

EFFECTS OF CONVENIENT TIME TO LISTEN TO RADIO-FARMER PROGRAMME ON ADOPTION OF TECHNOLOGIES BY FARMERS IN IMO STATE, NIGERIA

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ABSTRACT

The study ascertained the effects of farmer's convenient time for listening to radio-farmer programme on adoption of improved technologies by farmers in Imo state, Nigeria. The specific objectives of the study were to; ascertain the factors that influence farmers' convenient time for listening to radio-farmer, determine the adoption level of agricultural technologies disseminated via radio-farmer. The study assumed that there was no significant relationship between the farmers' convenient time for listening to radio-farmer and adoption of technologies. The population for the study consisted of all rural farmers in Imo State. Multi-stage proportional random and purposive sampling techniques were used to collect a sample size of 360 farmers. Results indicate that the exponential function had the highest value of coefficient of determination (R^2) was 0.793 which implies that 79% of the variation in farmers adoption level influenced by convenient time to listen to radio-farmer programme by the farmer. Results from the study further shows that many factors influence farmer convenient time to listen to Radio-Farmer Programme such factors were, frequency of broadcast (once a week (86.7%), time of broadcast in the evening (76.4%) and convenient time (8pm - 8.30pm). Results also showed that adoption level was generally low due to time limitations and the inability of Extension agencies to regularly visit farmer's listeners to identify confusing issues on the subject matter. The Effect of farmers convenient to listen to Radio-Farmer Programme had significant influence on Adoption of improved technologies although with numerous challenges the study recommends that farmers should form Radio-Farmer Programme listeners groups and arrange to listen to Radio-Farmer Programme together in order to avail them the opportunity to interact and discuss the contents of the broadcast.

Keywords: Effects, Adoption, Technologies, Radio-farmer, Programme

INTRODUCTION

The function of agriculture in economic development has long been recognized and plays an important role in reducing poverty and served as an engine for economic growth in developing countries (Mgbada, 2010). Ugwu (2007) noted that agriculture is still the mainstay of the Nigerian economy despite its declining contribution in the national economy in the past two decades. Today technologies are key driving force to economic progress of any nation while in the past economic progress was determined by traditional factors of production such as land, labour and capital.

Mgbada (2010) explained that the main aim of adoption of improved technologies is to increase agricultural returns and improve the social standard of the rural farmers. Agricultural technology transfer is the process of making farmers to see, experience, learn and adopt new improved practices and materials of production. Mgbada (2010) defines technology transfer as the dissemination of improved technologies to farmers in a codified and understandable message through appropriate channel. Adoption is the decision to make use of agricultural

technology as the best available. Technology refers to any combination of all the management practices employed in producing and managing a given commodity. For example crop, animal or mixture (Mouneke and Ekeleme, 2004). Agricultural technology therefore refers to the application of technology in agricultural practices to solve the problems of how production and productivity in agriculture. It is the improved method of farming which include cultural practices, improved plants, animal breeds option. Ifenkwe (2013) describes adoption of technology as the acceptance and utilization of technology. Radio-farmer programme is used to reach large number of farmers quickly as well as create awareness of new practices. The information and teaching functions of radio is desirable for changes to occur especially in rural communities where majority of the small scale farmers are located.

Rapid dissemination and adoption of improved technologies among farmers will help to increase productivity (Ugochukwu, 2000). Radio has been recognized for playing the major role in the success of agricultural technology transfer and adoption of

technologies (Ango et al 2013). Agricultural technologies disseminated to farmers can be categorized into cultural operation, technologies like fertilizer use, manure application, crop varieties, proper seed bed preparation, seed treatment etc. The crop based technologies include improved seed varieties. Some of the improved agricultural technologies disseminated via radio-farmer in Imo State include: soil conservation practices, improved stems, (TMS) homestead fish pond, yam minisetete technique, use of herbicide. There is a wide gap in knowledge on the effect of agricultural technology transferred on agricultural productivity. Radio-farmer has received less attention due to poor financing by government, poor network linking, extension workers and radio-farmer host. There is a problem of wide spread illiteracy among farmers in Imo State. Agricultural Development Programme (ADP) has through radio-farmers disseminated improved technologies to the farmers in order to better the problem of food shortage within the area. Despite those efforts aimed at increasing food production in the area, there is still very low food productivity in the area. This gap between low food production and improved agricultural technologies disseminated to the rural farmers in Imo State calls for the need to analyze the effect of farmers' convenient time to listen to radio-farmer on adoption of improved technologies by farmers.

