Extension Workers' Perceived Effectiveness of Linkages Mechanism with Researchers And Farmers In Edo State, Nigeria.

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Abstract: *The study examined extension workers' perception of linkage mechanisms with researchers and farmers in Edo state, Nigeria. A total of seventy (70) respondents were used for the study, which comprised of 28 extension agents and 42 fadama facilitators in contact with researchers and farmers. Data were generated with the use of structured questionnaire and analysed using means. Results showed that result demonstration, agricultural show, joint campaign and field trip where the effective linkage mechanism (M=3.77) and (M=3.36) between extension agents and researchers and extension agents and farmers respectively.Also that method demonstration (M=4.40) was most effective method of transferring technology to farmers and that the linkages with researchers (M=26.29) is more effective compared to farmers (M=23.36). The study recommends intensified use of personal letters as linkage mechanism both with researchers and farmers and the encouragement of farmers in joint use of mobile vans and tape recorders.*

I.   Introduction

The performance of the Nigeria agricultural sector in the economy of Nigeria is evidently unsatisfactory (Adetunji*et al,* 2002). This could be as a result of the weak linkage between researchers, extension personnel and farmers, as it has be noted by American Society of Agricultural Biological Engineer ASABE(2005) that there is no dearth of knowledge and new technologies in agriculture but these rarely reach farmers especially those in developing countries. Traditionally, knowledge and technologies are expected to flow from knowledge centresi.e. International Agricultural Research Centres (IARCS) and Advance Research Institute (ARIS) to National Agricultural Research system (NARS) and from there to the National Agricultural Extension System (NAES) and the Non- Government Organization (NGOs) to farmers in practice however very little of this has happened in part because NARS and NAES are traditional decoupled in many developing countries and information channels between them are weak, thus much information still remains in accessible to farmers.

The very weak linkages in the Research-Extension-Farmer–Input Linkage System (REFILS), in Nigeria as in most developing countries have been a major limiting factor to increase food production and sustainable development.

For agro-technologies to be relevant to local needs, researchers, extension workers and farmers must play important roles in identifying research problems adapting the recommendations to local conditions and providing feedback to researchers about the innovations that have been developed (Agbamu 1998). Effective communication links between researchers and extensionistare vital in the modification of technological recommendations and in initiating further research.Such links enable new technologies and management practices to be suited to local ecological conditions. The participation of extension workers in adaptive research trials allows them to become familiar with the technologies they are expected to promote and also helps to ensure that the sociological dimensions of farming are not neglected.

Linkage activities are usually managed at verifying administrative levels; national regional, state and local levels. The agricultural research and extension system identifies farm families as their target and the hub around which researchers and extensionist focus their actions.

Agbamu, (1998) further asserted that the constraints which hinder research extension linkage potentially affect the agricultural output of farmers, whereas effective links will allow farmers to enhance their output through the availability of farming innovations.

By 1982 research – extension – linkage practitioners modifies the linear model and evolved a Farming System Research and Extension (FSRE) Approach with emphasis on a bottom up technology generation and transfer system described as the technology triangle relationship among the three stakeholders, i.e Research, Extension and Farmers, (Agbamu, 2000).Olowu and Windapo (1995) identified a complex relationship in which there are relational overlaps such overlaps are linkage points between them which point to the fact that none of the three can function independently.

