INFLUENCE OF INFORMATION CHANNELS ON MAIZE FARMERS' ADOPTION OF INNOVATIONS IN THE NORTHERN EXTENSION SERVICE ZONE OF EDO STATE, NIGERIA

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ABSTRACT

The study examined how different communication channels influenced the awareness and adoption behaviour of maize farmers in the northern extension service zone of Edo state, Nigeria. One hundred and fifty six (156) maize farmers were randomly selected to solicit information about the influence of different communication channels in the awareness and adoption of improved agricultural technologies. Sampled farmers ranked other farmers high (62.8%) followed by farm visits by extension agents (51.9%) as sources of information on improved maize technologies. Of the 5 identified maize technologies in the study area, farmers average level of innovation awareness was higher (mean = 4) as compared to low level of adoption (mean = 2). Farmers level of technology awareness was strongly influenced by farm visits by other farmers (X^2 = 12.88), extension agents (X^2 = 11.48), radio (X^2 = 4.93) and television (X^2 = 11.07) while extension agents (X^2 = 4.94) and radio (X^2 = 10.04) played a significant role in their adoption of improved maize practices. The relationship between television was not statistically significant. Recommendations included increased emphasis being given to use of contact farmers (farmer-to-farmer extension), extension agents, radio and television in disseminating agricultural information to farmers.

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1.   DEFINITION OF PROBLEM

Technological development is crucial for the attainment of agricultural development, particularly in developing economies such as Nigeria. Such improvements in production technologies facilitate the development process by enhancing farmer productivity and efficiency (Onemolease, 2005). However, the goal of agricultural development, which among others include increased farmers awareness and adoption of improved farm technologies, increased production scale and farm yield, enhanced income and improved living standards of farmers, will continue to elude policy makers. An effective linkage system is to be set up to link information on available technologies with the relevant stakeholders in the agricultural development process i.e. farmers (Ekumankama, 2002).

This information linkage service is provided, within the Nigerian context, by the nation – wide Agricultural Development Programme (ADP). Such information flows are critical to agricultural growth and development, and an extension agency that provides such farm – level technology information may enhance farmers' production efficiency (Hornik, 1988).

Almost two decades ago it was asserted that a major impediment to agricultural development in Nigeria was poor communication facilities (Williams, 1989). It was realized that much had been achieved in terms of technological development, but information about this was not known to the farmers (Williams, 1989), thus creating a communication gap between what is attainable (potential farm yield) and obtainable (actual farm yield) (Omokhudu, 1999; Akished, 1981). This situation emphasises the importance of communication for effective agricultural extension service. More importantly, according to Farinde and Soetan (1999), are the communication methods employed by the extension service in disseminating agricultural information to farmers. According to Vergot, Israel and Mayo (2005), the choice of information delivery methods can have important influence on the impact of extension programmes.

Several channels of communication are available to an extension worker, ranging from individual channels such as farm and home visits by extension agents to group activities (e.g. field day, agricultural

shows and tours) and mass media channels (print and/or electronic media) (Olowu and Yahaya, 1992). Previous studies have shown that these communication sources exert varying influence on farmers' adoption of improved farm technologies (Omokhudu, 1999; Farinde and Jibowu, 1994; Okunade, Ogbimi and Jibowu, 1999). However, these studies did not focus on maize farmers. A major concern is whether information sources play important role in maize farmers' awareness and adoption of recommended production innovations.

The specific objectives examined in the study were to:

1.   delineate the social characteristics of maize farmers in the study area.

2.   identify the farmers sources of agricultural information

3.   ascertain the farmers awareness and adoption of farm innovations relating to maize production

4.   determine if farmers adoption of maize technologies is influenced by the channels by which such information is received.

The null hypotheses tested in this study are:

Ho (1):   There is no significant association between farmers' agricultural information channels and their awareness of farm innovations.

Ho (2):   There is no significant association between farmers' agricultural information channels and their adoption of farm innovations.

2.   RESEARCH PROCEDURE

The northern extension service zone of Edo State falls within the guinea savannah ecological zone and covers five Local Government administrative Areas (LGAs), two of which were randomly chosen i.e. Owan west and Etsako west LGAs. Three communities per LGA were randomly selected: Ozalla, Sabongida – Ora and Uhunmwora were sampled from Owan west LGA while Jattu, Agbede and Auchi were

sampled from Etsako west LGA. A random sample of 30 maize farmers was taken in each of the communities making the total sample of farmers used in the study 180.

