

NIGERIAN AGRICULTURAL SCIENTISTS' INSTITUTIONAL INFORMATION SOURCES

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Abstract

This study investigated the specialisations as well as the intra and inter-institutional sources of information of agricultural scientists in Nigeria. The study used a multi-stage sampling procedure to select 172 agricultural scientists from 11 agricultural research institutes in Nigeria. The results indicate that more than one third of the agricultural scientists are agronomists/plant protectionists while meteorologists and social science based experts constitute about six percent. The major intra-institutional information sources, in descending order are: notice boards, bulletins, circulars, memoranda and journals. The prominent inter-institutional information sources, also, in descending order are: journals, newsletters, meetings, bulletins and conferences. Agricultural scientists, generally, lack access to current information technologies in their research institutes.

1.0 Introduction

The belief in the efficacy of knowledge as a precondition for increased agricultural productivity in Nigeria is evident in the establishment of many agricultural research institutes in the country. To date, there are 18 national agricultural research institutes that generate technologies aimed at reducing the drudgeries of labour and increasing the productivity of Nigerian farmers. The 18 agricultural institutes, which are located in different parts of the country, cover four agricultural sub-sectors: arable crops, forestry and tree crops, livestock and fisheries and related activities (extension, storage and industrial research). Scientists of various disciplines are, therefore, employed with the objective of applying a wide variety of scientific disciplines to the development of new approaches to agricultural production and to proffer solutions to farmers' problems.

Generally, the information available to the scientists provides, at least, a minimum basis for the achievement of increased agricultural productivity. Information is, therefore, a vital resource for job performance of the scientists. According to Rogers and Kincaid (1981), information mediates individual's interaction with the environment. Information also performs certain organisational functions. The three common functions are production, innovation and maintenance. The production function is directed towards the achievement of the organization's output or production goals. Production messages are those that direct, coordinate and regulate the activities of the organization's members to bring about the desired results. This type of information involves the work done, the work to be done and problems associated with the work. In the agricultural research institutes, information of this nature includes policy statement, research mandate, research strategy/plans, procedures and rules for organisational set-up.

The different sources of information available to the scientists, from administrative and professional viewpoints, could influence their performance. The World Bank (1995) stated that improved communication and information accesses are directly related to social and economic development. Analysts have also indicated that where an improved telecommunication system has been established, increased productivity has resulted (Saunders, Warford and Wellenius 1994). It is, therefore, expected that a nation's agricultural institutional information framework may be associated with the attainment of increased agricultural productivity of a nation. As a preliminary step towards establishing this position, this study was, therefore, designed to ascertain the institutional information framework of agricultural research institutes in Nigeria

1.1 Objectives

The general objective is to ascertain the intra and inter-institutional information framework of Nigeria's agricultural research institutes. The specific objectives are to:

- i) determine the areas of specialization of scientists' in agricultural research institutes of Nigeria and
- ii) ascertain the information sources of scientists in the research institute.

2.0 Methodology

2.1 Sampling

Scientists of the national agricultural research institutes in the five ecological zones of Nigeria constituted the target population of this study. The five zones namely, are: North West Zone (NWZ), North East Zone (NEZ), Central Zone (CZ), South West Zone (SWZ) and South East Zone (SEZ). Fifty percent of the research institutes in each zone were randomly selected. In the North East and South East Zones, however, the Lake Chad Research Institute, (LCRI), and the National Root Crops Research Institute, (NRCRI), being the only agricultural research institute in the zones respectively, were purposively selected. The National Agricultural Extension and Research Liaison Services, (NAERLS), was purposively included as it is the only agricultural extension research institute in Nigeria. This procedure resulted in the selection of 11 agricultural research institutes of the study. From the selected institutes, 50% of scientists in each of the institute were randomly selected using the table of random numbers. This gave a sample size of 172 scientists (Table 1).

Table 1
Distribution of Scientists In Sampled Research Institutes.

Research Institutes*	Number of Scientists in research institutes	N u m b e r selected	Percentage (%)
NAPRI	34	16	50
NAERLS	32	15	50
LCRI	15	8	53
IAR	43	22	51
NSPRI	19	10	52.6
NIFFR	30	15	50
IAR & T	30	15	50
CRIN	20	10	50
NIOMR	42	21	50
NIFOR	40	20	50
NRCRI	39	20	51.3

***Legend**

NAPRI == National Animal Production Research Institute.
 NAERLS == National Agricultural Extension and Research Liaison Services
 LCRI== Lake Chad Research Institute
 IAR == Institute for Agricultural Research
 NSPRI == Nigeria Stored Product Research Institute
 NIFFR == Nigerian Institute for Freshwater and Fisheries Research.
 IAR&T== Institute of Agriculture and Training
 CRIN == Cocoa Research Institute of Nigeria.
 NIOMR== Nigerian Institute of Oceanography and Marine Research.
 NIFOR== Nigerian Institute for Oil palm Research
 NRCRI== Nigerian Root Crops Research Institutes

2.2 Instrument for data collection

Data were collected, through the use of structured questionnaire, from the selected scientists of the agricultural research institutes. The questionnaire was designed into sections to obtain information related to the objectives of the study.

