



ICT for Agro Development in Nigeria, Opportunities and Prospects

Obikwelu R Okonkwo¹, Eugenia Ngozi Ezeah², Ifeyinwa N. Arize³, Nefishetu Faith Aliu⁴, Celestine Ozoemenam Uwa⁵

¹Department of Computer Science Nnamdi Azikiwe University, Awka, Nigeria

²Department of Computer Education, Enugu State College of Education, (Tech) Enugu, Nigeria

³Department of Computer Science, Chukwuemeka Odumegwu Ojukwu University, Uli- Anambra State, Nigeria

⁴Department of Computer Science, Auchu Polytechnic, Auchu, Nigeria

⁵Department of Computer Science, Nigerian Defence Academy Kaduna, Nigeria

Abstract: *The rapid growth of Information and Communication Technology (ICT) in all spheres of life especially in agricultural sector has added much value services to the agro product development in Nigeria. The agricultural sector will be a total failure in Nigeria due to poor technological embracement of ICT in developing the agro products. This hindered to a great extent, the poor dissemination of agro products information. This paper proposes the use of Information and Communication Technologies (ICTs) for agro development in Nigeria, which will enable the farmers to have relevant information on agro products irrespective of the location where they are.*

Keywords: *computer, realtime, raw material, data, store and forward*

I. INTRODUCTION

The ever increasing use of information in all aspects of business activities cannot be over emphasized. Thus, the information needs in all facets of life especially in agricultural sector are very important and challenging. It is based on this background that the study on "Information and Communications Technology (ICT), opportunities and prospects" has been undertaken to illustrate the importance of applying ICT in agro development in Nigeria. ICT has drastically changed the way the world operates especially in communication. Every organization needs to pay much attention to how information is gathered, stored, disseminated and utilized, which agriculture is not an exceptional in order to give a rapid development in a country like Nigeria.

The term ICT is seen as technologies that facilitate, communicate, processing and transmission of information by electronic means. This encompasses radio, television, cellular phones, computer and network hardware and software, satellite systems as well as the various services and applications associated with them such as video conferencing, and distance learning. These changes have been so pervasive that it is hard for the developed countries to imagine what the world will be without these technologies. This however is not applicable to a developing country like Nigeria, where the agricultural sector is confronted immensely with the challenge of poor information dissemination of production and management of agro products found in the country. This paper intends to nurture the farmers using radio system and online expert consultations via store and forward, which should be played at a given time frame in the dialect of the farmers. The focus is not only to disseminate information, but also to educate them on the various ways of enhancing the production of the agro products they are working with. When this new technological innovation is implemented very well, it will not only boost the production of the agro products but create opportunities for our unemployed youths in the country to have interest, and as well engage themselves in the activities of the farm products.

An information society is one that makes the best possible use of ICTs. [3] cited in [9] notes that the information society is a way for human capacity to be expanded, built up, nourished, and liberated by giving people access to tools and technologies, with the education and training to use them effectively. The link between ICTs such as mobile phones, livelihoods, and poverty stems from the recognition that information is a critical factor for development purposes, [2]. Mobil phones or radio have the potential to amplify the speed, ease and to introduce new modes with which information is communicated. The phones can enable interactive communication flow unhindered by space, volume, medium or time, thereby influencing the existing communicative ecologies, [12] cited in [2]. However, the role to enhance the agro production in developing country like Nigeria and support the livelihood of the populace cannot be overlooked. The main focus of ICT in agriculture is meeting the farmers' needs for information. A farmer who accesses the most current information about his farming conditions is always placed better than those who lack information. This can be achieved through the use of ICT tools such as the use of mobile phones and radio, in which information is published to farmers via mobile phone or broadcasted to them using radio at specific time frame at all levels irrespective of their location.

II. REVIEW OF RELATED LITERATURE

An information society is one that makes the best possible use of ICTs. [6] Supported this view by describing it as a society in which the qualities of life, as well as prospects for the social change and economic development, depend increasingly upon information and its exploitation. In such a society, living standards, pattern of work and leisure, the educational systems, agricultural sector, etc, are all influenced advances in information and knowledge. This is evidenced by an increasing array of information intensive products and services, [3] notes that the information society is a way for

human capacity to be expanded, built up, nourished and liberated by giving people access to tools and technologies with education and training to use them effectively. This is a unique opportunity to connect and assist those living in the poorest and most isolated regions of the world.

