



A Review of the Role of ICTs in Enhancing Food Production and Sustainability for National Development in Nigeria: The Way Forward

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ABSTRACT

This paper was motivated by the necessity to evaluate the role of the information, communication technologies (ICTs) available for the production and sustainability of food crops for human consumption in Nigeria. The paper argued that there still exist major policy gaps by the Nigerian government on agricultural productivity. The key objective of this paper is to show that ICTs has continued to impact significantly on the production and sustainability of food globally with the application of array of ICT tools and gadgets including the use of internet and mole phones. The paper applied a critical theoretical qualitative research approach to argue that the various levels of government in Nigeria urgently need to massively invest in ICT capacities through education to inform, and innovate current agricultural techniques for improved and sustainable production.

Keywords: Food Production in Nigeria, Application of ICTs, Way Forward.

INTRODUCTION

Most scholars are agreed that although nature's resources and agriculture has continued to represent major forces and drivers of Nigeria's economical developmental trajectories, yet the introduction and application of scientific technologies has remained the most impactful variable on the growth of Nigeria's agricultural sector. Muyo N (2011) observed that "technological inventiveness and the application of modern scientific innovations would continue to offer better options for development in areas including education, health, agriculture, insurance and banking services globally. (Ansoms, 2008) supported the above view by arguing that most nations have accepted information, communication technologies (ICTs) as the most vital platform in driving their nations towards achieving high-value added knowledge and information dependent economies that could have comparative advantages in the current world economic order. In view of the above analysis, only nations that welcomes and prioritize financing as well as inculcating new scientific technologies relevant to

their situations and conditions are most likely to maintain and promote development and remain globally respected and recognized. The deployment of ICTs to Nigeria's agricultural sub-sector which represent perhaps the most important economic area of people's life is also seen as a window that could extend the opportunity for eliminating the challenges of mass poverty while promoting economic. (World Bank, AfDB and AUC 2012).

Various researches so far undertaken on the success and otherwise of the role so far played by the application of ICTs on the performances of agricultural sub-sectors across many African countries which focus primarily on various agricultural programmes that represented the (micro-dimension) especially with attention to how these programmes have influenced the growth and the standard of living of the citizens especially those domicile in localities where those programmes were executed revealed that many of such agricultural projects that were supposedly aided by the application of various ICTs technologies have showed that there are no evidential proof or studies to suggest and corroborate successful records of the positive impacts of the use of ICTs in the food production processes of many of these African countries.

(Driouchi et al., 2006) observed that ICTs performs crucial roles in promoting food production due to the fact that they assist improve the effectiveness of the economic interfaces within agricultural sector while equally providing accessibility to prompt information by improving farmers accessibility to market price fluctuations and trends on platforms where their products are traded through the internet or mobile phones platforms and usages. In addition, a study carried out in the Republic of Niger showed that visiting a market of about 65 kilometres could take between 2 and 4 hours especially when contrasted to a three minutes mobile phone call. A web-enabled of daily pricing of agricultural products established on a platform that encourages sellers and buyers interface called "E-soko" in a Ghana assisted farmers in that country improve their earnings by 10 percent (Halewood and surya: 2012).

The upshot of the above analysis is that market dynamism especially those factors that relate to direct external demands of food products were effectively managed while products values were equally captured in real time.



Fig 1: Farmers in the Northern part of Nigeria cultivating their farm land

Objectives of Study

This paper was motivated the need to evaluated whether or not the discovery and global application of existing variety of ICT appliances and technologies in Africa and specifically in Nigeria has recorded over the years is significant improvement in agricultural production and over the years. The paper argued that there are various ICT gaps still impeding and negatively impacting the various food and agricultural outputs in Nigeria especially in the vital areas of the application and use of information communication technologies (ICTs). Secondly, this paper also aims to influence policy makers at various levels of government and related stakeholders managing Nigeria's agricultural sector to maximally utilize the array of available ICT gadgets including the internet, mobile phones, air drones, Nitrogen-sensor technologies, television, and video conferences, Wireless Sensor Networks (WSN), Geographical Information Systems (GIS) and the Global positioning systems (GPS) to create seamless communication

and awareness between all stakeholders, identify opportunities and the associated benefits that ICT could proffer for the growth of the subsector in the Nigerian economy. This paper also suggested that government at various levels in Nigeria need to improve ICT education and training and ensure that ICT components are accessible due to the fact that the positive contribution of ICTs to food production and sustainability must be pivoted on farmers that are highly trained in ICT. Also, ensuring that ICT education is well embedded in Nigeria's educational policies and programmes from post primary to higher levels-should be prioritized by government and key stakeholders in the agricultural sector of the economy.

