

NIGERIA'S AGRICULTURE AND FOOD SECURITY CHALLENGES: ICT SOLUTION

ODACHI G.N

Department Of Computer Science, Nwafor Orizu College of Education Nsugbe, Anambra State

Abstract

Agriculture in Nigeria has had a checkered history since Nigeria started exportation of crude oil and mass importation of food crops. Before Nigerian civil war of 1967-1970, agriculture was the mainstay of Nigerian Economy. Nigeria was then leading the world in some farm products such as cocoa and palm oil. Contribution of agriculture to Gross Domestic Product (GDP) was quite substantial. But today contribution of agriculture to GDP has declined substantially from 60% in 1960 to 25% in 1979. This trend has not changed much in recent time. In 2009, agriculture accounted for 33.4% of GDP, while 70% of the population live below the poverty line. At this point in time there is no-gainsaying the fact that Nigerian agriculture and food security has great challenges. The obvious challenges arise from long period of neglect and relegation of agriculture to the back ground, among others. This paper, therefore, proffer ICT solution to agricultural problems in Nigeria.

Keywords: Gross Domestic Product, Information and Communication Technology, Challenges, Food security and Economy.

Introduction

In spite of the growing importance of oil, Nigeria has remained essentially an agrarian economy with agriculture still accounting for significant share in Gross Domestic Product (GDP) and total exports as well as employing the bulk of labour-force (Talabi S.O and Onasanya O, 2011).

The population of Nigeria involved in farming is between 60%-70%. Yet there is threat to hunger and poverty. About 70% of Nigerians live on less than 100 or US\$ 0.7 per day. Attainment of food security is a fundamental agricultural objective in Nigeria. This is to ensure that households have access to good and nutritious food for healthy living. Even though domestic food production is on the increase, there is not enough to meet national food demand (Nigeria Agriculture and food security challenges, 2001)

This goes to show that access to adequate and nutritious food is limited by low income/poverty as nutritious foods are most of the time expensive.

Remove oil from Nigerian scene, there is bound to be almost total collapse of the economy. Diversification of Nigerian economy through agriculture and industrial establishment is long overdue. Lip service is paid to it by various leaders in Nigeria since 1970. For a country's economy to depend mostly on oil (mono economy) is an ill wind that blows nobody any good.

It has been observed that the quickest route out of economic stagnation is ICT skills acquisition. Japan, South Korea and recently China represent the clearest modern examples of countries, once regarded as backward and under developed, which have changed their fortunes by investing in ICTs (Odachi, 2009).

To remain afloat in this competitive world, Nigeria should adapt to the changing technology that is prevalent in advanced countries. In view of the above, Nigeria must invest adequately in ICTs.

Objectives of Agricultural Policy and Food Situation in Nigeria

In a wide sense, the objectives of the new agricultural policy include:

- i. To achieve self-sufficiency in basic food supply and the attainment of food security.
- ii. To increase production and processing of export crops, using improved production and processing technologies.
- iii. To increase agricultural raw materials for industries.
- iv. To generate gainful employment in agriculture
- v. To obtain rational utilization of agricultural resources, improved protection of agricultural resources from drought, desert encroachment, soil erosion and food and the general preservation of the environment for the sustainability of agricultural production.
- vi. To promote increase application of modern technology to agricultural production.
- vii. To improve the quality of life of rural dwellers.

The aforementioned objectives are loadable, but a big question is, how far have they been achieved? The above question is answered by looking at the nation's food balance sheet and the level of dependency on food import. See tables 2.1, 2.2 and fig 2.1 below:

Table 2.1: Food Production, Demand with Shortfalls and Imports (Million Metric Tones).

Description	1994	1995	1996	1997	198	1999	2000	2001
Production	86.70	89.25	93.35	95.64	98.74	100.41	102.12	103.86
Food demand	87.23	89.55	96.26	99.03	101.87	104.63	107.46	110.37
Shortfall	(0.53)	(0.30)	2.91)	(3.43)	(3.13)	(4.22)	(5.34)	(6.51)
Food import	0.67	0.58	2.95	3.47	3.24	4.48	5.59	6.91

Source: FOS, review of Nigeria Economy, various issues.