[4] rightly pointed out that ICTs are usually important for sustainable development in developing countries. A growing mode of delivery in such an environment is by Information and Communication Technology that capture and store digitally encoded data, manipulate and transform these data, and then transmit and share results. [14] notes that for the past two decades, most developed countries have witnessed significant changes that can be traced to ICTs.

If information is to be used and empowering, it must be disseminated in a manner that best facilitates its reception [11]. However, information is delivered in numerous ways but the challenge is to consider the method most suitable to the audience attempting to reach. The abundance of methods and media for disseminating information creates a need for extension and education to know the types of technology its audience owns and /or regularly uses [10]. Knowing the targeted participants will equally be helpful in determining the source in disseminating information in a manner that is welcomed by both ends. [8] suggested that in the information age, dissemination of information and applying this information in the process of agricultural and livestock production will play a significant role in development of farm families.

In technology driven society, getting information quickly is important for both sender and receiver, ICTs have made it possible to quickly find and distribute information. [14] indicates that many initiatives have taken at the international level to support African efforts to develop a communication infrastructure and these efforts are designed to enable African countries, including Nigeria to find faster ways to achieve desirable and sustainable development.

[15] states that with Internet services, one can do business all over the world without physically contact with the buyer or the need for a business intermediary. Sustainable development of agricultural sector in Nigeria as a developing nation seems as necessity for policy makers and development actors. Nigeria is rich in land mass and with agricultural resources. In fact, National Agricultural Research Systems (NARS) are main sources of generation and development of technologies and knowledge in agricultural sector, as the linchpins of agricultural development [5]. Also, they unavoidable role in national innovation system in order to enhance capacities of knowledge-based development of agricultural sector [16].

III. OBJECT ORIENTED ANALYSIS AND DESIGN OF THE SYSTEM

This section describes a number of basis/standard that the designs of the ICT for agro development system will accomplish.

- Accessibility: All the users have equal opportunity to access the system at any point in time.
- Simultaneous Access: Many end users can access the system concurrently by using the internet.
- Obtainability: The system is constantly available through the Internet services.
- Integrity: Every information obtained in the system has been tested and confirmed reliable through scientific experiment. No part of this research work is permitted to be altered unless there is an improve version of the original information.
- Security: The information stored in the database of the system can only be modified if the need for the update arises.

IV. THE SYSTEM MODEL OF ICT FOR AGRO DEVELOPMENT

The system architecture was developed in order to accommodate the requirements definition. This architecture defines the key components of the proposed system together with the interaction between these components. This system was modeled such that when a user wants to view information in the system, such user has to enter the username and password before access is granted. The developed system allows many farmers to use it concurrently, which equally gives a high performance at any given time. It is only the admin user that has the authority to modify any of the modules when the need arises.

