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ACTORS AFFECTING THE EFFECTIVENESS OF EXTENSION LINKAGES BETWEEN AGRICULTURAL DEVELOPMENT PROGRAMMES (ADPs) AND UNIVERSITIES IN SOUTH-EASTERN NIGERIA

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ABSTRACT

This study analyzed the factors that affect the effectiveness of agricultural extension linkages between ADPs and universities in south eastern Nigeria. The attitudes of collaborators towards and their preferences for certain linkage mechanisms and arrangements were examined to determine the impact on the effectiveness of linkages. The paper also analyzed the ratings of factors that facilitate or limit effectiveness, assessed the various strategies for increasing and strengthening effectiveness, as well as examined the factors that militate against the achievement of expected linkages for extension work in Nigeria. ADP and University staff who had linkages for the purpose of agro-technology generation and transfer, participated in the study. Information obtained was analyzed using means. The results showed general positive attitudes towards most of the suggested linkage arrangements (grand mean 3.16). The general high ratings of many factors, as facilitators of linkage effectiveness, indicated that for linkages to be effective, all the physical, psychological and social factors of human relationships must be made to work together. To stem the problems of funding, the paper suggested that government and private sector agencies should demonstrate greater commitment and support for linkage programmes through adequate funding.

Key words: effectiveness, linkage, collaborator, technology transfer, funding.

INTRODUCTION

In Nigeria, strong functional and effective agricultural extension linkages are known to exist between Agricultural Development Programmes (ADPs) and universities for the purpose of sharing research knowledge in furtherance of agricultural extension roles and mandates. Studies conducted by Agbamu (1998 and 2000) show that research-extension linkages exist and work satisfactorily in many countries of the world especially those with bottom-top decision flow systems. According to the United States Office of Technology Assessment (1990), there is increased impetus towards formation of extension linkages and this is attributed to the following. First is the greater awareness on the part of collaborators of the multiplicity and interdependence of factors that affect linkages. The second is connected with low funding which motivates researchers to work together to conserve funds and reduce duplication of efforts. The third is the discovery that government and funding agencies are more disposed to increase budgets for those willing to make collaborative efforts and fourthly the challenge for the country to compete more actively in the present day international market place.

Several studies and reports have identified factors that facilitated as well as those that

militated against the formation and maintenance of effective linkages. For instance, a recent analysis of the quality of manpower available for linking the agricultural extension services of the ADPs and Universities in S.E. Nigeria, showed that strong and effective linkages exist between staff of both organizations on the basis of gender, educational qualification, cognate research experience, sources of funds for research, as well as awareness and use of linkage types and arrangements (Uzuegbunam & Madukwe, 2004). The study revealed that the educational qualifications of staff of both systems were comparable, a situation which promoted understanding and inter-agency collaboration. Staff involved in linkage activities in both systems were mostly males, well-qualified and experienced in research and extension work. They obtained funds for research mainly from personal and institutional sources. Generally, staff of both systems were sufficiently aware of the major linkage types and arrangements which they utilized freely for sharing research knowledge.

In an earlier study, Madukwe *et al* (2000) found that a high percentage of ADP and university staff had at least a B.Sc degree and that the more the difference in their qualifications, the less the linkage between them. Oganga (1998) and Ndukwo (1998) in separate studies on the influence of gender on linkages, found that males were favoured in the Rivers and Abia States, respectively in extension activities than females. A similar finding by Madukwe et *al* (2000) revealed that about 90% of the agro-technical transfer workers in the ADPs and Universities were males. These factors, which stem mainly from the personal characteristics of the actors in the linkage activities, therefore have tremendous influence on the effectiveness of linkages.

This paper therefore examined the factors that influence the attitudes of collaborators towards their preferences for certain linkage mechanisms. It analyzed the collaborators' ratings of factors that facilitate or limit effectiveness. The study further assessed the various strategies for increasing and strengthening effectiveness of linkages and finally examined the factors that militate against the achievement of expected linkages for extension work in Nigeria.