LITERATURE REVIEW

The continent of Africa has continue to experience ground breaking development in the area of information communication technologies (ICTs) over the past twenty years. In many Africa countries studies have revealed that ICT has become pivotal and has continued to offer important solutions to the offer important solutions to the agricultural sector of the economies of these countries thereby assisting in reducing the negative consequences of mass poverty amongst Africans. The key aim of this paper is to re-examine whether the availability of a variety of ICT tools have significantly impacted food production in Nigeria. Irrespective of the contribution that agricultural growth and progress has made in Africa as a continent and Nigeria as a country, food production and agricultural yields have continued to decline when compared to the higher degree of productivity of yields by the advanced nations across the world over the last twenty years.. The poor performance of the agricultural sub-sector in Nigeria is traceable to the poor utilization of contemporary food production processes tools and technologies (Aker, 2011).

It is worthy of mention that the major changes made by countries including Korea, China and Japan in their patterns of food production was anchored on the massive commitment and investment in communication technologies (ICTs) and the premium accorded to researches in agriculture, systems of irrigation and development of

enduring facilities for food storage all of which acted as catalysts for higher agricultural yields and higher revenue for their citizens (UNECA, 2012).

In Nigeria, the agricultural subsector is yet to be given the impetus and attention it deserves especially in the aspects vital to its growth trajectory leading to the unimpressive output of the sector thereby leading to the absence of vital rural structures, poor yield rates and food insecurity across. Nigeria is regarded as having one of Africa's largest population within working age demography which shows a variety of opportunities for the country's economic growth trajectory to become achievable by 2040 (UNECA 2012, EIU 2012, AFDB, OECD, UNDP, 2012).

In addition, ICT adoption and application for higher for higher food productivity in Nigeria would require the political commitment and capacity to develop, diffuse, innovate and apply technologies and associated ICT related tools that are adaptable to the environmental condition and existing natural resources in Nigeria. Modern ICT Technologies and gadgets may not be impactful on higher food productivity outside the globally acceptable standard of education, training and skills acquisition by farmers across the country. Therefore, government in Nigeria need to develop a technological roadmap that could encourage and improve the introduction, utilization and diffusion of relevant ICT techniques to cover a wide range of food production while providing improved financial commitment to agricultural education across the country Juma C (2006).

METHODOLOGY

This paper adopted a critical, secondary and qualitative approach to evaluate various materials including various government documents, the internet, newspapers and documents from non-governmental agencies to argue that there still exist an absence of well-organized ICT oriented approaches regarding the introduction and execution of agricultural policies in Nigeria. The paper added that the lack of adequate information on the positive values of adoption and

application of ICTs appliances has continued to impede the various aims and efforts of government in Nigeria to achieve a prosperous food production and sustainable food security for the masses. The paper therefore argued that stakeholders in the Nigeria's food production sector need to acknowledge and harvest the positive technological values, opportunities and advantages that ICTs could offer and provide for the improvement of Nigeria's food production for the present and future generations Nigerians.

DISCUSSION AND FINDINGS

The introduction of information communication technologies (ICTs) into agricultural productivity and sustainability to improve food security is fast gaining global recognition. Burgess R, Pande R (2005) observed that many African countries and Asian nations have been applying (ICTs) for diffusing knowledge for agricultural productivity and that Nigeria could also benefit from such initiative. Cameroun, Kenya, Ghana, Senegal, Zambia, Botswana and Gabon are some of the countries in Africa that have been deploying ICTs for food production and agricultural sustainability. Mirdamadi, Hosseini and Ghizari (2008) highlighted various methods by which ICTs could be applied for securing food crops through the agricultural diversification, improvement of the educational base of farmers on the benefits of application of ICT gadgets in their businesses with the consistent use of both radio and television to assist farmers in the local communities to connect with vital information that could assist grow their agricultural outputs and generate improved income while alleviating poverty across Nigeria.

CONCLUSION AND RECOMMENDATION

The current economic downturn has continue to challenge many countries in Africa and particularly Nigeria to strategically think outside the box to achieve set objectives. History and experience have both shown that one of the major aspirations of most Nigerian political leaders is to achieve food security and sustainability of food for the generality of Nigerians across the country. The rapid deployment of ICTs could impact on aforementioned objective and also arrest the

ugly scenario of decreasing food production levels in Nigeria. Government at all levels across Nigeria need to initiate a national programme for food security and sustainability that would ensure the diffusion of ICTs to the country's agricultural domain as an integral aspect of its economic roadmap.

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