Fig. 1 The connection between the main actors of the agricultural research extension linkage system (technological triangle).
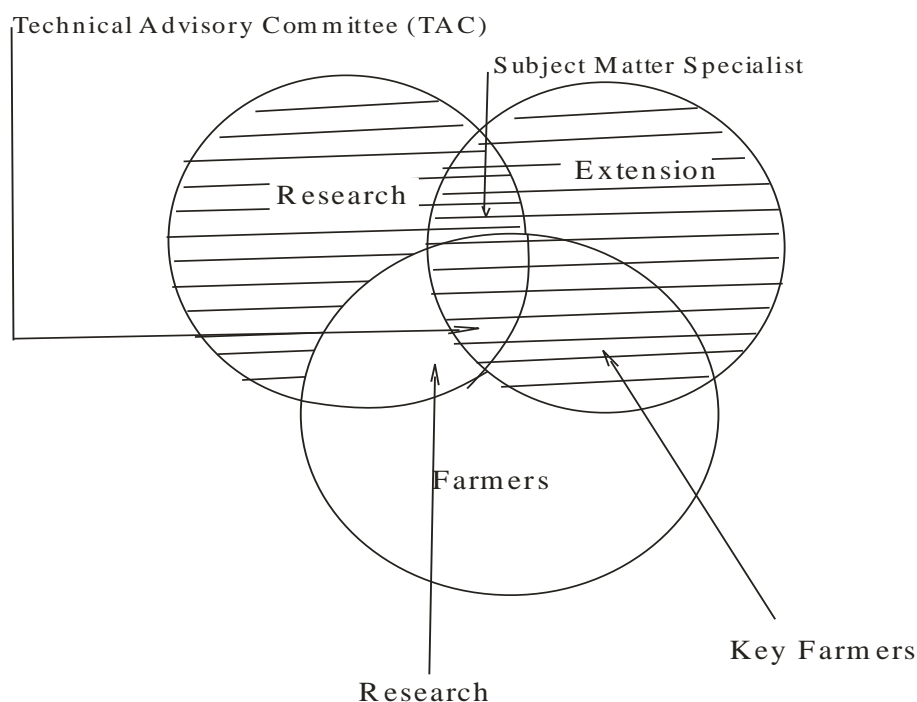
The agricultural research findings are of little use if they are not adopted by farmers. Studies have shown that the achievement of a stable and more productive farming system in a nation like Nigeria results from building a strong link within and between research and technology transfer agencies and the farmers. Research, extension and farmers belong to the agricultural production sub-systems. The three subs systems interlock and hence the interface between them should be managed in the linkage mechanism. The relationship is such that researchers release research results to extension agents who in turn apply the knowledge to assist farmers, and then farmers discuss their farm problems with the extension agents who in turn passes these to the researchers.

Against the background of agricultural information flow to actualize extension delivery, knowledge extension workers' perception of linkage mechanism with researchers and farmers is an issue of research.

II.   Objectives of the Study
The general objective of this study is to assess extension workers' perceived effectiveness of linkage mechanism with researchers and farmers in Edo State, Nigeria. The specific objectives were to ascertain respondents' perceived effectiveness of linkage mechanism with researchers and farmers; effectiveness and frequency of use of technology transfer methods.

III.   Hypothesis formulated
A null hypothesis formulated for the study is that there is no significant difference ineffectiveness of extension agents in linkage with researchers and farmers.

IV.   Methodology
The study was carried out in Edo state, Nigeria. A two stage sampling technique was used in selecting respondents for the study. The first stage was to purposively select Agricultural Development Programme (ADP) in Edo state. The next stage was to randomly select 28 extension agents in contact with researchers and farmers, and also 42 fadama facilitators. This gave a total of seventy (70) respondents' perceived effectiveness of linkage mechanism, technology transfer methods and frequency of use with researchers and farmers respectively with the aid of questionnaire validated by expert judgment. Respondents perceived effectiveness of linkage mechanism was measured in a 4 point rating scale of very effective= 4, effective=3, least effective=2, and not effective=1. Effectiveness of technology transfer method was measured in a 5-point rating scale of very effective coded 5, effective coded 4, undecided coded 3, least effective coded 3 and not effective coded 1.

Frequency of use of technology transfer method was measured in a 4-point rating scale of very frequent

coded 4, frequent coded 3, sometimes coded 2, and not at all coded 1. Data were analyzed using mean and hypothesis tested using t-test.