MATERIALS AND METHODS

The study area is South Eastern Nigeria comprising nine states – Abia, Anambra, Akwa-Ibom, Bayelsa, Cross River, Ebonyi, Enugu, Imo and Rivers. There are fourteen universities within this study area and many of them are known to be involved in agricultural technology transfer programmes. There are also nine Agricultural Development Programmes ADPs, one in each State, and these are also known to have technology transfer programme linkages with some of the universities within the South East.

Four universities and their collaborating ADPs were studied. The study was purposively conducted in the chosen univ C.O. Uzuegbunam heir perceived collaboration in agro-technology generation and transfer activities. The four universities and their collaborating ADPs were, Federal University of Agriculture, Umudike with the Abia State ADP; the University of Uyo with the Akwa-Ibom state ADP; the University of Nigeria with the Enugu State ADP and Federal University of Technology Owerri with the Imo State ADP.

The target population comprised university lecturers and ADP staff within the study area. A total of 160 respondents were purposively sampled for the study. Eighty university staff and 80 from the ADPs were selected on the basis of their perceived

involvement and cooperation with each other in extension and research activities within their locations. Consequently, 20 respondents were drawn from each of the Universities, while 20 were from each of the ADPs.

Since the study was designed to examine the factors affecting the effectiveness of extension linkages between the two organizations, only those involved in the linkage activities were selected. For instance in the universities, it was the deans of faculties of agriculture and heads of departments who design the linkage programme and the lecturers who operate them. In the ADPs, the programme managers (PMs), zonal managers (ZMs), chief extension officers (CEOs), zonal extension officers (ZEOs), subject matter specialists (SMSs) and block extension supervisors (BESs) were selected.

Two sets of identical semi-structured questionnaires were used for field data collection, one set for university staff and the other for ADP staff. The questionnaire was designed to obtain information on the respondents' attitude towards linkage arrangement and their ratings of factors that facilitate or militate against linkage arrangements. The data and information obtained were analysed using means.

RESULTS AND DISCUSSION

Attitudes towards linkage arrangements

Data in Table 1 show the mean scores of attitudes of respondents towards a number of linkage arrangements between their organizations. The analysis of the responses showed general positive attitudes towards a number of suggested linkage arrangements (grand mean 3.16). Those factors towards which there were indications of positive attitudes were, free exchange of information and record (3.66), free provision and exchange of consultancy services (3.43) and joint funding of research projects (3.36). Some of those that also attracted positive attitudes were, university and ADP staff working with the same group of farmers (3.15), compulsory linkages between all extension systems (3.00) joint budgeting sessions for all (2.63) and only universities of agriculture and ADP should link (3.33). However, respondents showed unfavourable attitudes (1.94) towards the suggestion that staff of both organizations should not hold joint parallel appointments, indicating that it is desirable for staff of both organizations to hold joint parallel appointments.

The above findings corroborate the views of Feller (1985) and Marshall and Summers (1985) that combining a research appointment with the role of extension specialist enhances the specialists research abilities and knowledge of research findings. The data also showed that university staff were not as positive about joint budgeting meetings (2.48) as ADP staff (2.78) were, indicating that they would prefer to maintain their identities and confidentiality with regard to preparing their budgetary needs.

Effective linkages between the two systems are, therefore, possible where there is a good knowledge and understanding of the essence of making certain linkage arrangements, thus defining the attitudes of those involved. Willingness to forge a linkage using one arrangement or the other will, in essence, depend on whether it is considered beneficial or not. Agricultural research extension linkage system is therefore a marriage of the knowledge capabilities of researchers, extensionists and farmers.

Table 1: Mean scores of respondents' attitudes towards linkage arrangements

Linkage arrangements	Mean Scores (max 4) University staff	ADP Staff	Average
Free exchange of research and information records	3.70	3.62	3.66
Free provision and exchange of consultancy services	3.41	3.45	3.43
Joint funding of research projects	3.33	3.40	3.36
University and ADP staff working with same group of farmers	3.18	3.14	3.15
Compulsory linkages between all extension systems	2.95	3.06	3.00
Joint budgeting sessions	2.48	2.78	2.63
No joint/parallel appointment	2.00	1.88	1.94
Only universities of agriculture and ADPs to link	3.70	2.95	3.33
Limit linkages to interpersonal relationships	3.60	3.55	3.58
Linkages between universities and ADPs unnecessary	3.58	3.50	3.55
Grand mean	3.19	3.13	3.16