The objectives of the study were to; ascertain the factors that influence farmers' convenient time for listening to radio-farmer, determine the adoption level of agricultural technologies disseminated via radio-farmer. The study assumed that there was no significant relationship between the farmers' convenient time for listening to radio-farmer and adoption of technologies.

METHODOLOGY

Study Area

This study was carried out in Imo State, Nigeria because it is one of the major food producing states in South-East, Nigeria where radio-farmer programme had been extensively used to disseminate agricultural technologies to farmers by extension service. The state lies between latitude 5° 45'N and longitude 6° 35'E of the Greenwich Meridian. It is bounded in the east by Abia State, northwest by Anambra State, south-south by Rivers State. The state is located within the rain forest belt of Nigeria with the temperature range between 20°C and 30°C (Imo ADP, 2012).

Imo State has a population of 3,934,899 persons, with a total land area of 5,530km² (NPC, 2006). The population density of 710 person per square kilometer (NPC, 2006).

Imo state is an inland state blessed with many rivers, streams, flood plains and body sites of water. The major body sites are Imo River, Urashi River, Njaba River, Oguta lake, Itu water sites, Amamura, Ife-

Owuta water sites. Imo State is mainly an agrarian state. Most farm households keep small ruminants, fishes and poultry.

The major food crops grown include cassava (*manihot esculanta*), yam, (*Dioscorisspp*) cocoyam maize (*zea mays*) and melon papper (*capisicum*) cash briefs grown in the state are oil palm (*Elasis guinensis*), and forest trees like *Iroko*, *mahoganyobeche*. The state is endowed with mineral resources such as crude oil kaolin and limestone.

The population for the study consisted of all rural farmers in Imo State. Multi-stage proportional random and purposive sampling techniques were used to collect a sample size of 360 farmers from the 3600 of the sample frame. The first stage involved purposive sampling of two extension blocks each from each of the three agricultural zones, which gave a total of six extension blocks.

The second stage involved a proportional random sampling of extension circles in the ratio of 2:3:5 which equal to 6,9 and 15 circles, giving a total of 30 extension circles. The third stage involved a purposive sampling of (12) twelve farmers from each of the 30 extension circles giving a total of 360 respondents which formed the sample size. Data for the study were collected using a set of questionnaire administered on the 360 farmers. Data obtained were analyzed using both descriptive and inferential statistics. Descriptive statistics such as mean; percentage and frequency distribution were used. The null hypothesis was tested using simple need regression models. The implicit model is given as follows:

$$Y = X_2, X_3, X_4, X_5, X_6, X_7, X_8 + e \quad (X_1,$$

Where Y = Level of adoption of technologies by farmers.

e = error term

X₁ = farmers convenient time (Yes = 1, No = 0)

X₂ = time of radio- farmers broadcast cast (incs)

X₃ = knowledge gained from radio-farmers (Yes = 1, No = 0)

X₄ =duration of radio-farmers (in hrs)

X₅ =language of broadcast (Igbo = 1, English = 2, Both = 3)

X₆ =Presents of the radio-farmer Heartland FM = 1, IBC = 2, Hot

FM = 3, Mega band = 4

X₇= Ownership of radio set (Yes =1, otherwise)

X₈=Relevance of the technology (Yes = 1, otherwise)

X₉ =Frequency of broadcast (in weeks)

X₁₀ = Satisfaction derived from (high = 1, moderate = 2, low = 3)

X₁₁ = Income of farmers (in naira)

X₁₂= Level of education of the farmer (Years)

X₁₃ = Gender of the farmers (male 1, female 2)

e = Error term

The adoption levels of technologies disseminated were listed out and each farmer was asked to indicate

the state he was on the adoption scale. The 6-step was used to describe adoption (not aware to adoption was used. The scaling procedure adopted (Not aware =1, aware = 2, interest = 3, evaluation = 4, trial = 5 and adoption = 6).

