

Using Information and Communication Technology Among Nsukka Yellow Pepper Farmers in Enugu State, Nigeria

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Abstract: This study assessed use of Information and Communication Technology (ICTs) among Nsukka yellow pepper farmers in Enugu State, Nigeria. The specific objectives of the study were to: present some socio-economic characteristics of Nsukka Yellow Pepper farmers; evaluate the ICT use by the farmers; determine the types and frequency of use of various ICTs; and identify some challenges in the use of ICTs in the study area. Multi-stage sampling procedure was used to select two hundred Nsukka yellow pepper farmers. Data were collected using semi structured questionnaire and interview schedule and were subjected to descriptive and inferential statistics. The results of the analysis reveal that the average age of the farmers was 46 years. Majority (74.4%) of the respondents were females who were married and were all Christians. The major ICTs commonly used among the farmers were mobile phone, radio and television. 39.5% of respondents receive information at least 6-9 a week. Respondents in the area considered radio and mobile phone to be the most relevant sources of information ranking them 1st and 2nd respectively. Results of the analysis also show that their biggest challenge is inadequate resources to purchase ICT facilities followed by irregular power supply. In view of this result we recommend that government should provide some incentives to these farmers to enable them acquire ICT gadgets to ease their sharing of information.

Key words: Information and Communication Technology • Yellow Pepper • Pepper Farmers • Agriculture
• Crop production.

INTRODUCTION

Agriculture is an information dependent sector of the economy. Information is generally becoming a major input, thereby playing central role for farmers to respond to opportunities that could improve their agricultural activities, [1]. Oladele [2] noted that information is crucial for increasing agricultural production and improving marketing and distribution strategies. Knowledge and information plays significant role in every farming activity. Nyamba and Mlozi [3] asserted that information and Communication Technologies (ICTs) have continued to be the best hope in developing countries to accelerate their development process. World Bank [4] maintains that knowledge production is accelerating and knowledge improves with rapid development in ICT.

Information and communication Technology as asserted by World Bank [5] and Quintas and Ray [6] is a significant factor of economic production and growth. ICTs increase productivity, access to markets and

adaptability to weather conditions in farming. It has changed the lives of individuals, organizations and indeed many nations. Agu [7] asserted that it facilitates exchange among women from diverse social groups; allow rapid access to information needed for exchanging, buying, producing and selling products and lead to increased productivity gains. Government of Kenya [8] stated that ICT is a critical tool for expanding human skills and rests largely on a system of producing, distributing and utilizing information and knowledge that in turn plays a great role in driving productivity and economic prosperity. It is a powerful tool in the hands of any information user.

Singh, Kumar and Singh [9] defined information and communication Technology as the basket of technologies that assist or support the storage and dissemination of information or data. ICTs are any devices or tools that allow the exchange or collection of data through interaction or transmission. It is an umbrella term for tools that are used for information collection, storage and

dissemination among others. ICTs as stated by Warren [10] include television, radio, video, voice information system, fax, computer and television.

Das [11] stated that the role of information and communication technology in disseminating agricultural knowledge has been well established. Bachhav [12] have it that, the use of information and communication technology in agriculture sector is enhancing farming productivity in a number of ways. It helps in providing information on weather trends, best practice in farming and timely access to market, helps farmer collect correct information which enable them make decisions about what crops to plant and where to sell their produce as well as buy inputs.

The use of information and communication technologies offer farmers the opportunity to collect, gather, share and disseminate information on emerging production techniques, market information and how to enhance their production levels. Nsukka yellow pepper farmers are one of those farmers that can benefit from the importance of ICTs. Nsukka yellow pepper belongs to specie of pepper known as *Capsicum annum*. This type of specie according to Hwang, Lim, Kim, Choi, Kim, Reeves...Shin [13] is among the most worldwide cultivated specie. *Capsicum* species are members of the Solanaceae family which includes tomato, potato, tobacco and petunia.

