

Agglomeration of Agro Industries and its Potential to Boost Agricultural Productivity in Nigeria

Aisha Lawal, Ibrahim

Introduction

In many developing countries, the greatest potential for sustainable growth lies in the agricultural sector. Yet ironically, poverty is most widespread and often evident in its worst forms in this sector. Many small-scale farmers, and the rural communities in which they live, are trapped in a “cycle” of low margins, resulting in low risk-taking ability and low investment, which in turn leads to low productivity, low market orientation and low value addition which, in turn, nets low margins (ITC, 2006a). The nature and extent of the changing structure of agri-food demand offer unprecedented opportunities for diversification and value addition in agriculture, particularly in developing countries. (FAO, 2007).

In Nigeria, Agriculture is a major employer of labor and its contribution to the non-oil gross domestic product (GDP) is stable at about 40 percent in recent years (FDA/FMARD 2005). Agriculture also supplies raw materials required by the industrial sector and generates foreign exchange through export. More than 70 percent of the farming population in Nigeria consists of smallholder farmers, owning or cultivating less than 5 ha of farmland at a time (NARP 1994). Thus, agriculture should be the focal point of national economic growth agendas and reforms.

However, the contribution of agriculture to Nigeria’s Gross Domestic Product (GDP), which stood at an average of 56% in 1960-1964 decreased to 47% in 1965-1969 with a further decline to 35% recorded in 2002-2004. Furthermore, agricultural production has failed to meet the food needs of the country’s rapid growing population (Ayinde, 2008; Binuyo et al., 2015). Consequently, the improvement of agricultural productivity is critical for food security, poverty alleviation and economic growth particularly as agriculture

Key Findings

- The post-harvest handling of agricultural produce is an important component of value chain development.
- The best way to reap the benefits of agglomeration economies is through the geographical co-location of firms and enterprises, which is one of the reasons for the use of industrial clusters to promote agglomeration.
- Abakaliki rice processing cluster has served as a great trendsetter for agro industrial clusters in Nigeria.

is the primary source of livelihood for over 70 percent of the population. This necessitated agricultural diversification needs to be among the top priorities of the Nigerian Government.

Agro-Processing in Nigeria

Food crop productivity does not hinge on crop yield and production efficiency alone, but is also a function of the efficiency of post-harvest processing and marketing. The efficiency of post-harvest processing and marketing is vital for local agriculture to compete with imports particularly in an era of global trade liberalization. There is the need for high quality locally-processed foods to attract consumers and to favorably compete with imports. Furthermore, as downstream activities including processing and marketing grow, significant effects on upstream incentives for farmers to adopt modern technologies to improve their productivity may manifest.



In Nigeria today, there are broadly two types of food processing: cottage level and industrial processing. Due to insufficient food inspection and standards enforcement, food processing often involves output of uneven quality especially at the cottage level. The challenge sometimes emerges from a lack of standards or when these are present, insufficient enforcement or a lack of enabling systems (FAMARD, 2016).

The post-harvest handling of agricultural produce is an important component of value chain development, and a catalyst for progressive and sustainable expansion of agribusiness, investment and agro-processing activities, thereby eradicating waste and ensuring import substitution, food security, wealth creation, employment generation, human capital development and security of human life and property (FMARD, 2016).

The prospects for continued growth in demand for value-added food and agricultural products constitute an incentive for increased attention to agro-industries development within the context of economic growth, food security and poverty-fighting strategies. Agro-industries, here understood as a component of the manufacturing sector where value is added to agricultural raw materials through processing and handling operations, are known to be efficient engines of growth and development. With their forward and backward linkages, agro-industries have high multiplier effects in terms of job creation and value addition. The demand pull created by an agro-industrial enterprise stimulates businesses well beyond the closest links with its direct input suppliers and product buyers; an entire range of ancillary services and supporting activities in the secondary and tertiary sectors of the economy are also positively impacted. Because of the generally perishable and bulky characteristics of agricultural products, many agro-industrial plants and smaller-scale agro-processing enterprises tend to be located close to their major sources of raw materials. Consequently, their immediate socio-economic impacts tend to be exerted in rural areas (Da Silva, 2009).