V.   Results and Discussions

Extension Agents perceived Effectiveness of Linkage Mechanism with Researchers and Farmers

Table 1 showed that result demonstration, agricultural show, joint campaign and field trip where the effective linkage mechanism (M=3.77) and (M=3.36) between extension agents and researchers and extension agents and farmers respectively. Only personal letters (M=1.40) and (M=1.20) was not and effective linkage mechanism between extension agent and researcher/farmers respectively. This result is an indication that linkage mechanisms that promote good social interaction are more effective linkages between research-extension-farmers to actualize agricultural technologies transfer objectives. This result support the finding of Agbamu (2000) that the participation of extension workers in adaptive research trials allows them to become familiar with the technologies they are expected to promote and also helps to ensure that the sociological dimensions of farming are not neglected.

Table 1: Extension Agents Perceived Effectiveness of Linkage Mechanism with Researchers and Farmer

Linkage mechanism	Researchers		Farmers	
	Mean	**SD**	**Mean**	**SD**
Result demonstration, Agricultural show, joint campaign, field trip	3.77*	0.552	3.36*	1.189
Joint use of teaching aids, photographs	3.41*	0.789	3.07*	1.181
Joint sponsorship of information to farmers and researchers	3.18*	0.680	2.83*	1.033
Visit to research centers	3.14*	0.626	2.70*	0.919
Joint use of technical information	3.09*	0.741	2.68*	1.031
Free access to annual reports, bulletins and farm magazines	2.95*	0.655	2.57*	0.915
sharing of audio visual Joint programmes on TV and Radio	2.82*	0.754	2.58*	0.890
Joint use of mobile vans, tape recorder	2.54*	0.780	2.36	0.848
Personal letters	1.40	0.761	1.20	0.515

Source: field survey 2010 *Effective (mean ≥ 2.50) scale: Not effective = 1, least effective = 2, effective = 3, very effective = 4.

VI.   Extension Agents Perceived Effectiveness of Technology Transfer Methods

Table 2 showed the extension agents perception of effectiveness of technology transfer method. Method demonstration (M= 4.40) was most effective method to transfer technology to farmers. Followed by farm and home visit (M = 4.25) and result demonstration (M = 4.19).This result agrees with findings of Androulidakis*et al* (1995) where the perceptions of extension agents were sought about the appropriateness of the educational methods used to reach farmers in Greece. While the non-effective technology transfer method were leaflet(M = 2.32) may be as a result of no proper and effective usage/ application, booklets (M= 2.30), Newsletter (M = 2.20), chalk board (M = 2.00). The result further showed of all the effective technology transfer methods (M ≥ 3.0), radio (M=3.15), telephone (M=3.09) and television (M=3.04) were less effective. This shows that mass method which are ICTs compliance are not as effective as individual and group methods in technology transfer. The implication is more farmers may not be effectively reached with proven technologies from research.

Table 2 Extension Agents Perceived Effectiveness of Technology Transfer Methods

Transfer methods	Mean	SD
Method Demonstration	4.40*	1.081
Farm and home visit	4.25*	1.188
Result demonstration	4.19*	1.371
Agric documentary on TV	3.86*	1.092
Visit to research institute	3.80*	1.087
Field days	3.75*	1.114
Workshops	3.71*	0.951
Exhibitions and displays	3.51*	1.056
Agricultural show	3.49*	0.973
Discussion meeting	3.48*	0.995
Field trip	3.47*	1.066
Committee meetings	3.36*	0.996
Films	3.19*	1.059
Radio	3.15*	1.124
Telephone	3.09*	1.087
Television	3.04*	0.893
Institutional posters	2.97	0.989
Agricultural magazines	2.97	1.010
Video tape	2.96	0.917

Campaign	2.70	1.097
Audio cassette	2.67	1.033
Journals	2.51	1.076
Leaflets	2.32	0.900
Booklets	2.30	0.860
Newsletter	2.20	0.878
Chalk board	2.00	0.795

Source: field survey 2010 *Effective (mean ≥ 3.00)

VII. Frequency of Use of Technology Transfer Method By Extension Agents.

Table 3 shows frequency of technology transfer method by extension agent.