RESULTS AND DISCUSSION

Radio-Farmer Convenient Time to Listen

The distribution based on frequency of broadcast is presented in table 1. Result revealed that majority of the farmers (86.7%) shows that the radio-farmer is broadcasted once a week. The table 1 also shows that 11.4% and 1.4% of the respondents testified that the frequency of broadcast was twice a week and once in two weeks respectively. This implies that most of the farmers miss the radio-farmer broadcast for that week if they were not available the time it was broadcasted. The findings on the frequency of broadcast agreed with those of Ango et al (2013) and those of Olowu and Oyedoun (2003) that most farmers reported that radio-farmer broadcast was read once a week. The respondents distribution based on time of broadcast is presented in table 1 reveals that majority (76.4%) of the farmers indicated that the time of radio-farmer broadcast is evening. This is

because most farmers after farming operations for the day relax and listen to the radio. The finding on time of broadcast was similar to those of Ango et al (2013) and Njoku and Meremikwu (2014).

The respondents' distribution based on convenient time to listen to radio-farmer is presented in table 1 shows that most of the farmers 73.0% indicates that 8.00pm to 8.30pm is the convenient time to listen to radio-farmer. This could be because by 8pm to 8.30pm households have finished eating dinner, the children may have gone to bed, and the household head can now listen to radio in a quiet environment. The table further indicates that 10.6% of the farmer shows that their convenient time to list to radio-farmer was 7.00pm to 7.30pm while 6.4% and 6.9% of the farmers reported that their convenient time to listen to radio-farmer was 6.00pm to 6.30pm and 9.00pm to 9.30pm respectively while 3.1% of the farmers noted that that convenient time to listen to radio-farmer was 5pm to 5.30pm. The finding on convenient time to listen to radio-farmer the farmers agreed with those of Ango et al (2013) and those of Njoku and Mercemikwu (2014) that most of farmers convenient time to listen to radio-farmer broadcast was in the evening.

Table 1: Farmers' Convenient time to listen to radio-farmer of Programme

Farmers' Convenient time to Listen	Frequency	Percentage
Frequency of broadcast		86.7
Once a week	312	11.4
Twice a week	41	1.4
Once in two week	5	0.5
Once a Month	2	
Time of broadcast		5.0
Morning	18	18.6
Afternoon	67	76.4
Evening	275	
Convenient time		3.1
5pm - 5.30pm	11	6.4
6pm – 6.30pm	23	10.6
7pm – 7.30pm	38	73.1
8pm – 8.30pm	263	6.9
9pm – 9.30pm	25	

Source: Field Survey, 2016

Adoption level of technologies disseminated via radio-farmers of the respondents.

The result to respondent distribution based on level of adoption of technologist disseminated via radio-farmer reveals that fertilizer application had the highest adoption level of ($\bar{X} = 5.7$). This high mean adoption score implies that farmers adopted fertilizer use.

Result also shows that homestead fish pond construction ($\bar{X}=5.1$), cassava, yam and maize intercrop ($Y = 4.8$) timely harvest of yam and proper tillage ($\bar{X}=4.8$), weed control ($\bar{X}=4.8$) cassava processing ($\bar{X}=4.7$) cassava yam/melon intercrop ($\bar{X} = 4.7$), plantain/banana technique ($\bar{X} =4.7$) and yam trimming ($\bar{X} = 4.6$).

The mean scores of these technologies shows that the farmers were at the trial stage of the disseminated agricultural technologies in the adoption process. These high adoption scores could be because they are either the staple food crops in Imo State. (Echetama, 2013).Result shows that yam minissett technique had adoption score of ($\bar{X}=4.4$). This implies that the farmers were at the evaluation stage of technologies in the adoption process. Result further shows that dry season crop production technique had adoption score of ($\bar{X} = 4.3$) while soil conservation methods had

adoption score of ($\bar{X}=4.2$) which show that farmers were also at evaluation stage in the adoption process. This might be expected by the fact that radio-farmers broadcast had different limitations because of time limitation. Result showed that only one of the 13 technologies disseminated via radio-farmer had been adopted by the farmers. This implies that the level of adoption of technologies were generally low among the farmers in Imo State. The mean percentage responses shows that a moderate proportion 42.1% of the farmers were using technologies, while 19.6% of

them were at trial stage of technologies in the adoption process.

Result further indicates that 18.3% and 10.8% of the farmers were at evaluation stage and interest stages of technologies respectively in the adoption process.

The result shows that the standard deviation was closely packed and small. This implies that the data and high degree of uniformly and reliability of the result. This finding is in line with Onuh and Igwemma (2007) that explained that the smaller the standard deviation the higher the degree of reliability of the estimates.