Collection of data from the respondents was by means of a pre - tested questionnaire whose validity was achieved by expert consultation with agricultural extension educators and the zonal extension officer of the Edo north Extension service. The instrument was considered reliable with an estimated Crownbach alpha of 0.87.

Data collection was facilitated by trained enumerators through personal interviews with the respondents. Only 156 of the 180 administered questionnaires were analysed due to incomplete responses and/or non – retrieval. This represents a response rate of 86.7%. Data analysis was accomplished by means of frequency counts, percentages and chi–square analyses.

3.   FINDINGS

3.1   Social characteristics of respondents

The relevant social characteristics of respondents were age, education, marital-status and average farm size owned. Table 1 shows the age of the respondents**.** It reveals that majority of the respondents (43.6%) were between 41–50 years old. The respondents' average age was 46 years suggesting they were old, based on Otumanra's (2000) classification, which identified individuals above 45 years as old. According to this finding old people dominated farming in the study area, while younger individuals may have migrated to cities in search of white – collar jobs.

Table 1:   Age of respondents (n = 156)

Age categories	Frequency	Percent
< 30	8	5.1
31 – 40	26	16.7
41 – 50	68	43.6
>50	54	34.6
Mean	45.7	

Survey data, 2004

According to Table 2 the educational level of the respondent's can be described as fair with 44% and 18% having secondary and tertiary education respectively. This is contrary to the assertion that most farmers in rural communities have little or no formal education (Ekong, 2003). The existence and proximity of tertiary institutions (Auchi Polytechnic, College of Agriculture and Ambrose Alli University) in the study area may explain the respondents' relative high educational status.

Table 2:   Educational Level of Respondents (n = 156)

Education Level	Frequency	Percent
Non formal education	27	17.3
Primary education	32	20.5
Secondary education	69	44.2
Tertiary education	28	17.9

Survey data, 2004

As shown in Table 3, most respondents were married (93.6%) and practised farming on full time basis (81.4%). This suggests that farming was their primary source of livelihood. The majority of farmers (26.9%) had 10-15 years farming experience. The average number of years spent by the farmers on maize production was 17 years.

Table 3:   The experience of farmers in farming (n = 156)

Farming experience	Frequency	Percentage
<10 years	34	21.8
10 - 15	42	26.9
16 - 20	22	14.1
21 - 25	22	14.1
>25 years	36	23.1
Mean	17.5	

Survey data, 2004

The average farm size of farmers was 1.6ha showing that they were small – scale producers as shown in Table 4. An average farm holding of about 1.2ha has been reported among farmers in Edo state (Onemolease, 2005).

Table 4:   **The farm size of farmers in hectares (n = 156)**

Farm size (ha)	Frequency	Percent
<0.6	6	3.8
0.6 - 1.0	25	16.0
1.1 - 1.5	45	28.8
1.6 - 2.0	40	25.6
2.1 - 2.5	22	14.1
>2.5	18	11.5
Mean	1.59	

Survey data, 2004

3.2   Respondents' sources of agricultural information

The sources of agricultural information as indicated by respondents are presented in Table 5.

Table 5:   **Sources of agricultural information for the respondents in rank order (n = 156)**

Sources	Frequency*	Percent	Rank
Farmers meeting	98	62.8	1
Farm visit by ext agent	81	51.9	2
Radio	76	48.7	3
Television	65	41.7	4
Cooperative societies	37	23.7	5
House visit by ext agent	34	21.8	6
Extension Posters/handbill/newsletters	4	2.6	7
Letter contact by ext agent	2	1.3	8
Agric shows/drama	1	0.6	9
Farm excursion/tour	-	-	
Newspapers	-	-	

Multiple response hence total exceeds 156
Survey data, 2004

Farmers ranked farmers` meeting i.e. farmer-to-farmer extension high (62.8 %,) followed by farm visit by extension agent (51.9%) as shown in Table 5. Other sources included cooperative societies (23.7%), television (41.7%) and radio (48.7%). House visit by extension agents (21.8%) was used by a few others. This finding suggests that maize farmers to a great extent rely on each other for information on improved maize

technologies. The result for extension agent as a major source of information on improved agricultural technologies is supported by Okunade *et al* (1999) and Omokhudu (1999). Use of extension agents as an information source probably reflects their confidence in their ability to provide them with relevant and reliable and accurate information. Use of extension generated posters/handbills/newsletters by respondents was minimal (2.6%). This finding is in contrary to that of Vergot *et al,* (2005) who reported that extension newsletters were the most often used information channel by farmers. The result further indicates that none of the respondents received agricultural information through newspapers and Olowu (1990) asserts that newspapers in the country show little interest in agricultural information dissemination.