A section had a list of agricultural disciplines and scientists indicated which of these disciplines was their area of specialisation.

Another section of the questionnaire focused on scientists' intra and inter-institute sources of information. In the section, seven information sources (communication channels) were listed and scientists rated the use of these sources, within and between the research institutes, on a 4-point scale of "often" = 4 points, "occasionally" = 3 points, "rarely" = 2 points, and "never" = 1 point (Table 3).

Using this scale, an intra-institute information score, was obtained for each source. The intra-institute information score ranged from 17 points to 68 points. Similarly, an inter-institute information score was obtained. The inter-institute information score also ranged between 17 points and 68 points.

The sum of the intra and inter-institute information source scores gave the scientists' Total Information Score (TIS) for each source. The mean score for each source was then obtained by dividing its TIS by the number of scientists that rated that source.

3.0 Results and Discussion.

3.1 Specialization:

Table 2 shows that 12.2% of the scientist are animal scientists, 4.1% are veterinary scientists and 12.8% are fisheries/ aquaculturists while only 0.6% are meteorologists.

From this result, about 38% of agricultural scientists in research institute specialized in agronomy/plant protection. Nuru (1994) had ascertained that crop-based research compared to other sub-sectors has received considerably emphasis in the past two decades. With scientists focusing more on agronomy, breeding and plant protection, agricultural research in Nigeria has had more dividends in crop development. For instance, it has developed high yielding, open pollinated high breed maize, sorghum and millet and rain-fed, low land and up-land rice varieties as well as improved cowpea, groundnut, yam and cassava varieties (NARP, 1995).

Table 2 also shows that agricultural specialists in meteorology, forestry, rural sociology and agricultural mechanization are few and constitute only 6.4% of the scientists in the research institutes. These apparently marginalized disciplines are also needed to propel agricultural development in Nigeria. Scientists are needed in agricultural mechanization and engineering to develop and fabricate simple machinery that will free farmers of the drudgery that characterises the lot of Nigerian small-scale farmers. While meteorologists are essential for weather forecast and other weather-related problems, meteorologists and sociologists are essential link-pins between developed technologies and the end users.

Manpower planning, which is accepted as an integral component of national planning, should place some emphasis on these disciplines within the national agricultural research system for situationally relevant development.

Table 2
Scientists Areas of Specialisation

Specialization	Frequency	%
Agricultural Economics	11	6.4
Agricultural Extension	17	9.9
Rural Sociology	3	1.7
Agronomy	42	24.4
Plant Protection	23	13.4
Post Harvest Technology	11	6.4
Forestry	2	1.2
Animal Science Production	21	12.2
Veterinary	7	4.1
Fisheries and Aqua-culture	22	12.8
Agricultural Machinery & Engineering	5	2.9
Meteorology	1	0.6

3.2 Scientists' intra-institute information sources.

Table 3 shows that notice boards (65.63%) bulletins (49.02), circulars (41.72%) and memoranda (41.22%) are sources of information "often" used by scientists within the institutes, while journals (42.47%), meetings (50.00%) and radio (94.0%) are "occasionally" used by scientists. Circulars, memoranda and bulletins are sources of information for routine management and personnel practices within the organization. Information from these publications provide legitimate framework for making important official decisions for scientists. The use of radio by scientists, however, is most likely for social rather than for professional utilitarian purposes.

Scientists, "occasionally" use workshops (32.26%) and meetings (50%) as sources of information within the institutes. This may be partially explained by the infrequent mounting of workshops and meetings that involve this caliber of scientists in the research institutes. However, such workshops and meetings could be appropriate fora for introducing changes in organizational strategies and implementation of other novel ideas. The table also shows that E-mail (74.05%) and Fax (48.41%) are "never" used within the institutes.

The mean sources scores on Table 3 indicate clearly, that the five top scientists intra-institutional sources of information, in descending order, are notice boards, bulletins, circulars, memoranda and journals. Except for journals, these sources of information are mostly for routine organisational maintenance. The ranking of intra-institutional sources, corroborates, to some extent, that of Fameso (1992) in which scientists in agricultural research institutes in Oyo State ranked seminars, workshops, circulars and memoranda as sources of disseminating information to fellow scientists within the institutes.

Table 3

Scientists' Rating of Use of Information Sources Within Institutes.