Table 2: Distribution of Farmers by Level of Adoption of Technologies Transferred Via the Radio-Farmer

Agricultural Technologies	Not Aware(1) Freq. %		Aware (2) Freq. %		Interest (3) Freq. %		Evalu. (4) Freq. %		Trials (5) Freq. %		Adoption (6) Freq. %		Mean X	SD
Crop production Irrigation of technology	0	0	4.6	12.8	47	13.1	50	13.9	55	13.2	162	45.0	4.6	1.4665
Home stead fish pond	5	1.4	18	5.0	31	8.6	42	11.7	59	16.4	205	56.9	5.1	1.2974
Fertilizer application	0	1.1	6	1.7	12	3.3	16	4.4	29	8.1	297	82.5	5.7	0.8438
Dry season vegetable production technology	4	2.2	29	8.1	27	10.2	159	44	262	17.2	69	19.2	4.3	1.3964
Cassava processing technology	8	2.2	32	8.9	41	11.4	63	17.5	46	12.8	170	47.2	4.7	1.9803
Soil conservation methods	3	0.8	23	3.4	51	14.2	161	44	73	20.3	49	13.6	4.2	1.0615
Cassava/yam/melon intercrop	8	2.2	26	7.2	39	10.8	50	13.9	64	17.8	173	48.1	4.8	1.4233
Yam minisetete	3	3.6	37	10.3	48	13.4	61	16.9	95	26.4	106	29.4	4.4	1.4651
Cassava/yam/melon	6	2.7	29	8.1	37	10.3	53	14.6	89	24.7	146	40.6	4.7	1.3751
Plantain/production technology	8	2.2	22	6.1	41	11.4	69	19.2	88	24.4	132	36.7	4.7	1.2603
Timely harvest YM	13	3.6	19	5.3	37	10.3	43	11.9	89	24.7	159	44.2	4.8	1.4108
Weed control	10	2.8	28	7.8	32	8.9	41	11.3	87	24.2	162	45.0	4.8	1.4245
Yam staking /time	14	3.9	25	6.9	50	13.9	48	13.3	82	22.8	141	39.2	4.6	1.4767
Grand Mean	1.9	7.3	10.8		18.3		19.6		42.1		4.7			

Source: Field Data, 2016

Effect of farmer's convenient time to listens to radio-farmers programme on adoption level of agricultural technologies. Results of the four functional forms of the simple regression as presented in table 3 shows that the exponential function had the highest value coefficient of determination (r^2), highest value of coefficient variable and conformed to *a priori* expectation.

Results indicate that the coefficient of determination was 0.793. This implies that 79% of the variation of farmers/listeners adoption level was due to convenient time of listeners. Result further shows that the coefficient of farmers' convenient time was positive and significant at 1% level of probability. This implies that the time of broadcast was due to convenient time of farmers/listeners' will lead to increase in his level of adoption of improved technologies.

Result further shows that the coefficient of radio-farmer programme (X_1), duration of radio-farmer(X_2), language of broadcast (X_3), ownership of radio-set (X_{11}),

relevance of technology (X_{12}) were significant at 1%. Results also show that the coefficient of the farmer's age (X_7), sex of the farmers (X_3), marital status (X_{10}) were not significant at 0.05% level. Result further indicate that regression coefficient that are significant with coefficient of determination (r^2) value of (0.793) and significant level of the f-ratio (1367.241) was positive and significant at 1% level of probability.

Result also show that the coefficient of level of education (X_{11}) (12.449) was statistically significant at 0.01 probability.

Results indicate that the positive signs show that the variables increased farmers convenient time while the negative sign shows that decrease in farmers convenient time to listen lead to decrease in adoption of technologies.

Effect of farmer's convenient time to listens to radio-farmers programme on adoption level of agricultural technologies