Method demonstration (M = 2.72) was the highest, hence it was perceived as most effective (table 2). However, none of the technology transfer methods was frequency used i.e., all means were less than three (M<3.00). This situation can lead to low adaptive significance and appreciation of proven technologies. The implication may be a low utilization level of technologies. This result actualizes the ASABE(2005) that very little of knowledge and technology transfer mechanism has happened from IARCS and ARIS to NARS and NGOs to farmers a further implication is low and unsatisfied performance of the Nigerian agricultural sector and noted by Adetunji*et al*(2002), thus a stagnant contribution of agriculture to national GDP in Nigeria.

Table 3 frequency of use of technology transfer method

Transfer methods	Mean	SD
Method Demonstration	2.72	0.721
Result demonstration	2.65	0.767
Farm and home visit	2.57	0.778
Discussion meeting	2.43	0.677
Exhibitions and displays	2.40	0.827
Field trip	2.36	0.698
Visit to research institute	2.35	0.794
Agricultural show	2.22	0.619
Agric documentary on TV	2.19	0.772
Field days	2.19	0.730
Committee meetings	2.19	0.670
Workshop	2.17	0.556
Telephone	2.14	0.913
Television	2.06	0.646
Agricultural magazines	2.04	0.614
Video tape	1.96	0.695
Films	1.94	0.693
Radio	1.93	0.684
Institutional posters	1.86	0.734
Campaign	1.68	0.733
Journals	1.58	0.829
Audio cassette	1.54	0.679
Booklets	1.48	0.794
Newsletter	1.41	0.762
Leaflets	1.40	0.732
Chalk board	1.28	0.721

Source: field survey 2010 *Frequent (M ≥ 3.00)

VIII. Difference in effectiveness of Extension Agents in Linkage with Researchersand Farmers.

Table 4 shows the difference in perceived effectiveness of linkages with researchers and farmers. The mean shows that linkages with researchers (X = 26.29) is more effective compared to farmers (X = 23.36). The t- value (4.71) is significant at the 5% level implying that extension agents' communication with researchers is more effective or stronger than with farmers. An explanation for this could be that extension agents visit research centers frequently and also observetheir joint use teaching aids and joint sponsorship of information to farmers. This situation might negate the three sub-system interlock between extension agents, farmers and researchers as the linkage mechanism may favor more of the relationship between extension agent and researchers than between extension agents and farmers. This is may cause deficit or imbalance between agricultural information sources to research and agricultural information dissemination to farmers by extension agents .As the result show that information sourcing from research and information dissemination to farmers by extension agents. This means that information from research is better managed by extension agents than information to farmers. This can cause a gap between basic and adaptive research. Hence agricultural output of

farmers may be evidently reduced compared to agricultural output from technological experimental field as a result of information technology distortion between research institutes and farmers by extension agents.

Table 4 difference in effectiveness of extension agents' linkages with researchers and farmers

Linkages	Effectiveness			
	Mean	Difference	t value	Prob* level
Researchers	29.29	2.92708	4.710	0.000*
Farmers	23.36			

Source computed from field survey *significant at 5% (≤ 0.050)

IX.   Conclusion and Recommendation

Based on the findings of this study, it is concluded that extension workers in Agricultural Development Programme (ADP) in Edo State, Nigeria, perceived linkage mechanism with researchers and farmers to be effective. Result demonstration, agricultural show, joint campaign and field trip were most effective linkage mechanism.

The following measures are suggested towards improving effectiveness of linkage mechanism. The Agricultural Development Programme (ADP) in Edo state should: (a) intensify the use of personal letters as linkage mechanism both with researchers and farmers inactualizing agricultural technology transfer (b) Encouragefarmers in joint use of mobile vans and tape recorders, which are presently ineffective linkage mechanisms.

To facilitate research-extension –farmers' linkage, the extension workers should be more frequent in their visit to research institutes, use of agricultural journals, television, audio cassettes to facilitate technology transfer and sourcing.

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