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Effectiveness of Agricultural Extension Services in Agribusiness Value Addition for Food Security in Nigeria

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ABSTRACT
The dwindling performance of the agricultural sector in Nigeria has been seemingly adduced to the inability of the nation and entrepreneurs to effectively add value to the agricultural product. This scenario has limited the gain accrued to most agro-entrepreneurs and the nation at large from value addition. Many value addition technologies that could afford entrepreneurs the requisite skills and processes to improve the quality of agro products abounds. A lot of post-harvest losses has been recorded in Nigeria and huge sums of money lost to food spoilage especially the perishable ones. Adding value to farm products becomes vital for rural growth by enhancing farm income and providing employment in the processing businesses. Therefore, agricultural extension plays a crucial role in promoting agricultural productivity, increasing food security, improving rural livelihoods and promoting agriculture as an engine of pro-poor economic growth. In fact, agricultural extension service delivery is one among other institutions that can make a difference to rural development through the dissemination of relevant technologies and innovations that can position agriculture as a business. This study therefore, reviews the effectiveness agricultural extension services in agribusiness value addition. It therefore recommends an orientation of agro-entrepreneurs on the importance of extension services to various entrepreneurship activities. This will ensure adequate collaboration among the key players for sustainable food security.
Key words: Extension service, Agribusiness, Value addition, Food security

INTRODUCTION

The main goal of agricultural extension services is to provide the farmers with the necessary information as well as proven technologies that will assist them increase production and get more income. Agricultural Extension provides the vehicle for introducing new techniques or practices by instigating the development, transfer and diffusion process of innovation (Nwosu and Nwachukwu, 2013). However, Singh (2002) noted that innovative technologies and good practices translate to increased yields and improved food security only when they are properly shared with farmers. Agricultural extension service is the application of scientific research and new knowledge to agricultural practices through farmers' education (Okojie, 2020). According to Abou (2015), extension or rural advisory services consists of all the different activities that provide the information and services needed and demanded by farmers and other actors in rural setting to assist them in developing their own technical, organizational, and management skills and practices so as to improve their livelihood and well-being. The role of extension services is invaluable in teaching agro-entrepreneurs how to improve their productivity. It is also critical to move research from the lab to the field. Extension ensures a return on investment in research by translating new knowledge into innovative practices. Furthermore, Abou (2015) observed that through extension services, the development of collaborative market groups of agro-entrepreneurs, building relationship and the development of the market required that delivering the product demanded by the various retail markets and consumers are facilitated. He therefore classified Extension Services into 3 types:

i. Technology transfer – the transfer of advice, knowledge and information to farmers to enhance their income;
ii. Advisory – a source of advice in relation to specific problems faced by them;
iii. Facilitation – to help farmers to define their own problems and develop their own solutions.

Agricultural extension is a much-needed investment in the human and social capital of the rural population. There is currently an enormous need to mobilize agricultural extension services for food and nutrition security to achieve a range of rural development goals such as poverty reduction, preservation of the natural resource base. These extension or advisory services according to Abou (2015), help farmers (agro-entrepreneurs) to access information on technologies, markets, inputs, and finance, and upgrade their farming and managerial skills. These services are indeed complementary to the development of new technologies because they support their uptake. There is a changing trend in agriculture, from subsistence agriculture to agribusiness, commodity driven market to product driven market, homogenous group of crops to crop diversification and cereals grains crops to fruits & vegetables and oilseed crops (Yadav, 2013)

Nigeria is blessed with vast land mass, very fertile for agricultural purposes. Several crops, both arable and tree crops flourish very well under good weather conditions all through the year. This leads to large food production each farming season. Unfortunately, post-harvest losses remain major challenge to food security and income growth in Nigeria as large proportions of these farm produce are lost to post harvest spoilage especially the perishable crops such as vegetables and fruits. Farmers often times sell off their produce at farm gate price to avoid gluts and spoilage. Of course, farmers record huge losses in income, which discourage them most times from going into large scale farming even when it has been established that commercial farming ensures more food and more money. Therefore, adding value to farm produce becomes vital for rural growth through enhanced farm income as well as providing more employment in the processing businesses.

Value addition is simply the process of turning a raw produce into another un-identical noform which would increase it's monetary value (Hybrid veggies, 2019). It is the role of extension to properly communicate these value addition technologies to entrepreneurs in order to accord them the requisite skills needed to process and improve the quality of agro products. Similarly, Mbah and Ekweanya (2015) observed that poor adoption of available value-addition technologies led to high post-harvest losses. A post-harvest food loss is very important because food is often produced in large quantity that cannot be possibly consumed at a time and requires to be processed in order to store for a long period. He further agreed that attention should also be giving to value addition

before home consumption and export; this could result to extension of shelf life, make food available all year round, more variety available through food processing and preservation and improve the income of the rural entrepreneurs by generally improving earning potential capacity. Hence, the paradigm shift in agricultural extension services from mainly disseminating crop and livestock production technologies/information to providing proven and timely information in agribusiness activities such as food processing and value addition, linking agro-entrepreneurs to mainstream market, training farmers to acquire entrepreneurial skills etc. These emerging roles in the agricultural extension system have further strengthened farming business in Nigeria.