Explanatory Variable	Linear	Semi log	Double-log	Exponential
Constant	223.106	172.554	137.018	112.527
Farmers convenient time (X ₁)	12.052 (1.725)	4.908 (1.667)	0.087 (2.561)*	0.009 (4.337)**
Time of radio-farmer programme (X ₂)	12.007 (1.663)	4.117 (2.542)*	0.064 (2.912)*	0.09 (2.543)*
Knowledge gained from radio-farmer programme (X ₃)	11.209 (1.822)	2.802 (1.713)	0.052 (3.673)**	0.006 (2.912)**
Duration of radio-farmer programme (X ₄)	10.116 (1.911)	0.417 (1.882)	0.085 (3.112)**	0.007 (1.613)
Age of farmer (X ₅)	14.316 (1.818)	3119 (-2.467)*	0.072 (-1.663)	0.006 (-1.713)
Level of education (X ₆)	12.847 (3.109)**	4.994 (3.072)**	0.073 (3.108)*	0.009 (3.016)**
Sex of farmer (X ₇)	10.244 (-1.642)	3.008 (1.716)	0.039 (-1.416)	0.008 (-1.553)
Marital Status (X ₈)	11.333 (1.564)	2.908 (1.656)	0.046 (1.829)	0.007 (1.4418)
Income of farmer (X ₉)	14.592 (2.914)**	3.115 (1.777)	0.091 (-3.094)**	0.008 (3.413)**
Household size (X ₁₀)	10.827 (-2.668)**	4.089 (-1.365)	0.053 (1.316)	0.006 (12.556)*
Language of broadcast (X ₁₁)	11.387 (1.514)	2.692 (1.409)	0.081 (1.922)	0.07 (1.811)
Presenter of the radio-farmer (X ₁₂)	12.464 (1.391)	3.547 (1.825)	0.055 (1.613)	0.004 (1.397)
Relevance of the technology (X ₁₃)	13.829 (1.698)	4.663 (1.742)	0.053 (1.316)	0.009(1.814)
Satisfaction derived from (X ₁₄)	11.387 (1.514)	2.692 (1.409)	0.081 (1.922)	0.007 (0.811)
Ownership of radio set (X ₁₅)	13.065 (2.557)*	4.726 (1.903)	0.055 (1.613)	0.005 (1.802)
r ²	0.483	0.427	0.699	0.793
F-value	335.417**	266.875**	832.143** (2.915)	1367.241**
Sample size (n)	360	360	360	360

Source: Field survey, 2016

Figures in Parenthesis are t-ratio

- Means significant at 5% level of significance
- Means significant at 1% level of significance

CONCLUSION AND RECOMMENDATIONS

The study examined the effect of radio–farmer listens convenient time on technology adoption in Imo State Nigeria. Results obtained showed that convenient time of listeners will increase level of technologies adoption as well as reduce technology adoption at. The study recommends that radio–farmer presenters should adjust collaborate with listeners in order to fix the time and frequency of broadcast suitable for the farmers.

REFERENCES

- Ango, J., Imo, A., Awusaku, C., Abraham, F. (2013). Sociology change and Rural Development in Nigeria, Bzack publishers, Owerri.
- Echetama, J.A (2013). Determinants of Level of Adoption of Improved Agricultural Technologies Among Radio Farmers Programme Listeners in Imo State, Nigeria. Unpublished Ph.D Thesis, Michael Okpara University of Agriculture Umudike, Umuahia.
- Ifenkwe, G. (2013). Adoption of Innovation: In Nwachukwu, I. (ed) Agricultural Extension and Rural Development: Promoting Indigenous Knowledge. Lamb House Publications, Umuahia
- Imo State Agricultural Development Programme (IMOADP (2012); Annual Report; Headquarters; Owerri, Nigeria
- Mgbada, J.U. (2010). Agricultural Extension the Human Development Perspective, Computer Edge Publishers Enugu, Nigeria
- Mouneke, C.O and Ekeleme, F. (2004) Development Of Technology System Linkage And Coordination (eds) R.P.A Unamma A.C. Nwosu, O.C. Onwudike, H.O. Edeoga and A.C. Uwaebue in Farming Systems Research And Development, Principles and Practices In Humid and Derived Savanna, South-East Zone, MOUAU, Ben-El-Mary gold communication, Nigeria
- Njoku, J. and Meremikwu, D. (2014) Effect Of Radio-Farmer Programme In Disseminating Agriculture Technologies To Farmers in Orlu Agric Zone of Imo State Nigeria. Unpublished thesis University Agriculture Umudike.
- NPC National Population Commission (2006) Population Figures Abuja.
- Olowu, T.A. and Oyedoun, O.A. (2003) Farmers Accessibility of Agricultural Marketing Information: The Case of Oyinladun Radio Programme Journal of Agricultural Economics and Rural Development Studio 1 (1) 26-32.
- Onuh, M.O and Igwemma, A.A. (2007) Applied Statistical Techniques for Business and Basic Science, 2nd Education, Skillmark Media Publisher, Owerri, Nigeria
- Ugochukwu, O.C (2000) Stan Agricultural Science for Secondary Schools Longman, Ibadan, Nigeria
- Ugwu, D.S (2007) Agricultural Extension Practices in Nigeria Reading in Agricultural Economics and Extension in Nigeria. Computer Edge Enugu Nigeria