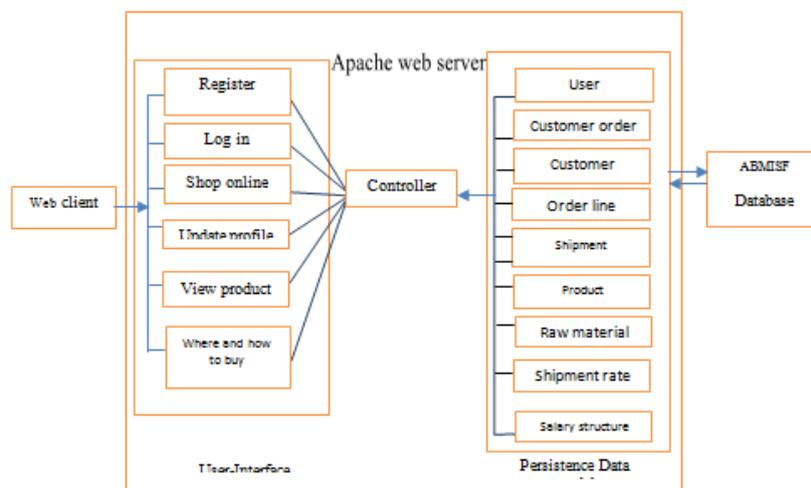


Figure 1: The architecture model of agro system

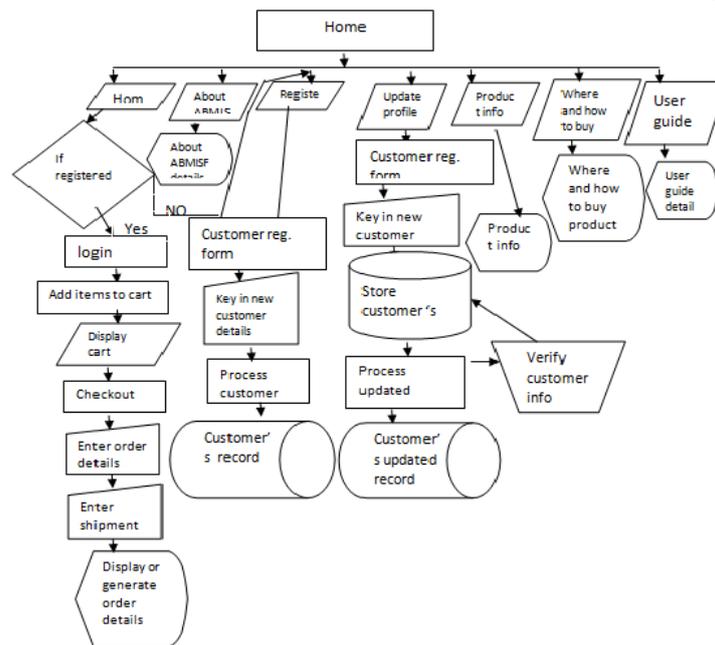
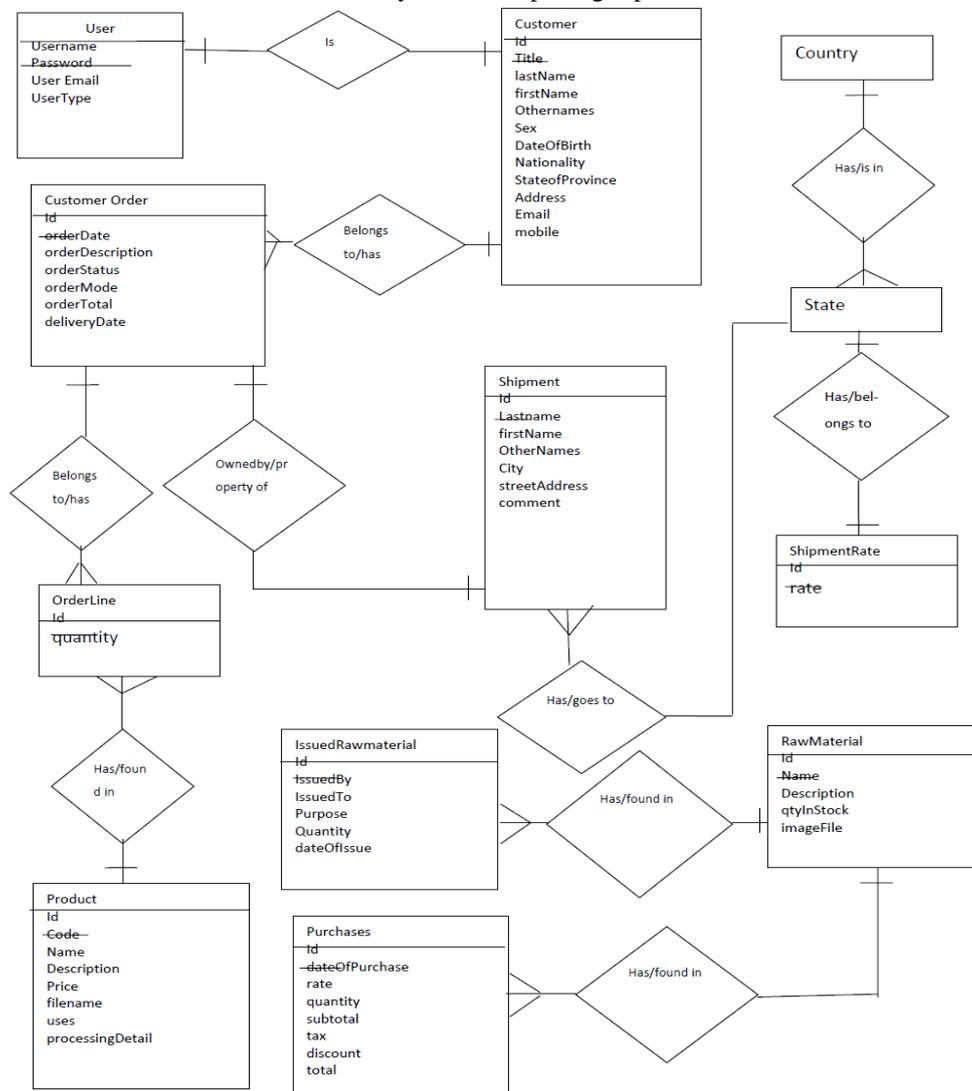