Agricultural Extension Services

Agricultural Extension also known as agricultural advisory services plays a crucial role in promoting agricultural productivity, increasing food security, improving rural livelihoods and promoting agriculture as an engine of pro-poor economic growth (IFPRI, 2017). According to Nwachukwu, (2013) Agricultural Extension is the transfer of appropriate technologies and production recommendations to the clientele (end users) taking into cognizance the interest of the farmer, policy makers, private organizations and the general public. Therefore, Extension as a rural support is needed to meet the new challenges agriculture is confronted with. These challenges include changes in the global food and agricultural system, the rise of super markets and the growing impotence of standards and labels. Others are growth in non-farm rural employment, agribusiness constraints, various health challenges that affect rural livelihoods and deterioration of the natural resource base and climate change (IFPRI, 2017). Similarly, Agwu and Irohibe (2013) opined that today's understanding of Extension goes beyond technology transfer to facilitation, beyond training to learning, and includes helping farmers form groups, deal with marketing issues, and partner with a broad range of service providers and other agencies. Therefore, providing agricultural extension services to smallholder farmers on a sustainable basis requires a well-articulated vision and implementation strategy (Hamisu *et. al*., 2017). This will help strengthen the existing extension delivery services in Nigeria to become more effective and efficient to service delivery.

Agribusiness Value Addition

In the recent times, much emphasis has been laid on large-scale farming as a way to ensure sustainable food security. Farmers are being encouraged to see farming as business and not just for feeding their families only. However, when there is large-scale production, there is the need to either preserve or process the excess farm produce into various forms by adding value to the produce to avoid waste, ensure continuous supply and increased income. Value addition is the process of changing or transforming a product from its original state to a more valuable state (Mbeine, 2014). It is the processing of agro raw materials into various innovative products high economic value, which consequently brings higher income to the producer. Agricultural value chain links the steps a product takes from the farmer to the consumer and includes input suppliers, production, processing, marketing and finance. Value addition is market driven and involves a vast range of activities designed to increase farm income. Value addition is aimed at increasing the economic importance of agriculture and it has contributed to reducing losses of agricultural products as it serves to increase the quality derived from farm produce (Farm Republic, 2020). Also, Onwualu (2012), opined that value addition consists of full range of activities from design, production, marketing and distribution that businesses go through to bring a product of service from conception to delivery.

Value added technology is an innovation that is adopted by the farmers to enhance or improve an existing agricultural product and service (Eluwa and Azuine, 2015). In so doing, farmers can determine a higher price or gain in addition to market accessibility. It is important that the value-adding agricultural technology must increase or stabilize farmers' profitability while the output must appeal to customers. Value added is the difference between the value of goods and services produced and the cost of the inputs used in their provision (Eluwa and Azuine, 2015). It includes innovation and coordination. Innovation focuses on improving existing processes, procedures, products and services or creating new ones; while Coordination focuses on arrangements among those that produce and market farm produce. Value added agriculture occurs whenever a change

in physical state or form of an agricultural product or the adoption of a production method or handling process leads to an enhancement in the customer base for the product, a greater portion of the consumers' expenditure spent on the product accruing to the producer (Yadav, 2013). Adding value is the process of changing or transforming a product from its original state to a more valuable state that is preferred in the market place and greater opportunities for adding value to raw commodities abound because of increased consumer demands regarding health, nutrition, and convenience as well as technological advances. It is always good for producers involved with adding value to produce what consumers demand which can fetch them more money other than producing only raw commodities that can yield little money.

The Concept of Food Security

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet the dietary needs and food preferences for an active, healthy life (Sistol, 2007). The Food Agriculture Organization (FAO) (2008) from this definition identified four main dimensions of food security as summarized in Table 1. These four dimensions are:

table 1: Dimensions of food security

Physical **availability** of food	Food availability addresses the "supply side" of food security and is determined by the level of food production, stock levels and net trade.
Economic and physical **access** to food	An adequate supply of food at the national or international level does not in itself guarantee household level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives.
Food **utilization**	Utilization is commonly understood as the way the body makes the most of various nutrients in the food. Sufficient energy and nutrient intake by individuals is the result of good care and feeding practices, food preparation, and diversity of the diet and intra-household distribution of food. Combined with good biological utilization of food consumed, this determines the nutritional status of individuals.
Stability of the other three dimensions over time	Even if your food intake is adequate today, you are still considered to be food insecure if you have inadequate access to food on a periodic basis, risking a deterioration of your nutritional status. Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status.

Source: The Food Agriculture Organization (FAO) (2008)

Therefore, for food security objectives to be realized, all these four dimensions must be fulfilled simultaneously.

Food insecurity is largely a matter of insufficient agricultural productivity. Food processing especially in the aspect of value addition contributes to food security by regularly assuring a diversity of diet, minimizing waste and losses and improving the marketability of foods.

