COMMUNICATION FACTORS AFFECTING FARMER ADOPTION OF SELECTED INNOVATIONS IN OWERRI AGRICULTURAL ZONE OF IMO STATE

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Abstract
The study determined communication factors affecting adoption of selected innovation by farmers in Owerri Agricultural Zone of Imo State, Nigeria in 2009. Specific objectives were to: examine how often farmers receive farm information, determine the level of awareness of the innovations, ascertain the extent of adoption of the innovations, and assess communication factors affecting adoption of innovation. A multistage random sampling technique was used to select 60 farmers in the study area. A sample size of sixty respondents was used for the study. Data were collected through a set of structured questionnaire and interview schedule. Analysis was done using descriptive (frequencies and percentages) and inferential statistics (chi-square and spearman correlation). Results show that farmers receive farm information on very regular basis (34%). it was also found that all the variables of the technology package were statistically significant at either 1% or 5% levels. This indicates that they influenced levels of adoption separately and jointly. Result further shows that all the communication factors were statistically significant at 1% level of probability except the power failure during air time programme which was significant at 5% level.
Keywords: Adoption, Communication factor, Farmer, Innovation.

Introduction

In developing countries, one serious constraint to agricultural development is the limited access to agricultural information. This has given rise to call for sustainable agricultural extension policy. The concept of information in general and of agricultural information in particular, as a source for development is just beginning to gain ground in most developing nations. Government policy makers, planners and administrators are increasingly recognizing the fact that information is indispensable to the development process. According to Hannah (1991), in spite of the growing realization, the essential social and information mechanisms are not yet sufficiently developed in most developing nations to foster generation, storage, preservation, repacking, dissemination and utilization of information communication. According to Roger and Shoemaker (1973), communication is a process by which an idea is transferred from a source to a recipient with the intent to change his behaviour. The purpose of communication is to bring about certain desired effort on the part of the receiver. Thayer (1968) and Rogers and Agarwala-Rogers (1976) stated that the aim of communication is to bring about changes or modification of receivers behaviour in terms of knowledge, attitude or skill – in essence, the desired effect of communication is alteration in overt or covert behaviours of individuals. The usefulness of a communication medium for a farmer will vary according to the adoption phase in which a potential adopter of an innovation passes. It is of great relevance to know that the complexity of human behaviours often leads to many limitations and problems in the communication process. Yahaya (2003) posits that in terms of extraneous differences in perception or lack of interest by the target audience interference on smooth operation of communication channels might be defined as an undesirable element in the communication. He further stressed that sender may lack fundamental knowledge about the subject matter or existing circumstances of the target audience.

According to Yahaya (2003) the use of communication skill, media and methodologies is typically abhorred and fragmented. These have contributed to poor or low adoption of innovation by farmers. In order to meet the increase demand for food by the population, modern ways of farming have to be developed and the use of different communication strategies integrated into extension programmes. Findings have showed that most of the research result do not get to the farmers and could neither be interpreted nor digested due to language barriers. It has also been found that lack of interaction between change

agents and farmers invade the adoption of innovation.

Information is an essential ingredient in agricultural development programme but farmers seldom fill the impact of agricultural innovation either because they have no access to such vital information or because it is poorly disseminated. The non or poor provision of agricultural information is a key factor that has greatly limited agricultural productivity and development in developing countries like Nigeria (Ozowa, 2008). Unfortunately, most of these innovations do not reach farmers field, even when it gets to them, low adoption is recorded. This could be as a result of ineffective medium for information dissemination or poor information communication due to some factors. The society is rapidly and constantly changing as well as the available communication methods, this calls for modification of extension programmes and communication strategies, to ensure that innovation are adequately and effectively communicated. Hence Nwuzor (2000) stated that information requires the development of special communication strategies capable of linking research personnel and all other stakeholders in agriculture to ensure their participation in agricultural development. Ofuoku, *et al* (2005) observed that farmers decision for or against the adoption of any science – based production technology is described as a mental process, consisting of several stages. This calls to mind that effective communication of the said technology is pertinent for the farmers to have positive thinking towards adopting the technology.

This study emphasized on selected innovations which include, cassava floor from roots, fertilizer application, crop rotation, herbicide application, soya bean milk production, pasture management for animals, vaccination, breed selection and breeding, use of modern technology for oil palm processing, bee production and processing, fish pond construction, feed formulation and feeding, and fish breeding. Adoption or rejection of innovations by farmers depends on some factors. For the purpose of this study focus is on communication factors that affect adoption of selected innovations. Often ineffectiveness in communicating farm information to farmers has been found to affect adoption of innovation negatively. This study therefore sought to address this issue with the following objectives.