Table 2: Mean scores of respondents' preferences for linkage mechanisms

Avenues	Mean Scores (Max 4) University staff	ADP staff	Average
Workshops and seminars	3.33	3.46	3.39
QTRMs	2.83	3.10	2.97
Bulletins and leaflets	2.89	2.99	2.94
FNTs	2.67	2.96	2.82
Liaison services	2.84	3.00	2.77
Radio and TV Talks	2.75	2.73	2.74
Personal contacts	2.79	2.17	2.48
Grand mean	2.87	2.91	2.92

Preference for linkage mechanisms

Table 2 shows the mean scores of respondents' reactions to a number of mechanisms for establishing linkages, arranged in the descending order of preference. Workshops and seminars ($\bar{x}$=3.39) were most preferred, followed by quarterly technical review meetings QTRMs ($\bar{x}$=2.97), bulletins and leaflets ($\bar{x}$=2.94) and fortnightly training, FNT, sessions ($\bar{x}$=2.82). Others are, liaison services ($\bar{x}$=2.77), radio and TV talks ($\bar{x}$=2.74) and personal contacts ($\bar{x}$=2.48).

The data show that while university staff found personal contact mechanism more effective ($\bar{x}$=2.97) and hence preferred, ADP staff did not ($\bar{x}$=2.17). The reason for this may be that university staff are generally better mobilized than their counterparts in the ADP, in terms of transportation and other logistics. However, the average mean score of ($\bar{x}$=2.48) for personal contacts may indicate that extensionists generally are laying less emphasis on that factor which requires a lot of time and expenses to reach everyone.

Both university and ADP staff indicated high preference for workshops

and seminars, QTRMs, FNTs and use of bulletins and leaflets. The high preference for workshops and seminars and hence the effectiveness of those mechanisms can be appreciated from the fact that they provide appropriate forum for brainstorming and general discussion of issues for the benefit of a large number of people.

Factors facilitating effectiveness of linkages

Table 3 shows the mean scores of respondents' ratings of some factors facilitating effectiveness of linkages. Availability of research infrastructure was rated highest ($\bar{x}$=3.64) by all the respondents followed by free exchange of research information ($\bar{x}$=3.61), as factors facilitating effectiveness of linkages. Both the university and ADP staff ($\bar{x}$=3.56) also agreed that provision of continuous retraining opportunities for staff of both systems would contribute to effective linkage. With regard to payment of stipends to university resource staff by the ADP, respondents of both systems ($\bar{x}$=3.42) shared the view that it would also facilitate effective linkage. Availability of computer facilities in both systems for storage and retrieval of research information was rated high by the university and the ADP staff ($\bar{x}$=3.34). Other factors over which it was mutually agreed that they could promote effective linkages were, provision of adequate transportation for university staff; ($\bar{x}$=3.32), provision of attractive fringe benefits for university and ADP staff ($\bar{x}$3.13) and adequate funding for both systems ($\bar{x}$=3.05).

However, the university staff rating ($\bar{x}$=2.26) was lower than the ADP staff rating ($\bar{x}$=3.34) in respect of the suggestion that unavailability of individualized linkage facilities e.g. telephone, could diminish effectiveness of linkages. The reason for this may be that university staff have more access to alternative communication facilities like the internet than the ADP staff. In addition, university staff may have better knowledge of the use of the available facilities.

Table 3: Respondents' rating of the factors facilitating effectiveness of linkages between ADPs and universities

Factors Facilitating Effectiveness	Mean Scores (Max 4)		
	University staff	ADP staff	Average
Availability of research infrastructure	3.54	3.73	3.64
Free Exchange of research information	3.60	3.61	3.61
Provision of retraining opportunities	3.29	3.85	3.56
Payment of stipends	3.43	3.40	3.42
Availability of computers	3.53	3.35	3.34
Adequate transportation	3.19	3.45	3.32
Attractive fringe benefits	2.69	3.56	3.13
Adequate funding	3.20	2.90	3.05
Unavailability of individualized linkage facilities	2.26	3.34	2.80
Grand mean	3.19	3.47	3.32

