

Adoption of Information and Communication Technology among Rural Farmers in Nigeria for Increased Agricultural Productivity

Nwankwo, O. C.

*Abia State College of Education (Technical)
Arochukwu, Abia State, Nigeria*

ABSTRACT

This study reviewed the mechanics for the Adoption of Information and Communication Technology for Agricultural Productivity among Rural Farmers in Nigeria. Information and Communication Technology is a concept that has become globally appreciated. It has made the world to assume a village status. One will at his/her convenience monitor the events that happen all over the world, via the internet, e-mail, e-system, digital and metro-digital machines and a host of other information technologies available for the use of mankind. This study has unveiled the fact that rural farmers are extremely far from current developments in the farming industry as a result of their lack of ICT background. Therefore, to keep the rural farmers on the track of current developments in the agricultural sector, this study advocates frequent grassroot technological education that will expose these farmers bit by bit to the ICT world until they fully acclimatise.

Keywords: *ICT, Internet, rural farmers, Agricultural Productivity.*

INTRODUCTION

In the recent time, Nigerian government re-focuses on agriculture through the recognition of the role of extension services; the granting of subsidy to agricultural input in order to achieve food security. The stage is fully set to encourage the use of Information and Communication Technology (ICT) to boost agricultural production in Nigeria. The advent of ICTs has made the world a global village through the process of globalization. This means bringing the world to individual's doorsteps irrespective of the distance. This implies that those in the rural areas are not exempted. The technology involves the use of computer, internet, radio television and telephone to create, communicate, organise, store, retrieve, disseminate and manage information. In the area of Agriculture, however, only those in research institutes and some offices in the universities and colleges of agriculture have integrated the technology in disseminating information to the target audience or intended beneficiaries. Rural farmers who are the main producers of food crops in Nigeria are yet to benefit from the technology. However, there has been revolution with regard to ICT in agriculture particularly. This revolution is an intervention with the potential to ensure that knowledge and information on important agriculture technologies, methods and practices are put into the right use by farmers. Information and Communication Technology has become an increasingly powerful tool for improving the basic services and enhancing local development opportunities. Today, a new paradigm of agricultural development is fast emerging in both developing and developed counties. The overall development of rural

areas is expanding in new directions; old ways of delivering important information to citizens are being challenged; and traditional societies are being transformed into knowledge societies. Information and Communication Technology (ICT) is a vital tool for solving communication problems worldwide. Its applications are making drastic changes both in electronic and social development (Chaka, 2008). The Federal Government of Nigeria (2004), in recognition of the importance of Information and Communication Technology (ICT) in improving knowledge, states in the National Policy on Education that government shall provide necessary infrastructure and training for the integration of Information and Communication Technology (ICT) in advancing knowledge and skills in the modern world. In relation to Agriculture, ICT as suggested by Agbamu (2007) involves all aspect of published knowledge in agriculture, for example the use of computer, internets, telephones (mobile and fixed), television, e-mail, fax, radio etc. Information and Communication Technology (ICT) encompasses any medium that records information whether printed format, magnetic disc or tape, optical disc, CDs, DVDs, flashes etc. It implies not only the physical availability of communication equipment and methods but also the existence of the right conditions for their use in getting information. These conditions include the ease of use or user friendliness of the technologies, regular electric power supply and availability of spare parts. It must be noted that the problem is not only the presence of Information and Communication Technology (ICT) facility, its use depends on the user's capability.

Information technology use refers to the extent to which the technologies are utilized for communication purposes. It also explains the level to which the potentialities of the technologies are harnessed for the information generation and transfer. According to Chapman and Slaymakers (2002), internet is fast providing a relatively cheaper and faster medium of gaining access to agricultural information. Major trends and developments that are shaping current agriculture include, introduction of computer, which has enabled the automation of many agricultural organizations that provide varied services and products; and introduction of e-mail and internet, which have enabled accessibility to information.

Many agree that knowledge always been central to development and vast amounts of knowledge and information have been generated over many years to improve food security and promote sustainable development (FAO, 1997). Information and communications technology (ICTs) increased priority and resources for information exchange have the power to improve the access to and benefit from development activities for the rural poor; as well as creating a more informed policy environment (FAO, 2003). Information and Communication Technology (ICT) in the agricultural sector facilitates knowledge sharing within and among a variety of agricultural networks including researchers, importers/exporters, extension services and farmers. ICT enables vital information flows by linking rural agricultural communities. Attempt to understand and explain the mechanism and constraints of technological innovation adoption are not new (Grilliches, 1957). Adoption of information and communication technologies in rural areas as a unique challenge has long been a specific public concern with regional, national and international strategic significance. This study as a matter of great importance preoccupies itself with the adoption of ICT among rural farmers in Nigeria for increased Agricultural Productivity.