From table 2.1 above, it has been observed that agricultural production in Nigeria has failed to meet the national demand from 1994-2001 - hence the short fall observed. This has led to importation of food crops to meet up with the people's demand. The increase in demand for food productions observed might be due to high population growth rate. This has also led to increase in importation of food. The above discussed scenario is not quite different when projected to 2010/2011.

Table 2.2: Value of exports and percentage shares in total merchandise export 1960 to 1999

Year	Agriculture	Oil and mining	Manufacturing	Agriculture	Oil and mining	Manufacturing
1960	391.72	11.26	60.76	84.48	2.43	13.10
1965	481.50	238.90	16.90	59.01	32.40	2.29
1970	447.60	765.60	14.70	36.45	36.45	1.20
1975	459.20	7,485.70	38.50	5.75	930.77	0.48
1980	622.30	24,744.80	71.40	2.45	97.77	0.28
1985	328.20	15,004.80	296.97	2.10	96.00	1.90
1990	302.20	13,265.00	103.30	2.21	97.03	0.76
1995	211.73	11,448.70	79.95	1.80	97.64	0.66
1998	215.35	9,406.93	166.41	2.200	96.1	1.70

Source: CBN (1960-1999), Annual Report and statement of account (Okoh RN, 2011)

The most interesting observation in table 2.2 is that while value of exports and percentage of total merchandise for agriculture have declined on the average from 1980 to 1998 that of oil and mining have steadily increased, within the same period. So while the fortunes of agriculture have declined, on the average, that of oil and mining have increased.

The two tables show that all is not well with Nigerian agricultural practices.

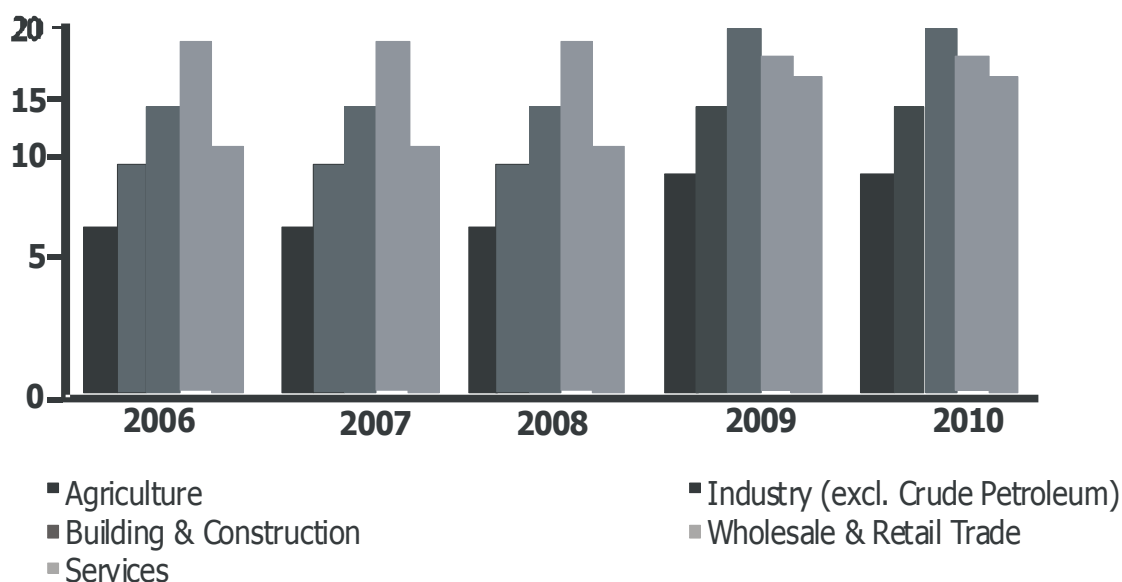


Fig 2.1 Growth rate of major sectors of non-oil GDP

Source: Central Bank of Nigeria (CBN) Annual Report, 2010.

In the bar graph above, the bars represent various non-oil sectors of the economy between 2006 and 2007. From left to right in each bar group, the bars represent in the following order:

- i. First bar ó Agriculture
- ii. Second bar ó Industry
- iii. Third bar ó Building & Construction
- iv. Wholesale & Retail Trade and Services

v. Service

Fig 2.1 shows that the GDP growth rate of agriculture is the least among the four other major non-oil sectors of the economy. The bar chart figure is obtained from CBN Annual Report for 2010. This shows that the poor performance of agriculture yesterday has not changed much today. Let us hope we shall change it for the better, tomorrow.