Enugu North senatorial zone is generally considered to be the home of the Nsukka yellow pepper as was noted by [14]. This variety of pepper as asserted by Uguru [15] is not cultivated in most states in Nigeria. The author further affirmed that this might be as a result of its tendency to lose its pungency, aroma and colour. Ezike [16] stated that this specie of pepper has a unique aroma which is not known to exist in any other pepper cultivar. Uguru [17, 18] stated that these species of pepper is usually planted from seeds that are extracted from ripe fruits, dried and stored for planting.

It is an important fruit vegetable cultivated in commercial and semi commercial quantity in Enugu North senatorial zone, (former Nsukka agricultural zone) of Enugu State, hence the name Nsukka yellow pepper. Nsukka yellow pepper is popularly referred to as "Ose Nsukka" as was stated by [19]. Onwubuya, Okporie and Nnenna [20] stated that its cultivation forms a major and sometimes the only agricultural activity of rural women in Enugu state. There is the need to improve production in order for it to reach people that need it. The improvement requires agricultural information which ICTs offers.

In order to attain this required growth, Nsukka yellow pepper farmers must not be left behind in an effort to create a knowledgeable society in which ICT becomes the key to agricultural transformation. Any digital divide need to be bridged in order to build the capacity of these farmers especially since this specie of pepper is only found in this zone. The applications of information and communication technology reinforces the poor policy implementation strategies adopted in many developing countries of the world, since it is widely known that the availability of timely, relevant and accurate information is known to make the difference between the success and failure of agricultural sector.

Objective of the Study: The objective of the study is to assess the use of ICTs among Nsukka yellow pepper farmers in Enugu North Senatorial zone of Enugu State, Nigeria. The specific objectives of the study are to:

- Present some socio-economic characteristics of Nsukka Yellow Pepper farmers;
- Determine the major activities of farmers using ICTS;
- Determine the type of ICTs used by farmers;
- Identify the major sources of information using ICTS; and
- Identify some challenges in the use of ICTs in the study area.

MATERIALS AND METHODS

The Study Area: This study was carried out in Enugu State, Nigeria. The state is in the South East Agro Ecological Zone of Nigeria. The ecological Zone according to Shaib, Aliyu and Bakshi, [21] lies between latitudes 40 -70 N and spreads over a total of 78, 612 sq. kilometres which represent 8.5% of the country's total land area. Ezike as cited in Nweze [22] noted that Enugu state is located between latitudes 50 56 N and 7o 55 E of the Greenwich meridian. The state is bounded in the northeast by Ebonyi State, on the north by Benue and Kogi States and to the west by Anambra State from which it was carved out in 1991. In the south it borders with Abia State. Enugu State has a total land area of 8, 022.95 sq. kilometres, (National Population Commission, 1992).

According to annual abstract of statistics (2011), the census 2006 had the population of Enugu state as 3, 267, 837 projected to 3, 684, 475 in 2010 and Enugu North population stood at 1, 229, 811 projected to be 1, 386, 608 in 2010. The population density of the state stands at 248 persons per square kilometre.

About 80% of the rural population is engaged in agriculture which is characterized largely by smallholdings of less than one hectare. These farmers predominantly cultivate food crops including cassava, yam, Nsukka yellow pepper, garden egg, rice, ground nut, maize, rice, pigeon pea, cocoyam and cowpea. The major perennial tree crops grown are oil palm, citrus, pear, mango, local apple and cashew. These are basically supplemented with small-scale livestock farming such as local or high breed poultry, small ruminants, piggery, goats, sheep and indigenous cattle.

Data Collection: Data was collected through the use of semi structured questionnaire and interview schedule from august 1st 2018- October 30th 2018. The respondents comprises randomly selected registered contact farmers in Enugu North Senatorial zone of Enugu state. Multi stage sampling technique was adopted for this study. Two towns were selected from each of the six local governments that make up Enugu North Senatorial Zone. The towns are: Nsukka and Ibagwa Agu from Nsukka local government area, Olido and Ugbaike from Igbo-eze North local government, Opanda and Ugbele Ajima from Uzo Uwani local government area, Uhunowere and Unadu from Igbo-eze South local government area, Aku and Ozalla from Igbo-Etiti, Obollo and Agu Orba from Udeno local government area. The sample sizes were proportionally allocated based on the number of registered Nsukka yellow pepper farmers in each town. The sample sizes of each local government are: Nsukka 55, Igbo-Etiti 31, Igbo-eze North 32, Igbo-eze South 20, Udeno 30 and Uzo Uwani 32. The sample size of the study is two hundred Nsukka yellow pepper farmers.