CONTRIBUTIONS OF ICT TO AGRICULTURAL DEVELOPMENT IN NIGERIA

The new technology is changing the way we live and work and they are transforming many aspects of social and economic organization in a way we could hardly imagined in less than two decades ago. ICTs present new opportunities for individuals and communities and not only to consumers but also producers through the mass media. This enables low cost of creation, access and distribution of information, which requires a network rather than centralized approach. ICT helps in increasing the efficient productivity and sustainability of small scale farmers through greater interaction in communication, evaluation, production and sharing of useful information which include the use of computer, internet services, geographical information system, mobile phones, radio and television. Farmers in Nigeria face enormous challenges due to the higher risks and uncertainties involved in farming. The risk and uncertainties, such as poor soil, draught, erosion and pest can be controlled or stop through basic information about pest and disease control, early worming system, weather changes, new varieties, ways to optimized production, regular and quality control. Electronic Agriculture is a new term and its scope is expected to evaluate with time. It involves conceptualization design, development, evaluation and application of innovation in a way to use Information and Communication Technology (ICT) on Agriculture. Stakeholders in Agriculture get their information and knowledge about agriculture and food production through Information and Communication Technologies (ICTs). The information must be user friendly easy to access, cost-effective and well protected from unauthorized access. Information and Communication Technology (ICT) also improve market access through the awareness of up-to-date market information on prices for commodities, inputs and consumers need which can improve farmers livelihood substantially and has a dramatic impact on their negative position. Such information is important in making decision about further crops and commodities, about best time and place to sell or buy agricultural produce.

Information and Communication Technologies (ICTs) have made tremendous contributions in extension delivery for sustainable development of agriculture. It is important to note that right from the inception of Agricultural Development Programme (ADP) strategies in Nigeria, starting with the use of Training and Visit (T&V) extension delivery with the aid of mobile cinema, television and radio, the development support communication component of the strategy has made very significant contribution to the country's agricultural development. In recent years, short message service has taken up and effectively deliver prices and trading information through mobile phones and internet services to farmers. Information and Communication Technology (ICT) enables rural communities to interact with other stakeholders, thus reducing social isolation. It widens the perspective of local communities in terms of national and global development, open up new business opportunities and allow easier contact with friends and relatives. It plays a vital role in helping the farming communities due to elimination of huge gap between agricultural knowledge and rural communities.

Use of ICT in Rural Areas and the Associated Problems: As a matter of fact, the use of Information Communication Technology depends on demands by the user/consumers and the buying power (or income per capita) of the related community. Even though the problems associated with the adoption of ICT in the rural areas appear enormous, and somehow hard to solve, the question is what can be done to make these communities an information society so that rural agriculture commonly in the hands of the small and medium-scale producers can be boosted and the status of farmers enhanced through relevant and timely information? Comparatively, in India, the use of ICT to meet farmers' needs for information according to Shaik, Jhamtani and Rao (2004) study reveals that 90% of farmers saw the ICT information as most appropriate, enabling them to sell at those markets where their goods would command the best prices. In the same study, Shaik, Jhamtani and Rao (2004) reveal that 82.5% of the farmers further perceived obtaining access to land records via Information Communication Technology (on line registration) as most appropriate. Conversely, in the rural areas of Nigeria, among the (women) farmers in Zaria local government area, 79% of the respondents preferred radio as the major source of information (Akinola, 2007).

Barrier/Limiting Factors to the Use of ICT in Rural Areas: According to Gelb and Parker (2005) and Arowosafe (2005), Information Communication Technology adoption constraints among the rural farmers are:

- i. Lack of effective training,
- ii. Cost of buying the technology facilities,
- iii. Lack of understanding of the benefit of Information and Communication Technology.
- iv. Lack of time.
- v. Lack of confidence in Information and Communication Technology.
- vi. Lack of extension conviction
- vii. Inadequate farmer's support by organizations and government
- viii. Lack of involvement of end users in Information and Communication Technology development.

From our discussion, it can be deduced that the use of Information and Communication Technology has some inherent benefits. The benefits though many have been limited to the following for the purpose of this study:

- i. Encouraging autonomous learning.
- ii. Facilitating communication (facilitating interaction between the source and receiver).
- iii. Promoting collaborative learning.
- iv. Building and exploiting information bases.
- v. Fast delivery of latest research findings.
- vi. More effective control procedures including production control, sales control, cost control, budgetary control and credit control.
- vii. Simplification of problem-solving by the use of problem solving software.
- viii. Greater degree of system integration on the basis that the output of part of a system provides the input to a related sub-system, which has the effect of eliminating duplication and delay.