Review of Efforts made by Nigerian Government to Boost Agriculture

Nigeria government has made various efforts to boost agricultural products since 1960. These efforts include:

- i. The 1962-1968 development plan laid emphasis on the introduction of more modern agricultural methods through farm settlements, cooperative plantations, supply of improved farm implements and a greatly expanded agricultural extension service.
- ii. Establishment of National Accelerated Food Production Programme NAFPP in 1972.
- iii. River Basin and Rural Development Authorities was established in 1976.
- iv. Operation feed the Nation (OFN) was introduced during general Obasanjo's regime.
- v. Green Revolution Programme was inaugurated in 1980.
- vi. The World Bank funded Agricultural Development projects.
- vii. Rural Integrated Agricultural Development Programme (ADP)
- viii. Agricultural Extension and Research institutes, etc

Each of the above programmes sought to improve food and cash crop production in Nigeria, but the tables and the bar chart shown above show that all these efforts have not much impacts on agricultural production in Nigeria. This has led to mass food importation as local production has failed to meet the demand of Nigerians. Food production must grow consistently above demand to bridge short falls. At this point in time, it is pertinent to ask, what are the problems of agriculture in Nigeria?

Problems of Agriculture in Nigeria

Anyanwuocha (2006) identified the following problems of agriculture in West Africa which incidentally is the same with that of Nigeria. The problems includes:-

- i. Small farm size: This arises from the land tenure system. In many areas, farms are very small as a result of fragmentation of land. This does not encourage large scale farming.
- ii. Climatic problems: Adverse climatic condition such as insufficient rainfall, drought etc affect agriculture in Nigeria.
- iii. Pest attacks: Attack by diseases and pests contribute to low productivity.
- iv. Illiteracy and conservation attitude of farmers: This is a major factor hindering agricultural production in Nigeria.
- v. Inadequate capital: Some farmers are poor and many of them cannot afford the required capital for large scale farming and new techniques for agriculture.
- vi. Poor marketing facilities: Facilities for the marketing and distribution of crops are inadequate.
- vii. Inadequate storage facilities: Storage facilities for many agricultural products are inadequate.
- viii. Poor transport facilities: Transport facilities for evacuation of crops are inadequate.
- viii. Use of crude implement for farming.

These are some of the traditional problems facing agriculture in Nigeria. Solutions applied to these problems in the past have not yielded much dividend. So we must look for a new way out of our agricultural problems. Therefore integration of Information and Communication Technology (ICT) to our agricultural practice is the answer to our problems of agriculture.

ICT Integration to Agriculture

According to Ozowa (2010), over the years, deliberate, though ineffective efforts have been made by donors and African countries to bring about agricultural development without much to show for it. Much of the failure is attributed to non-integration of agricultural information with other development programmes to address the numerous related problems that face farmers. Information is an essential ingredient in agricultural development programmes, but Nigerian farmers seldom feel the impact of agricultural innovations either because they have no access to such vital information or it is poorly disseminated.

The integration of Information and Communication Technology (ICT) in agriculture can be utilized for providing accurate, timely, relevant information and services to the farmers, thereby facilitating environment for more remunerative agriculture.

With ICT facilities, farmers can be updated on temperature, humidity and rainfall with additional parameters such as atmospheric pressure, solar radiation, wind speed and soil moisture. In India, Ingen technologies provide this information to farmers. Ingen Technologies also use predictions and analytical software to predict demand for beverages of a major software drink company.

The use of ICT portal or agricultural website helps in dissemination of vital agriculture information such as online detailed contents, crops, crop management techniques, fertilizers and pesticides, and many other agriculture related materials.

Most of the small scale farmers sell their products to middlemen who now determine the prices to the detriment of the farmers. But with the provision of commodity prices and market information on real time basis available on the internet, the farming community can be provided with choices they lack today. This will ensure better price realization and stimulate a drive towards better productivity. Again with e-commerce farmers can sell their products online. In this regard the farmer can sell his product right inside his farm. What the farmer needs do is to register his location and products, to ensure that products ordered online can be traced to a particular farmer (Samuel 2010). This has widened the market for farmers.