RESULTS

The data collected were analysed using a statistical Package and the mean rating, standard deviation and percentages were obtained.

The responses were coded as Very High (VH) - 4, High (H) -3, Low (L) -2, Not at All (NA) -1 giving an overall average of 2.5 which we will regard as the starting point of high rating.

The mean rating of the activities of farmers in the use of ICTs, ICTs used by farmers, major sources of information using ICTs and challenges associated with the use of ICTs were obtained and ranked in descending order of the means.

Table 1a: Gender

Gender	Freq.	%	Valid %	Cum. %
Female	149	74.5	74.5	74.5
Male	51	25.5	25.5	100.0
Total	200	100.0	100.0	

Table 1b: Age distribution

Ages	Freq.	%	Valid %	Cum. %
24.00	11	5.5	5.5	5.5
31.00	13	6.5	6.5	12.0
38.00	18	9.0	9.0	21.0
45.00	78	39.0	39.0	60.0
52.00	70	35.0	35.0	95.0
59.00	6	3.0	3.0	98.0
66.00	4	2.0	2.0	100.0
Total	200	100.0	100.0	

Table 1c: Marital Status

Marital Status	Freq.	%	Valid %	Cum. %
Single	6	3.0	3.0	3.0
Married	184	92.0	92.0	95.0
Widowed	10	5.0	5.0	100.0
Total	200	100.0	100.0	

Table 1d: Frequency of Access to ICTs

No of Times/week	Freq.	%	Valid %	Cum. %
1-3	51	25.5	25.5	25.5
3-6	20	10.0	10.0	35.5
6-9	79	39.5	39.5	75.0
9-12	50	25.0	25.0	100.0
Total	200	100.0	100.0	

Table 1a shows the percentages of respondents and their gender which indicate that there are more females with a percentage of 74.5, while the males have 25.5.

Table 1b shows the percentage age distribution and it shows that respondents with age 45 have the highest value of 39.0.

Table 1c shows the percentages of respondents and their marital status which indicate that there are more married farmers with a percentage of 92.0, while the widowed and single are 5.0 and 3.0 respectively.

In Table 1d, we show the frequency of access to ICTs. The highest percentage of access per week is 6-9 times with a percentage of 39.5.

Table 2 shows the mean rating of the activities of farmers in the use of ICTs and the ranks in order of use by farmers. It can be observed that the highest ranked is access to farm inputs followed by production management and then market information coming third.

The mean responses on the type of ICTs are arranged in descending order in Table 3. The result indicates that, Radio, mobile phone, TV/Video were the most frequently used ICTs.

STable 2: Activities of Farmers in the Use of ICTs

S/No.	Activities of Pepper Farmers	N	Mean	Std. Deviation	Ranks
1.	Access to Farm inputs	200	2.90	.998	1 st
2.	Production Management	200	2.60	.668	2 nd
3.	Market information	200	2.55	.593	3 rd
4.	Financial information	200	2.17	.882	4 th
5.	Climatic information	200	2.13	.840	5 th
	Valid n (list wise)	200			

Table 3: ICTs Used by Farmers

S/No.	ICTs Used by Farmers	N	Mean	Std. Deviation	Rank
1.	Radio	200	3.90	.443	1 st
2.	Mobile phone	200	3.65	.477	2 nd
3.	TV/Video	200	3.60	.490	3 rd
4.	Computer	200	3.50	.749	4 th
5.	Internet	200	3.49	.749	5 th
6.	Projector	200	3.48	.749	6 th
	Valid n (list wise)	200			