- To examine how often farmers receive farm information;
- To determine extent of awareness of selected innovations
- To ascertain extent of adoption of innovation introduced;
- To assess communication factors affecting adoption of innovation.

Materials and Methods

The study was carried out in Owerri Agricultural Zone of Imo State, Nigeria. It is located between Latitude 5^0 15 N and 5^0 45 N, and Longitude 7^0 30 E and 6^0 45 E. The area falls within the lowland rainforest region dominated by oil palms and Hyparrhenia grass species (Igbozuruike, 1995).

According to NPC (2006), the population densities of Local Government Areas (LGAs) making up the Agricultural Zone vary between 191 persons/km^2 and 5,113 persons/km^2 . majority of the inhabitants are farmers and the major crops grown include Cassava, Maize, Yam, Cocoyam, Vegetable, Tree crops and Orchard crops. Most farmers produce at subsistence level on mixed farms with small scale livestock production.

Multi-stage random sampling technique was adopted for selecting respondents. First stage involved random selection of five (5) LGAs. In the second stage, two (2) autonomous communities were randomly selected from each of the LGAs. The third stage involved random selection of six (6) farmers from each of the communities. A total of sixty (60) respondents formed the sample size. Primary data were collected through the use of structured questionnaire and interview schedule.

A four point Likert scale of Full adoption (FA), Partial adoption (PA), Discontinued (D) and Not adopted (NA) was designed to ascertain the extent of adoption. Similarly, another four point Likert scale of strongly agreed (SA), agreed (AG), disagreed (DA) and strongly disagreed (SD) was designed to assess communication factors affecting adoption of innovation. Data were realized using both descriptive and inferential statistical tools. Descriptive statistics (frequency distribution and percentages) were used to examine how often farm information were received by farmers and extent of awareness of the innovations. The Spearman correlation and chi-squared were used to ascertain extent of adoption of innovations introduced and assess communication factors affecting adoption of the innovations. This is specified as:

$$\chi_2 = \sum \left(\frac{0_i - E_i)}{E_i} \right)^2$$

Where

Oi = Observed frequency of adoption of technologies

E_i = Expected frequency of adoption of technologies

E = Summation.

The Spearmen rank correlation is specified as follows

$$\left| \frac{6 \Sigma d^2}{n \left(n^2 - 1 \right)} \right|$$

Where

n = Sample Size

d = deviation (difference between the ranks of adoption of technologies).

E = Summation.

Results and Discussion

Table 1: Percentage distribution of respondents on reception of farm information.

Reception of farm information	Frequency (f)	Percentage (%)
Very regular	17	34
Regular	12	24
Occasionally	14	28
Irregular	4	8
Very irregular	3	6
Total	50	100

Source: Field Survey, 2011

Result in table 1 shows that farm information are received by farmers on regular (24%) and very regular basis (34%). This is a credit to extension field workers and a confirmation of the ADP forthnight training session where extension agents receive training on farm information and later visit farmers on regular basis. This finding implies timely creation of awareness on farm information.

Table 2: Percentage distribution of respondents on awareness of selected innovations

Selected innovations	Aware f (%)	Not Aware f (%)
Cassava flour from cassava tubers	39(78)	11(22)
Seed treatment before planting	47(94)	3(06)
Chemical fertilizer application	49(98)	1(02)
Crop rotation	43(86)	7(14)
Herbicides application	46(92)	4(08)
Soya milk production	23(46)	27(54)
Pasture management for animals	24(48)	26(52)
Vaccination	23(46)	27(54)
Breed selection of breeding stock	11(22)	39(78)
Disease resistant crop varieties	47(94)	3(06)
Use of modern techniques for palm oil Production	14(28)	36(72)
Bee production and processing	14(28)	36(72)
Fish pond construction	7(14)	43(86)
Feed formulation and feeding	16(32)	34(68)
Fish breeding	9(18)	41(82)

Source: Field survey, 2011

Note: Figures in parenthesis are the percentages

As shown in Table 2, majority of farmers agreed that awareness was created on the following innovations; cassava flour from cassava tuber (78%), chemical fertilizer application (98%), crop rotation (86%), herbicides application (92%), and resistant crop varieties (94%). Similarly, some farmers posited that awareness was not created on Soya milk production (54%), pasture management

for animals (52%) vaccination (54%), breed selection of breeding stock (78%), use of modern techniques for palm oil production (72%), Bee production and processing (72%), fish pond construction (86%), feed formulation and feeding (68%) and fish breeding (82%). Results show that more awareness was created on crop related innovations. This implies that farmers engage in animal production are not adequately reached with agriculture innovations. It could be that extension agents are not well exposed to animal production innovations. This therefore calls for effective spread of innovations to both farmers in crop and animal production.