Table 4: Mean scores of respondents' ratings of strategies for increasing and strengthening linkages between ADPs and universities

Strategies	Mean Scores (Max 4)		
	University staff	ADP staff	Average
Sharing research and extension knowledge on a regular basis	3.73	3.88	3.81
Increased use of electronic communication facilities to transfer and exchange information	3.16	3.18	3.17
Extension and research staff meeting point working directly with farmers	3.70	3.68	3.44
Mutual coordination of technical transfer efforts	3.46	3.75	3.61
Joint parallel appointments for staff to facilitate quick preparation of research results	2.44	2.35	2.40
Grand mean	3.30	3.37	3.33

For linkages to be effective therefore, all the physical, psychological and social factors of human relationships must come into play. The implication of this is that provision of adequate funds is a first step towards the acquisition of the physical infrastructure that are required for linkage operations. In this connection, Amalu (1998) noted that the national policy on ADPs made adequate provision for funding and for the full combination of all these factors as essential ingredients for improving agricultural productivity and for raising the standard of living of rural dwellers. Hence, all the infrastructural facilities such as all season rural roads, minor irrigation dams, farm service centres, seed multiplication units, input distribution centres etc etc, were to be provided and developed as facilitators for linkages between institutions.

Research funding can be enhanced through the establishment of symbiotic relationships between organizations. Firms have been known to

turn to universities for specific projects where certain skills are required for the need of the firms (Oyelaran-Oyeyinka *et al.* 1996). University staff often lack the financial capacity to undertake extension activities and so they usually fall on the ADP for financial support while in return make available results of their research findings for practical field application by the ADP. Related to this finding is the issue of payment of stipends for non-monetary services contributing to collaborative work. Hence, payment of stipends to university resource staff by the ADP definitely encourages and facilitates linkage. Extension requires increased and free access to research information (Marshall and Summers 1985), as a way of strengthening linkage between extension and research. Sharing research-based knowledge between universities and the ADP is a major source of information for extension programming.

Strategies for increasing and strengthening linkages

Table 4 shows the mean scores for the rating of strategies for increasing and strengthening linkages between ADPs and universities. The data show that university staff ($\bar{x}$=3.73) agreed to a great extent with ADP staff ($\bar{x}$=3.88) that the practice of sharing research and extension knowledge between the two systems on a regular basis is a good strategy for increasing and strengthening linkages between the two systems. It can also be concluded that annual workshops and conferences where research and extension knowledge are presented to a large audience, are useful mechanisms for strengthening linkages. Regularly published research reports are also useful for scientific staff interaction.

The data further reveal that the university system ($\bar{x}$=3.16) and the ADP system ($\bar{x}$=3.18) share the view strongly that increasing the use of electronic communication facilities to transfer and exchange information between the two systems would increase and strengthen linkages between them. Feller *et al* (1984) recommended an increase in the transmission of Agricultural Research Services (ARS), research findings to state extension services via the electronic information network to increase and strengthen linkages.

With regard to the practice of extension and research staff of both organizations working directly with farmers, university staff ($\bar{x}$=3.70) and ADP staff ($\bar{x}$=3.68) agreed to a great extent that it is a strategy for increasing and strengthening linkages. These responses agree with Ozorah (1988) who stated that results of on-station and on-farm trials were tested in the farmers' farms with the farmers themselves participating. On the issue of establishing a system of mutual coordination of technology transfer effort by both systems, university ($\bar{x}$=3.46) and ADP ($\bar{x}$=3.75) staff agreed that it was a good strategy for increasing and strengthening linkages between them. This means that the exercise of identifying technology needs should always be jointly done by staff of both organizations.

The factor of establishment of joint (parallel) appointments for staff of both systems to facilitate quicker preparation of research results seemed to present the least appeal to university staff ($\bar{x}$=2.44) and ADP staff ($\bar{x}$=2.35). However, Marshall and Summers (1985) recommended that the creation of joint

extension/research appointments will enhance the specialist's research abilities and knowledge of research findings.