3.3   Respondents' awareness and adoption of improved technologies

Respondents' level of awareness of improved maize technologies was high with a range from 80.8% for improved varieties to chemical weed control method (60.9%) see Table 6.

Table 6:   **The level of awareness and adoption of technologies as assessed by farmers (n = 156)**

Technologies	Aware		Adopted	
	Frequency*	%	Frequency*	%
Recommended Crop spacing	106	67.9	100	64.1
Improved variety	126	80.8	98	62.8
Chemical pest/disease control method	95	60.9	59	37.8
Fertilizers	112	71.8	51	32.7
Chemical weed control method	95	60.9	48	30.7
Mean	4		2	

Multiple response hence total exceeds 156
Survey data, 2004

The mean awareness score was 4 out of the 5 identified technologies. Improved maize varieties (62.8%) and recommended crop spacing (64.1%) were the most widely adopted innovations by the respondents. Farmers tended to adopt chemical pest/disease (37.8%), weed control method (30.7%) and fertilizers (32.7%) at a much lower rate. This may be attributed to the high cost of these inputs and farmers limited access

to the resources to use them effectively. The mean adoption score was 2. The results show that a gap exists between farmers' awareness and adoption of agricultural innovations. A similar result was obtained by Onemolease and Aghanenu (2002).

3.4   Relationship between information channels and respondents' awareness and adoption of innovations

According to Table 7, the analysis indicates that some of the information channels used by respondents had a significant association with farmers' awareness and adoption of farm innovations.

Table 7:   The relationship between information channels and respondents' awareness and adoption of recommended farm practices

Communication channels	Awareness (X^2)	Adoption (X^2)
Farm visit by ext agent	11.48*	4.94*
Radio	4.93*	10.04*
Television	11.07*	1.70
Farmers meeting	12.88*	0.61
House visit by ext agent	1.29	0.37
Cooperative societies	0.27	0.15
Letter contact by ext agent	0.85	0.25
Posters/handbill	0.54	0.68
Agric shows/drama	0.02	0.00

Significant (P<0.05)

An interesting finding is that other farmers (i.e. farmer-to-farmer extension) had a significant association with farmers awareness of farm innovations ($X^2 = 12.88$; p<0.05) but not with their adoption ($X^2 = 0.061$; p>0.05). This shows the important role of farmer-to-farmer extension to make farmers aware of innovation but it does not necessarily leads to adoption. Farm visits by extension agents however showed a significant association with respondents' awareness ($X^2 = 11.48$, p < 0.05) and adoption ($X^2 = 4.94$, p < 0.05) of farm technologies and this is in line with Ekumankama's (2000) findings. A similar result was obtained for radio (awareness: $X^2 = 4.93$; adoption: $X^2 = 10.04$) both of which were significant (p < 0.05). Television only showed significant association with farmers awareness of farm innovations developed by research

institutes ($X^2 = 11.47$; $p < 0.05$). These findings suggest that farm visits by extension agents and the radio can play important roles in the awareness and adoption of farm innovations by maize farmers, while farmer-to-farmer extension or farmers meetings, the radio, extension agents visits and television appears to be more relevant in creating awareness among farmers. This result supports the findings of Williams, Fenley and Williams (1984) that the importance of television in the innovation dissemination process is to acquaint farmers with the existence of farm innovations.

5. CONCLUSION AND RECOMMENDATIONS

Although some form of relationship between farmers' social characteristics, awareness and adoption of agricultural information has been established by past studies, this study has shown that information channels through which farmers obtain agricultural information also affects their awareness and adoption of improved farming technologies. The study therefore recommends the following:

The State extension service should intensify the use of contact farmers as medium of disseminating agricultural information to farmers since farmer-to-farmer extension was the most important source of agricultural information to the farmers.

Farmer visits by extension agents are an important method to make farmers fairly aware but also help them to adopt innovations.

The extension agents need the support from their organisation to empower them to deliver this service to the farmer.

The study also recommends an intensive use of electronic media (radio and television) in disseminating agricultural information to farmers to create awareness of existence of improved maize technologies among farmers in the study area.

Also, to improve their adoption of maize technologies, the study proposed that the extension agency or ADP employ more field extension personnel or agents.

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