CONCLUSION AND RECOMMENDATIONS

The communication strategy that is confined on the traditional mass media of communications did not effectively support the agricultural modernization campaign programmes of these nations. The communication strategy that utilized extensive variables in the use of interpersonal networks proved to be more effective than the strategy that confined to the traditional mass media of communications. The programmes that featured large-scale mobilization of the entire national population made it difficult for the manager of the programmes to implement the communication strategy plan. The adoption of Information and Communication Technology (ICT) for agricultural production among the rural farmers will in no doubt enhance the development of the rural community, food security and method of farming since there will be quick and timely delivery of relevant technical research findings and other information from agricultural organizations.

The cost of procurement, awareness, lack of involvement of farmers both in the planning and implementation of Information and Communication Technology projects, physics and network infrastructure among others were the major barriers to rural Information and Communication Technology usage in places where such has taken off. As a result, the following suggestions, which will need to be addressed by policy makers and government, agricultural organizations, research institutes and producers are made. Public, Private and Non-governmental organization should play more active roles in Information and Communication Technology education of the farmers by getting in close collaboration with the universities and other research/extension institutions. These organizations can build and provide a common environment and infrastructure for the farmers. Majority of the farmers cannot afford computer system individually. Government should provide the infrastructure for the wide spread of agricultural information with legislation and the opening of an Internet café (or information house), in at least two or more villages apart.

Again, they should endeavour to make use of the primary and secondary schools in major villages as computers and connections centers to the internet. This study has unveiled the fact that rural farmers are extremely far from current developments in the farming industry as a result of their lack of ICT background. Therefore, to keep the rural farmers on the track of current developments in the agricultural sector, this study advocates frequent grassroot technological education that will expose these farmers bit by bit to the ICT world until they fully acclimatise. Research institutions (universities, research institutes and others) have a task in emerging more in multiplying and dissemination of agricultural information to the rural farmers. In line with FAO suggestions, farmer's organization should be encouraged and legislated so as to benefit from FAO-ICT network- "Farm Net" which only recognizes farmer organizations as a means of enjoying such provision. Government and other stakeholders in agriculture should be made to know this, since it is an FAO initiative, which Nigerian is a member state.

REFERENCES

- Adeyinka, F. M.** (1997). Technological Response of Firms to Telecommunication Development in Nigeria. An interim Project report submitted to the African Technology Studies (ATPS). Ibadan: NISER.
- Agbam, J. U.** (2007). *Essentials of Agricultural Communication in Nigeria*. Malthouse Press Limited Lagos. Pp 20 - 24 and 91 - 93.
- Akinola, M. O.** (2007). Factors influencing Agricultural Transformation Networking among Rural Women in Zaria L.G.A of Kaduna State. Proceeding of the 41st Annual conference of the Conference of the Agricultural Society of Nigeria (ASN). Pp 640.
- Arowosafe, G.** (2005) The Use of ICT in Technical Education ETF sponsored Capacity Building Workshop for lecturers of Polytechnics and Monotechnics in Nigeria. Pp 4 and 5.
- Chaka, I. G.** (2008) Information and Communication Technology (ICT) as a Vital tool in the Education Sector Reform in Nigeria. *Nigeria Journal of Sociology in Education*, 2, 2.
- Chapman and Slaymaker, T.** (2002) ICTs and Rural Development. Review of Literature, Current interventions and Opportunities for Action. Working paper 192, Overseas Development Institute (ODI) London, U.K. Pp 1 - 36.
- Federal Republic of Nigeria** (2004). National Policy on Education (4th Edition) Lagos: NERDC, Press
- FAO** (1997). Food Supply System in Africa; in Agriculture Food and Nutrition for Africa: A Resource Book for Teachers of Agriculture FAD Corporate Document Repository. <http://www.fao.org/docrep/w0078e03>
- FAO** (2003). *FAO and ICT in Agriculture*. Rome: Food and Agriculture Organisation.
- Grilliches, Z.** (1957). Hybrid Corn: An Exploration in the economics of Technological Change. *Econometrics*, 25, 501 - 522.
- Gelb, E. and Packer, C.** (2005). Is ICT Adoption for Agriculture stills an important Issue? Paper Presented at the European Federation for Information Technology in Agriculture Conference.
- Shaik N. M., Jhamtani A. and Rao D. U. M.** (2004). Information and Communication Technology in Agricultural Development. A Comparative Analysis of Three Projects from India. *Journal of Agricultural Research and Extension Network*, 135, 10.