Table 5: Respondents' ratings of factors militating against linkages between ADPs and universities

Factors	Mean Scores (Max 4)		
	University staff	ADP staff	Average
Linkage issues not adequately provided for in law/policy of establishments	3.16	3.02	3.11
Recruitment of highly trained staff diminishes need for linkage	2.20	1.93	2.06
Poor salaries/stipends/incentives	2.95	3.30	3.16
Inadequate transportation and other logistic support	3.38	3.61	3.46
University research findings not based on farmers problems	2.90	3.21	3.04
Lack of telephones and other information facilities	3.15	2.75	2.94
Late release of funds for projects	3.34	3.81	3.58
Redundancy of research staff due to poor funding	3.46	3.65	3.55
Non-comparability or inequality of staff qualification	2.46	2.77	2.60
Linkage disruption due to frequent transfers and admin. Changes	2.53	2.50	2.51
Poor government policy on research activities	3.21	3.51	3.36
University researchers working for self interest	2.63	3.39	2.86
Differences in training orientation for staff	2.44	2.74	2.45
Universities and ADPs located far apart	1.65	1.95	1.73
Grand mean	2.80	3.01	2.91

Factors militating against linkages

Table 5 shows the mean scores of ADP and University staff responses on the extent to which they agree with a list of factors that could constitute constraints to effective linkages between the ADPs and the universities. The data show that respondents generally agreed that most of the factors listed militated against linkages between ADPs and universities. The factors which they agreed to a great extent militated against linkages include, non-provision of linkages issues in the law/policies establishing universities and ADPs ($\bar{x}$=3.11); poor salaries from government and low incentives for ADPs and university resource persons ($\bar{x}$=3.16), and inadequate provision of transportation and other logistic support to facilitate the use of some linkage mechanisms ($\bar{x}$=3.46). Others are, discarding of most university research findings as not based on farmers problems ($\bar{x}$=3.04); late release of funds for ADP projects ($\bar{x}$=3.58); redundancy of research staff as a result of poor funding ($\bar{x}$=3.55) and poor government

policy on research activities generally ($\bar{x}$=3.36).

While the issue of universities and ADPs being located far apart had the least average mean score ($\bar{x}$=1.73), indicating respondents' views that the factor militates against linkages only to a very little extent, the rest of the factors contributed only a little extent. These findings suggest strong negative feeling over the multifarious problems militating against effective extension linkages. Since extension work entails a lot of communication to maintain effective linkages, it's overall effectiveness could also be adversely affected.

With regard to funds, it must be noted that poor funding generally constitutes serious drawbacks to effective linkages. This implies that funding agencies, especially government, occupy strategic positions in the linkage processes between organizations. Agbamu (2000) identified research budget as one of the critical indicators of research-extension linkage. Regrettably, while in Nigeria research budget, as a percentage of national budget, was only 3.0% in 1997/98, it was as high as 8.0% in Indonesia, 7.7% in Mexico and 4.5% in Thailand (Agbamu 1998). The issue of staff training and what staff do with their training and qualifications can be very critical in the effective linking of organizations. In fact, where researchers hold on to their findings, the attitude could constitute constraints to effective linkages. Regarding the non-inclusion of linkage issues in the laws and policies establishing universities and ADPs, Agbamu (2000) found that in all the seven countries he studied, there were policy laws and regulations for agricultural extension practice.

CONCLUSION

It can be concluded from the findings of this study that many factors bordering on attitudes, preferences, collaboration and motivation should be made to work together to increase the effectiveness of existing extension linkages. The attitudes of collaborators towards any linkages arrangement must transcend personal gains and preferences to produce the desired end result. However, government and private sector agencies must demonstrate greater commitment and support for linkage activities through adequate funding.

A situation, in which there are weak laws or policies governing linkage matters in Nigeria, creates room for poor coordination of efforts. In this regard, PCU should be charged with additional responsibilities for effective coordination and cooperation between research agencies. It is also clear from the findings that although the Universities and the ADPs are all involved in extension activities, there is insufficient cohesion between them to facilitate coordination and collaboration in finding solutions to problems. There is need, therefore, for more complementary relationships in their research efforts. It has often been said that most agricultural research results do not go beyond the researchers' desks, especially in the universities. It is time to reverse the trend through the strengthening of linkages between researchers and extensionists to facilitate the application of the findings to field situations.

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