Agglomeration Economies and Clusters

The best way to reap the benefits of agglomeration economies is through the geographical co-location of firms and enterprises, which is one of the reasons for the use of industrial clusters to promote agglomeration. Agglomeration economies refer to the benefits that arise when firms and people locate near one another (Glaeser, 2010). Agglomeration economies have been proven to play a significant role in the analysis of regional development, regional growth and industrial location.

The concept of agglomeration economies implies that a spatial concentration of economic activity generates positive effects on the productivity of the firms located in the area in question. Agglomeration economies are a form of external economies as they are not under the control of the firm and the firm itself cannot create them (Kirsi, 2003). The agglomeration of agro-industrial firms has been particularly relevant to the Nigerian government in recent times. An industrial policy of establishing agro-processing zones or clusters was laid out as a key objective of the ATA strategy of the Jonathan/Adesina administration carried through to the Buhari/Audu Ogbah administration through the Agricultural promotion policy. This idea focuses on attracting private sector agribusinesses to set up processing plants in zones of high food production, to process commodities into food products. This would be enabled by government by putting in place appropriate fiscal, investment and infrastructure policies for Staple Crops Processing Zones (FMARD, 2016). The spatial concentration of industries is a salient characteristic of developed economies. Empirical literature from developed countries suggest unevenly distributed firms and labor across spatial units with more agglomeration evident in some regions more than others (Ellison and Glaser, 1997; Maurel and Sedilot, 1999; Alonso-Villar et al., 2004; Bertinelli and Decrop, 2005).

Some industries are said to induce concentration of economic activities as they demonstrate high operational economies of scale¹ and some others capitalize on the concentration because of the exhibition of agglomeration economies. For example, a new firm not only takes advantage from concentration of activities in terms of forward and backward linkages, but complementary services also reduce its operational cost. The effective price of infrastructure, such as power, water supply and roads is reduced if there is a concentration of users of these services. The failure to recognize the merits of concentration by policy makers has often led to suboptimal utilization of resources. Given that the firms are not evenly distributed across regions, it is pertinent to know the consequences of the agglomeration of industries on productivity and other dimensions of firm level efficiency.

Abakaliki Rice Processing Cluster

The Abakaliki Rice Mill founded in 1957, is a well-known rice cluster located in Ebonyi State, South Eastern

¹ Economies of scale is a proportionate savings in costs gained by an increased level of production

Nigeria. Because farmers in Ebonyi produce rice in large quantities, there was need for milling centres to be situated across local government areas to provide easy access to the mills. This need gave rise to the establishment of such centers by cooperative societies in virtually every local government area. The milling machines were situated in such a way that they formed a cluster for milling the rice produce of the state. The center is also a trading market for rice. Aside these sub-milling centres scattered in various parts of the state, there is a central mill known as Abakaliki Rice Milling Industry located within the state capital along Ogoja road. The Abakaliki rice milling industry provides services for farmers over a huge area. This large cluster of rice milling industry (the Abakaliki mill and smaller ones) is owned and managed by private individuals and cooperative societies. They own their milling machines, while government only collects royalties/levies from them. People come from far and near to the Abakaliki mills to buy or sell rice daily. According to the results of investigation, patrons from the north as well as from neighboring states such as Enugu, Imo, Abia and Anambra buy very large quantities of rice from Abakaliki. The high patronage of Abakaliki rice is due to its unique taste, affordability and inexpensive price. The rice cluster brings together several smaller groups of stakeholders, involved in many rice processing activities. These groups include the rice mill owners, rice de-stoning machine owners, rice dust/husk carriers, bag stitchers, barrow pushers, on-loaders and off-loaders, vehicle owners, drivers, mammy market traders, and others. Currently there are in the cluster, more than 1000 rice milling machines owned by over 200 entrepreneurs, employing over 2500 workers as machine operators and cashiers.

The daily output of the Abakaliki rice mill cluster is reported to be an average of 180 metric tonnes with the major input (paddy rice) sourced from domestic production within Nigeria, particularly Ebonyi. The rice cluster provides opportunities to providers of related services such as disposing of rice dust/husk (mostly done by women), and food vendors. Rice production has created jobs providing upkeep for many families. Other jobs in the Abakaliki rice mill industry include technical/professional and unprofessional/causal works, as well as the sale of wares. The industry employs loaders, toll gate levy collectors/taskforce, food vendors, commercial bus/duty truck drivers, milling machine operators, sales representatives, wheel barrow pushers, winnowers (women whose duty it is to dispose the rice husk/chaff), security men, gatemen, while independent others trade on different wares. Unemployment in the state is consequently significantly reduced.