Figure 2: system flowchart of agro development

V. DATABASE DESIGN OF THE SYSTEM INFORMATION

A data has the core information for storing, processing, and securing data, such that a computer program can quickly select pieces of data and the entity relationship of the database is shown in table 1.

Table 1: entity relationship of agro products.



VI. RESULTS AND DISCUSSION

Every information on agro products is sent to the farmers as a visual text message in the farmers' mobile phone numbers and audio message in the language those farmers in that locality will understand stating an appropriate time made known to the farmers when the audio message will be played via mobile phone, store and forward. Thus, the photograph seen below was used to illustrate the dissemination of information on agro products conveyed to farmers in their own dialect using store and forward in a given time frame.



Figure 3: this photograph shows a group of farmers organized for agro empowerment

VII. CONCLUSION

Since we need to grow together with the technological changes in the society, all farmers should need information about trend and available technological tools to equip them, so as to produce more and participate effectively in setting standards for a livelihood and employment opportunities. This can only be achieved if huge utilization of ICT must be taken as the first priority.

REFERENCES

- [1] Aboulquasem S., Gorgan h., and Mahnoosh S. (2008): Integrating Information and Communication Technologies in the Iranian agricultural research system
- [2] Alfred, S.S.; Elizabeth K. and Joyce G.L.(2010): Contribution of mobile phones to rural livelihoods and poverty reduction in Morogoro region, Tanzania
- [3] Annan, K.(2002). Information and Communication Development: Information Society Summit. p7
- [4] Crede, A and Mansell R. (1998). Knowledge Societies. Information Technologies for Sustainable Development. Ottawa, Canada.
- [5] Dalrymple, D. G. (2000). The role of public Agricultural Research in International Development.
- [6] Martin, J. W. (1995). The global Information Society. England: Aslib, p3
- [7] Moghaddasi, M. S. (2004).The importance of discovery for a country's agriculture-World transactions on Engineering and Technology Education. 3(2): 297-298.
- [8] Mudukuti, A. E., and Miller L. (2002): Factors related to Zimbabwe women's training courcesal needs in agriculture. Journal of agricultural and Extension training courses 9(2): 47-53.
- [9] Ogbomo, M.O. and Ogbomo, E. F; (2008):Importance of Information and Communication Technologies (ICTs) in making a healthy information society.
- [10] Orr, C.L.(2003): Informational needs of limited scale landowners within the urban/rural interface of Lincoln County, Oklahoma (master's thesis, Oklahoma State University)
- [11] Rezvanfar, A.; Akbary, M.; and Hemmatyar, A.H (2009) Analysis of Communication Linkage from Livestock Research Specialists to livestock ownersin Iran
- [12] Tacchi, J., Slater,D. and Hearn,G. (2003), Ethnographic action Research. A user's handbook. New Delhi, UNESCO.
- [13] Taeb, M and Keshavary, A. (1999): Country's status reports. Iran National Agricultural Research System in the Asia – Pacific Region.
- [14] Thioune, R. M. C.(2003): Information and Communication technologies for development in Africa. Opportunities and challenges for community development. Volume 1. Ottawa: IDRC. Available://www.Idrc.ca Retrieved 4th July, 2013.
- [15] Woherem, E. R. (2000). Information Technology in the Nigerian banking industry. Ibadan: Spectrum books. pp 1-2, 26155-60
- [16] World bank (2007), Enhancing Agricultural Innovation: How to go beyond the strengthening of research systems. World Bank, Washington DC