shows that yam flour industry, potato-based food manufacturing industry, pounded yam processing industry, preservation industry, packaging industry and cocoyam processing industry are not available except for cassava processing industry. it on this note Shiru, (2012) opine that when industries that are supposed to process available raw materials into finish product are not available or inadequate, it discourage the farmers from producing more of these product thereby reducing the rate of development in the area. Supporting this assertion Fretz, (2015) added that lack of industries in this area could prevent sustainable development and increase the cost of production and reduces the standard of living of the people as most of the food produced is wasted. To ensure sustainable agriculture in the sector, and diversify the economy farmers need to be encouraged by making sure most of the industries are available for easy processing of their raw into finish products while at the same time empowering the farmer, youths, community and at the same time bringing development to state at large (Akpan et al, 2012).

Conclusion
Based on the findings of this research, the researchers conclude that edible oil refining and hydrogenation industry, coconut oil producing industry, tomato processing industry, pineapples

processing industry, mango processing industry, guava processing industry, plantain cheeps banana processing industry, peas processing industry, and orange extractor industry are not available in Benue State, except for oil palm processing industry. Secondly, meat processing Industry, animal product processing industry, meat preservation industry, fish processing industry, fish preservation industry, fish oil extraction industry, meat/meat packaging industry, milk processing industry, fish meal processing industry, egg processing industry are not available in the study area. Lastly, yam flour industry, potato-based food manufacturing industry, pounded yam processing industry, preservation industry, packaging industry and cocoyam processing industry are not available except for cassava processing industry. All other processes are done locally and therefore, required processing industry to avoid wastage.

Recommendations

Base on the findings of the study the researcher made the following recommendations:

1. Looking at the quantity of fruits in Benue State, there is a need for private organizations to partner with the farmers as a means of establishing processing industries to prevent wastage and loss of income.
2. Private individuals should invest in processing industries to avoid wastage of meat, fish and their by-products.
3. Cooperate bodies should look into yam, potato, cassava production sector and assist in establishing processing industries for better industrialization of the area while encouraging more youths to go into farming.

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