Communication channels	Often	Occasionally	Rarely	Never	Total Information Score	M score
Telephone	42(27.81)*	31(20.53)	40(26.49)	38(25.17)	301	1.75
Letters	11(7.69)	40(17.97)	45(31.47)	47(32.87)	394	2.29
Memoranda	61(41.22)	51(34.46)	28(18.92)	8(5.41)	461	2.68
Circular	63(41.72)	50(33.11)	23(15.23)	15(9.93)	463	2.69
Bulletins	75(49.02)	46(30.07)	19(12.42)	13(8.50)	489	2.84
Newsletter	18(13.53)	39(29.32)	31(23.31)	45(33.83)	386	2.24
Notice Board	105(65.63)	41(25.63)	8(5.0)	6(3.75)	565	3.28
Workshop	18(13.14)	51(37.23)	27(19.71)	41(29.93)	397	2.28
Conferences	27(32.88)	53(36.30)	31(21.23)	14(9.59)	379	2.20
Journals	29(21.32)	62(42.47)	27(19.85)	918(13.24)	460	2.67
Technical reports	32(21.32)	55(37.67)	42(28.77)	17(11.64)	454	2.63
Meetings	28(14.72)	71(50.00)	18(12.68)	25(17.61)	427	2.48
E-mail	8(5.06)	10(6.33)	23(14.56)	117(74.03)	296	1.72
Fax	9(7.14)	25(19.84)	31(24.61)	61(48.41)	234	1.36
Radio	(7.14)	25(19.84)	23(15.33)	7(4.67)	410	2.38
TV	41(27.33)	81(94.0)	32(22.22)	76(52.78)	301	1.75
Newspaper	5(3.31)	27(17.88)	81(53.64)	38(25.13)	320	1.86

*Figures in parenthesis are percentages.

3.3: Scientist' inter-institute information sources

Table 4 shows that journals (74.44%), newsletters (65.63%), meetings (54.81%) and circulars (41.94%), are the "often" used inter-institute sources of information while they "rarely" use E-mail (32.09%), fax (26.92%), radio (22.66%) and newspapers (30.08%).

Table 4

Scientists' Rating of Use of Information Sources Between Institutes.

Communication channels	Often	Occasionally	Rarely	Never	Total Information Score	Mean Score
Telephone	37(25.87)*	76(53.15)	22(15.38)	8(5.59)	246	1.43
Letters	56(37.33)	62(41.330)	25(16.67)	7(4.67)	281	1.63
Memoranda	52(35.86)	71(48.97)	17(11.72)	5(3.45)	272	1.58
Circular	65(41.94)	68(45.87)	17(10.97)	5(3.23)	295	1.75
Bulletins	51(35.60)	66(46.15)	13(9.09)	13(9.09)	460	2.67
Newsletter	105(65.63)	42(26.25)	13(8.13)		503	2.92
Notice Board	27(19.54)	69(50.00)	28(20.29)	14(10.14)	233	1.35
Workshop	22(16.790)	98(74.81)	7(5.34)	4(3.05)	428	2.48
Conferences	22(16.30)	75(55.56)	25(18.52)	13(9.63)	441	2.56
Journals	99(74.44)	24(18.05)	7(5.30)	3(2.26)	572	3.32
Technical reports	3(2.27)	18(13.64)	29(21.970)	82(62.12)	385	2.23
Meetings	74(54.81)	17(2.59)	34(25.19)	10(7.41)	467	2.72
E-mail	7(5.22)	31(23.13)	43(32.09)	30(59.55)	179	1.04
Fax	10(7.6)	19(14.62)	35(26.92)	66(50.55)	180	1.05
Radio	4(3.13)	32(25.00)	29(22.66)	63(49.22)	233	1.35
TV	23(16.67)	28(20.290)	32(23.19)	55(39.86)	233	1.35
Newspapers	14(10.53)	33(24.81)	40(30.080)	46(34.59)	206	1.19

*Figures in parenthesis are percentages.

Indeed, the mean source scores of Table 4 point out the top five inter-institutional sources of information as journals, newsletters, meetings, bulletins and conferences, in that descending order. Their prominence may not be unconnected with the relevance of these sources for their professional contents as well as their relevance to scientists' performance and career mobility.

Table 4, therefore, shows the crass insufficiency of information technology in Nigeria's national agricultural research system. This finding supports Idachaba's (1998) report of the lack of adequate telecommunications infrastructure in the Nigerian NARS. He reported that NVRI, NRCRI and NAPRI have no telephone/telex/fax linkages with the outside world. This absence of modern communication system had also been identified as one of the key constraints of the research system in Nigeria (NARSP, 1996).

The findings of this study and those of previous studies, reflect the degree of integration of new information technologies, into the Nigerian agricultural research system. The effect of this lack of global connectivity could be tremendous, especially in terms of the direction of contemporary research, and more specifically, on the knowledge gap between Nigerian agricultural scientists and those of the developed economies.

The bottom line is that, the gross inadequacy of information technology in the institutes, is detrimental to the progress of the Nigerian agricultural research system.

4.0 Conclusion.

Agricultural scientists intra-institutional and inter-institutional sources of information differ. The intra-institutional sources of information are notice boards, bulletins, circulars, memoranda and journals. While their inter-institutional sources are journals, newsletters, bulletins and conferences. Currently, scientists in Nigerian agricultural research institutes do not have access to the information super-highway- the internet- due to lack of access to information technologies in the research institutes.

The Nigerian government should, therefore, develop a telecommunication system that will provide the much needed institutional information framework for the ultimate global connectivity for Nigerian agricultural scientists.

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