Conclusion

The potential for Nigeria to reap the benefits of agglomeration economies through agro-industrial clusters is evident. The Abakaliki rice processing cluster has served as a great trendsetter for agro industrial clusters in Nigeria. Similar examples of clusters in other industries exist, Nigerian clusters such as the computer village in Lagos and the automobile spare parts cluster in Newi have thrived over decades. Promotion of agro industrial enterprise clusters could be a big part of the solution to Nigeria's long-standing problem in boosting productivity and the Nation's economy.

References

- Abakaliki, S. N. (2015). Life and hustles in Abakaliki rice mill. Nigerian Pilot. Retrieved May 27, 2017, from <http://nigerianpilot.com/life-and-hustles-in-abakaliki-rice-mill/>
- Adesina AA. (2012) Unlocking the Potential of Agriculture in Sub-Saharan Africa: Nigeria's Transformation Agenda for Agriculture. Abuja, Nigeria: Federal Ministry of Agriculture and Rural Development.
- Adetunji, O. 2006. Creating appropriate technology as a means of waste minimization in cassava end products. www.nifst.org/?nifst:articles
- Amaza P.S, Maurice D.C. (2005) Identification of factors that influence technical efficiency in rice based production system in Nigeria: A Paper Presented at Workshop on Policies and Strategies for Promoting Rice Production and Food Security in Sub Sahara Africa, Cotonou (Benin Republic)
- Ayinde O.E.(2008)Empirical analysis of agricultural growth and unemployment in Nigeria. African Journal of Agricultural Research. ;3(7):465-468.
- Bello B. (2004) The Nigerian Rice. In Nigeria Rice Memorabilia. Edited by: Abo ME, Abdullahi AS. Project Synergy Abuja, Nigeria;
- Bertinelli, Luisito and Decrop, Jehan, (2005), Geographical agglomeration: Ellison and Glaeser's index applied to the case of Belgian manufacturing industry, *Regional Studies*, 39, issue 5, p. 567-583,
- Binuoye G, Abdulrahman S., Yusuf O, Timothy A. (2015) Technical Efficiency of Rain-fed Lowland Rice Production in Niger State, Nigeria. Asian Journal of Agricultural Extension, Economics & Sociology 9(4): 1-12, 2016; Article no.AJAEES.22504 ISSN: 2320-7027

A., D. S. (2009). *Agro-industries for development*. Rome: Food and Agricultural Organization of the United Nations.

Ellison G. and Glaeser E. (1997) Geographical concentration in U. S. manufacturing industries: a dartboard approach, *Journal of Political Economy* 105, 889–927

Federal Department of Agriculture/Federal Ministry of Agriculture and Rural Development (FDA/FMARD). 2006. Progress in implementation of Presidential Initiative on Rice, Cassava and Vegetable Oil Development Programme. www.mistowa.org/files/CASTON/presidential%20Initiative%20-%20FDA.pdf.

Glaeser, E. L. (2010). *Agglomeration economics*. Chicago: The University of Chicago Press.

Kirsi M. (2003), Agglomeration Economies in the Finnish Manufacturing Sector. 43rd Congress of the European Regional Science Association 27-30 August 2003, Jyväskylä – Finland.

Maurel F. and Seddilot B. (1999) A measure of the geographical concentration in French manufacturing industries, *Regional Science and Urban Economics* 29, 575–604.

National Agricultural Research Project (NARP). 1994. National Agricultural Research Strategy Plan, Draft Report on North West Zone.

Yue Hu (2010), *A study of the correlation between agricultural economic growth and agricultural agglomeration in China*. *Journal of Chemical and Pharmaceutical Research*, 2014, 6(6):1878- 1881. ISSN : 0975-7384

About the Authors

Ibrahim is a graduate student at the Ahmadu Bello University. In Spring 2017 she was an FSP Nigeria Agricultural Policy Project Visiting Scholar and studied at Michigan State University (MSU). This brief reflects work she did while at MSU with input from Saweda Liverpool-Tasie, Associate Professor at MSU and Michael Johnson, CARE USA, Director, Research, Innovation, Evaluation & Learning.

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