Table 4: Major Sources of Information Using ICTs

S/No.	Sources of Agricultural information	N	Mean	Std. Deviation	Rank
1.	Friends/co-farmers	200	3.90	.443	1 st
2.	Family/relatives	200	3.65	.477	2 nd
3.	Agricultural input suppliers	200	3.60	.490	3 rd
4.	NGOs	200	3.50	.749	4 th
5.	Extension Agents	200	3.50	.749	4 th
6.	Agricultural researchers	200	3.50	.749	4 th
7.	Agricultural shows	200	3.47	.695	5 th
8.	Social media	200	3.40	.490	6 th
9.	Ministry of agriculture	200	3.30	.459	7 th
10.	Livestock headers	200	2.86	1.386	8 th

Table 5: Challenges Associated with the use of ICTs

S/No.	Challenges Associated with ICT use	N	Mean	Std. Dev.	Remarks
1.	Inadequate resources to purchase ICT facilities	200	3.73	.444	1 st
2.	Lack of electricity	200	3.72	.498	2 nd
3.	Inadequate communication network	200	3.65	.477	3 rd
4.	Lack of library and Information Centers	200	3.59	.601	4 th
5.	Wrong time of airing AI programs on Radio and TV	200	3.51	.841	5 th
6.	Lack of adequate income	200	3.39	.532	6 th
7.	High rate of illiteracy among farmers	200	3.21	.790	7 th
8.	Lack of understanding of information delivered	200	3.19	.491	8 th
9.	Fear of computer	200	3.17	.817	9 th
10.	Lack of interest	200	3.02	1.407	10 th
	Valid N (list wise)	200			

Table 4 above shows that the farmers sourced their information through informal ways like friends/co-farmers, Family/relatives and agricultural input suppliers. It was gathered that anything that brought them together created opportunity to source for information.

Table 5 shows the identified challenges associated with use of ICTs to access information for yellow pepper production among the farmers. The result which is presented in descending order of the mean identified

inadequate resources to purchase ICT facilities as a major challenge followed by lack of electricity. However, the mean rating for the ten challenges were all above average.

CONCLUSION

Our findings show that the yellow pepper farmers are predominantly females with 74.5%. The average age of the farmers is 46 years with 92.0% of them married.

The highest ranked activity of the farmers using ICT is in getting access to farm inputs followed by production management and then market information.

The results implies that there is no research-extension-farmer relationship or that even if it does exist; it may not be very effective. The farmers are not getting adequate information through ICT from extension agents whose jobs are to relate research findings to the farmers. By extension this might be one of the reasons why there is decline in the production of yellow pepper in the region. The identified challenges facing yellow pepper farmers are inadequate resources to purchase ICT facilities, lack of electricity and inadequate communication network.

Finally, the findings have shown that government and its agencies are insensitive to the plight of farmers. The farmers are not getting adequate information from agencies of government which is much more reliable.

Recommendations: Farmers should be encouraged to seek for information on improved ways of production management. Government need to come to their aid in the provision of infrastructure and other major challenges. Attention should be paid to the use of Radio in disseminating agricultural information. More effort should be made to improve the formal ways of disseminating information to rural farmers. Finally, we recommend that government should provide some incentives to these farmers to enable them acquire ICT gadgets to ease their sharing of information.