Various Agricultural Extension Services for Effective Agribusiness Value Addition

According to the Nairobi declaration (2011), the various services that agricultural extension provides to ensure the effectiveness of agribusiness value addition for food security include the following:

1. Through extension services, agro-entrepreneurs are advised on current innovations in production, processing, marketing and distribution that will lead to increase in agricultural output, higher incomes and more sustainable management of natural resources. This no doubt has helped to bring out new ways of thinking and doing business, and also a willingness to embrace change in various enterprises.

2. Also, agricultural extension ensures that agro-entrepreneurs get advice that will help them move up the value chain, for example in processing cocoa into chocolate or providing pre-packaged fresh vegetables for the hospitality industry. This is in addition to providing agro-entrepreneurs with "soft skills" to enable them build alliances and networks of different groups and individuals along the value chain.
3. Extension provides agro-entrepreneurs with technical information through public enlightenment using face-to- face tutorials, mass media (print, television and radio broadcasting), and transfer of useful knowledge needed to increase productivity.
4. Agricultural extension services help to develop the capacity of these agro-entrepreneurs to take advantage of market opportunities, adapt to climate change, forge new partnerships and learn how to make the best use of information and communication technologies (ICTs).

Continuing, Ani*et al.* (2016) enumerated other extension services that have been of great benefit to agro-entrepreneurs to include:

- business technical assistance and training
- access to capital at every stage of business development
- supportive community culture; and
- peer, professional and industry networks

All these would assist in entrepreneurial development in the rural areas and at same time offer a backdrop for discussion of services unique to the rural entrepreneurs.

Challenges Faced by Agro-Entrepreneurs in Accessing Agricultural Extension Services

The extension service delivery seemed to have recorded poor performance with regard to extension effectiveness indicators, especially with regard to weak link between farming systems research and farmer training programmes. This makes it difficult for appropriate technologies that will address the felt needs of agro-entrepreneurs to be generated. Most times, the innovation/technology characteristics are not considered. These include complexity of technology, cost of embracing the technology, divisibility and compatibility of Innovation; and credibility of source of information disseminated to them. These factors affect agro-entrepreneurs in accessing such technologies that do not really meet their immediate agribusiness needs. Unanma (2002) noted that farmers would obviously utilize recommended innovations that are technically feasible, economically viable and socio-culturally acceptable to them. Furthermore, there have been several efforts over several decades to avail farmers with beneficial research based on agricultural technologies but they do not seem to have yielded the expected impact (Ekumankama, 2019).

However, most agro-entrepreneurs are afraid of taking risks and trying out new set of ideas. They are comfortable with their old way of doing things for fear of losing money. Ukoha (2011) observed that most farmers are very conservative in nature and therefore find it difficult to embrace change. This notwithstanding, when the content of a technology is distorted, it makes it difficult for agro-entrepreneurs to accept such and conflicting information from various sources which can also discourage the receivers. Also, according to Obidike (2011), non-use of local dialect in broadcasting agricultural information on improved technologies can affect its diffusion in addition to poor radio and television signal in receiving agricultural innovation.

Other challenges faced by agro-entrepreneurs in accessing agricultural extension services for effective value addition according to Anuranjan*et. al.* (2017) include lack of awareness on availability of extension services, lack of confidence on information furnished by extension agents and unavailability of information in local and understandable language together with lack of good/updated content in local language. Most of the Change Agents do not have adequate training on ICT and agribusiness value addition. Therefore, they find it difficult to solve their clienteles' problems especially, in this the era of digital information dissemination where online communication is needed for prompt attention and solution to farmers' needs.

CONCLUSION

Agricultural extension is about sharing scientific findings and technical know-how with farmers and helping them capture a greater share of the value chain. Agricultural value chains encompass the flow of products, knowledge and information between smallholder farmers (agro-entrepreneurs) and consumers (IFPRI, 2017)]. They offer the opportunity to capture added value at each stage of the production, marketing and consumption process. Agro-entrepreneurs need to better engage with value chains in order to gain added value for improving their livelihoods, whilst reducing their risks and increasing their resilience. Hence, the role of extension services to ensure effective agribusiness value addition can never be over emphasized if food sufficiency and security is to be ensured. Agro-entrepreneurs are therefore encouraged to embrace and access extension services for improved economy.

RECOMMENDATIONS

To ensure effectiveness in agribusiness value addition through extension services for food security in Nigeria, the following recommendations are therefore made:

1. There should be an orientation of agro-entrepreneurs on the importance of extension services, of which when embraced will help reduce post-harvest losses and increase income.
2. An extension worker should as much as possible be credible, avoid distorting message content and ensure good public relation with clientele. He/she needs to constantly update himself/herself with the current information needed to become more effective in carrying out his/her duties.
3. Technology developers should make the technologies on agribusiness value addition to be divisible in components, less complex and more compatible for agro-entrepreneurs to adopt when disseminated. These technologies should also be made affordable and must be able to meet agro- entrepreneurs felt needs in order to encourage utilization of the technologies.
4. Government should through public-private partnership, install radio and television antennas at strategic places for better signal in order to enhance information communication to the agro-entrepreneurs especially in rural areas, as part of taking its agricultural initiative to the grassroots.
5. The link between the research and agro-entrepreneurs should be further strengthened to ensure proper feedback mechanism for improved technology development.

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