Extent of Adoption of selected innovations:

This is rated on four points likert scale of Fully adopted (FA), Partially adopted (PA), Discontinued (D) and Not adopted (NA). The extent of adoption of each technology packages was determined using Spearmen correlation and Pearson Chi-squared. Table 3 gives the summary of the estimated results.

Table 3: Estimated results of data relating technologies and adoption

Technology	Spearman correlation	Pearson Chi-squared	Significant Status
Cassava flour from tubers	0.97	83.79	1%
Seed treatment before Planting	0.571	21.306	1%
Fertilizer Application	0.360	8.44	5%
Crop rotation	0.752	37.745	1%
Herbicide Application	0.716	34.102	1%
Soya bean milk production	0.793	39.003	1%
Pasture management for animals	0.90	51.48	1%
Vaccination	0.892	48.83	1%
Breed selection and breeding	0.761	35.79	1%
Resistant crop varieties	0.854	50.00	1%
Use of modern technologies for oil palm processing	0.730	32.78	1%
Fish pond construction	0.306	5.53	5%
Feed formulation and feeding	0.704	29.94	1%
Fish breeding	0.484	13.969	1%
Bee production & processing	0.671	27.27	1%
Total	10.469	519.964	

Source: Field Survey, 2011

The table shows that all the technologies show various degrees to adoption level. The Spearman correlation disaggregated results show that production of cassava flour from cassava roots/tuber received highest acceptance and adoption amount from the clients. Its –Chi-squarred value was the highest and it is highly statistically significant. It was observed that ranking second was the adoption of pasture management for livestock. This was equally statistically significant at 1% level of probability. Vaccination of livestock and the use of resistant crop variety ranked third and fourth respectively.

All the variables of the technology package were statistically significant at either 1% level or 5% level. This shows that they influence levels of adoption separately and jointly. Jointly, the result of Spearman Chi-squarred is statistically significant at 1% level indicating high level of adoption and acceptance of the technologies.

Table 4: Distribution of Respondents on Communication factors affecting Adoption of Innovation

Technology	Chi-squarred	Significant level
Power failure during airtime programme	2.40	5%
Lack of interest and aspiration among farmers	44.267	1%
Noise	61.73	1%
Information Overload	45.20	1%
Divided attention due to hunger and thirst	52.00	1%
Channels procedure and Physical discomfort	53.33	1%
Incorrect message content	30.10	1%
Inadequate knowledge of farmer	63.33	1%
Poor understanding of information	78.00	1%
Poor farmer education	32.93	1%
Lack of infrastructure	28.93	1%
Strictly adherence to culture	54.80	1%

Source: Field Survey, 2011

Table 4 contains estimated result of Chi-squarred conducted on the communication factors affecting adoption of innovation. All the factor were statistically significant at 1% level of probability except the power failure during airtime programme which was significant at 5% level. This shows that they so much influenced adoption of innovation negatively. Poor understanding of information of the farmers ranks highest among the factors that may prevent full adoption. When the farmers are not aware or are uncertain of the gains and the use of an innovation, they tend to refuse it. Again, if a technology is communicated to them in a foreign language it may hinder understanding and therefore hinder adoption. Inadequate knowledge and noise ranked second and third respectively among the factors that hinder adoption. Noise is implicated among these factor because noisy environment prevents proper understanding of information. Strict adherence to culture, physical discomfort and poverty are some other factor that contributed negatively towards adoption efforts through communication.

CONCLUSION

The study broadly examined communication factors affecting adoption of selected innovations by farmers. It was found that farmers received farm information on very regular basis which confirms their awareness of the innovation studied. Results further show that all the communication factors studied so much influenced adoption of innovation negatively. This therefore demands for proper checks of these factors by extension programme planners/developers. Extension communicators should be given adequate training on communication, and audience analysis effectively carried out before information is communicated to users.

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