REFERENCES

1. United Republic of Tanzania (URT), 2010. Tanzania Development Vision 2025. Government Printers, Dar es Salaam, pp: 14. [www.tzonline.org/pdf/icteduction1.pdf] Retrieved 8th July 2010.
2. Oladele, O.I., 2006. Multilinguality of farm broadcast and agricultural information access in Nigeria. *Nordic J. Afr. Studies*, 15(2): 199-205.
3. Nyamba, S.Y. and M.R.S. Mlozi, 2012. Factors Influencing the Use of Mobile Phones in Communicating Agricultural Information: A Case of Kilolo District, Iringa, Tanzania, *International Journal of Information and Communication Technology Research*, 2(7): 558563.
4. World Bank, 1998. World Development Report 1998/1999. Knowledge for Development. Oxford University Press New York.
5. World Bank, 2000. World Development Report 2000/2001. Attacking Poverty Oxford University Press New York.
6. Qunitas, L.S.P. and T. Ray, 2002. Managing Knowledge. An essential Reader. Sage London.
7. Agu, M.N., 2013. Application of ICTS in Agricultural Sector: Women's Perspective. *International Journal of Soft Computing and Engineering*, 2(6).
8. Government of Kenya, 2013. Second Medium Term Plan, 2013-2017: Transforming Kenya: Pathway to Devolution, Socio-Economic Development, Equity and National Unity. Nairobi. Government Printers.
9. Singh, K., M.A. Kumar and R.K.P. Singh, 2015. Role of Information and Communication Technologies in Indian Agriculture: An Overview, Online at <http://mpr.ub.uni-muenchen.de/62413/> MPRA Paper No. 62413, posted 26. February 2015 14: 27 UTC (Retrieved December 5th 2018).
10. Warren, M.F., 2002. Adoption of ICT in agricultural management in the United Kingdom. The intra rural digital divide. *Agricultural Economy*, 48(1): 1-8. When information and knowledge are well improved agriculture and rural development.
11. Das, B., 2013. Diffusion of Old Information and Communication Technologies in Disseminating Agricultural Knowledge: An Analysis of Farmers' Income, *African Journal of Science, Technology, Innovation and Development*, 5(3).
12. Bachhav, V.B., 2012. Information Needs of Rural Farmers: A Study of rom Maharashtra, India: A Survey. *Library and Philosophy and Practice (e-journal)*. Paper 866- Retrieved December 15th 2013 from <http://digitalcommons.unl.edu/libphilprac/866>.
13. Hwang, D.G., J.H. Park, J.Y. Lim, D. Kim, Y. Choi, S. Kim, G. Reeves, S.I. Yeom, J.S. Lee, M. Park, S. Kim, I.Y. Choi, D. Choi and C. Shin, 2013. The hot pepper (*Capsicum annuum*) micro RNA transcriptome reveals novel and conserved targets: a foundation for understanding Micro RNA functional roles in hot pepper. *PLoS One*, 8(5), e64238. <http://dx.doi.org/10.1371/journal.pone.0064238>. PMID: 23737975.
14. Maga, T.J., M.I. Uguru and P.E. Ogbonna, 2012. Variability and correlation studies in agro morphological traits of the aboriginal Nsukka yellow pepper (*Capsicum annuum* L.) genotypes. *Nigerian Journal of Horticultural Science*, 17: 88-102.
15. Uguru, M.I., 1999. Location effects on the growth, yield and flavor expression of Nsukka aromatic pepper. *United States J. Appl. Chem. & Agric. Res.*, pp: 6.
16. Ezike, G.O.I., 1986. Silver Jubilee Celebration Book of Inventions and Creative Work. University of Nigeria Press SJC/002 and SJC/003.

17. Uguru, M.I., 1996. *Crop Production in the Tropics*. Longman Publishers, England.
18. Uguru, M.I., 2005. *Crop Genetics and Breeding*, (Revised ed.). Ephrata Press, Nsukka.
19. Ugwu, C.S., 2006. Linkage among Actors in Yellow Pepper (*Capsicum annum*) Innovation System in Nsukka Agricultural Zone, Enugu State. Thesis for Department Agricultural Extension, Faculty of Agriculture, University of Nigeria Nsukka.
20. Onwubuya E.A., E.O. Okporie and M.G. Nnenna, 2008. Nsukka Yellow Pepper Processing Techniques among Women Farmers in Enugu State. *African Journal of Agricultural Research*, 4(9): 859-863.
21. Shaib, B., A. Aliyu and J.S. Bakshi, 1997. Nigeria: National Agricultural Research Strategy Plan 1996-2010. Department of Agricultural Sciences, Federal Ministry of Agriculture and Natural Resources, Abuja, Nigeria.
22. Ezike, 1992. In N.J. Nweze (2002) Social Capital (Pilot) Survey in Enugu State <http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Integrated-Questionnaire/EnuguStatePilotRpt-ShortVersionAug02.pdf> (Accessed December 5th 2018).