With ICT, one can get information on market potential of some agricultural products. For instance, instead of selling unprocessed groundnuts you could further add value to it by further processing the nuts into peanut, butter and cooking oil.

Prompt ICT information on weather pests and diseases can prevent calamity experienced in agriculture in recent times, due to vagaries of weather and attack of pest and diseases.

Still in India, 'e-QUA technology' is applied to assist farmers. 'e-QUA' technology stands for 'almost all Questions Answered'. It is a farmer 'expert question and answer data base supporting Indian languages. It is an online multilingual multimedia informatics lab that answers farmers queries, based on location, season, crop and other information provided by farmers (Mukesh, Deepati and Kamini, 2010).

ICT offers more avenues for sharing of knowledge with stakeholders of different types and with different situations. Apart from canning and other methods of food preservation, various communities have their local ways of preserving agricultural products. This type of information can be shared among farmers. Information sharing is achieved through computer network which helps in dissemination of research products and messages.

With Global Positioning System (GPS), one can describe the exact latitude and longitude of one's farm. This is a way of promoting what is known as precise farming (Hutchinson and Sawyer, 2000). GPS can be used to control costs and boost crop yield. With GPS, farmers can map and analyze their fields for characteristics such as acidity and soil type.

Inadequate capital is one of the problems of agriculture in Nigeria. Some of the farmers especially small scale farmers are unaware of existing loan facilities due to poverty and low level of literacy. ICT can assist farmers by providing vital information on existing loan facilities

Through information provided by ICT, farmers will become aware of the latest agricultural tools and methods that make farming easy instead of the use of crude method. They can form a group and hire these tools.

At this point in time, it is pertinent to say that one does not claim to have exhausted what ICT can do for agriculture with the above discussion. The role of ICT in agriculture is enormous.

Conclusion

Information and communication Technology (ICT) is capable of lifting Nigeria's agricultural practice to the next level. It is a change agent we cannot ignore. Nigeria as a developing nation cannot be isolated from the wind of globalization. Application of ICT in agriculture has worked well in Korea, Japan, India and China, countries once regarded as undeveloped, but has now been lifted by ICT into leading positions in the comity of nations.

What Nigeria needs do now is serious investment on ICT infrastructures and making ICT facilities readily available to farmers at their door steps. The issue of adequate power supply is very important as far as ICT is concerned. Nigeria can learn from countries that have succeeded in agriculture through integration of ICT.

References

Anyanwuocha R.A.I (2006) Fundamentals of Economics for senior secondary schools, Onitsha, Africana first publishers.

Central bank of Nigeria (2010): CBN Annual report 2010.

Hutching and Sawyer (2000) Computers, Communications, Information: Users Introduction, New York, Irwin McGraw Hill, P. 4.27.

Mukesh P, Deepati T.P and Kanini B (2010). ICT for Agriculture Technology Dissemination (<http://agropedia.iitk.ac.in/?q=content/ict-agriculture-technology-di...>) Accessed 23/11/2011.

- Nigeria's Agriculture and food security challenges, 2001, <http://www.foa.org/tc/qork05/Nigeria.ppt.pdf>. Accessed 24/11/2011.
- Odachi G.N (2008). Enhancing the Attainment of Millennium Development Goals Through ICT, *Journal of Science Education*, Vol 9, No, 1, 2008
- Okoh R. N. (2004) .Nigerian Non-oil Export Mix and the competitive Global Market place. <http://www.unionbanking.com/Okoh.pdf>). Accessed 5/12/2011.
- Ozowa V.N (2011) Information Needs of small scale farmers in Africa: The Nigerian Example(<http://www.worldbank.org/html/cgiar/newsletter/june97/9nigeria.html>). Accessed 23/11/2011.
- Samuel A.I (2010) Using ICTs to Bridge the Agricultural Extension Gap and in Providing Market Access for Rural Farmers in Nigeria: A practical Approach (www.goole.com.ö ICT in agriculture in Nigeriaö).Accessed 24/11/2011.
- Talabi S.O and Onasanya O. (2011) Nigeria Agriculture- Introduction (<http://www.onlinednigeria.com/inks/agricadv.asp?blurb=480>). Accesses 24/11/2011.