Designing Effective Linkages for Sustainable Agricultural Extension Information Systems Among Developing Countries in Sub-Saharan Africa

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Abstract

Agricultural extension is the primary delivery system for information to farmers. Improving agricultural production may not be achieved without relevant and reliable agricultural information. In sub-Saharan countries, extension is a public service reaching out to a mostly subsistence farming population. The subsistence nature of farming in sub-Saharan countries justifies government intervention through public extension systems. To fulfill its mission of effectively educating and facilitating learning among farmers, extension organizations have depended on research institutions to provide relevant and reliable information on improved technologies and practices. The research-extension linkage, however, has been weak and is an institutional problem yet to be resolved. Exploring and institutionalizing linkages with other institutions is a strategy that extension organizations can use to keep current with new information. Farmers, universities and colleges, private organizations, and non-governmental organizations have not been fully acknowledged as potential information sources by extension organizations. Any existing relationships among extension and these institutions have been informal and indirect. These institutions, however, are rich in knowledge and information. They also provide dynamism in information generation that can greatly enhance agricultural extension information needs and subsequently improve services provided to farmers.
Introduction

Agricultural extension is primarily used as a means of information delivery to farmers. Improving agricultural production may not be achieved without an effective agricultural extension service, which is well linked to research information relevant to farmers needs. The main objective for any extension system is to be effective in communicating information that helps people in decision-making. The subsistence nature of farming in Africa like in other developing regions in the world, justifies government intervention in agricultural development through extension services. In most countries of sub-Saharan Africa, agricultural extension services are provided through the ministry of agriculture. The Training and Visit (T&V) extension system modified to suit each country’s agricultural goals is a dominant extension approach used in reaching farmers with information on agricultural production. The appropriateness and relevance of research findings and subsequent information used by extension agents to advise farmers is thus paramount for realizing meaningful agricultural development.

Information connects organization components together to provide better operation and survival in a competitive environment. The information system maybe likened to a nervous system in the human body (Babu, Singh, & Sachdeva, 1997). Information appraises, notifies, surprises and stimulates. Information reduces uncertainty, reveals alternatives, influences individuals and inspires them to act. This concept of information and information systems is useful to agricultural extension systems in Africa. The value of information about improved technologies in agricultural extension organizations in sub-Saharan Africa cannot be overlooked. Timely and reliable information will determine the kind of decisions that are made by extension agents and the overall performance of the extension organizations. When information is lacking or considered irrelevant to the needs of farmers, a situation of apathy and monotony arises reducing morale and overall effectiveness of extension agents.

Agricultural extension has the potential to stimulate agricultural development and is often used as a tool for implementing government policy. For instance, through extension government agricultural development policies such as promoting concern for the natural resource base and food security are translated into educational programs for farmers. Agricultural extension is recognized as the main link between farmers and research and crucial in communicating improved practices needed in agricultural development (Rivera & Carey, 1997; van den Ban & Hawkins, 1996; van Crowder, 1996). To fulfill its mission and be effective in educating and/or facilitating learning for farmers, an extension organization needs reliable and relevant information sources to enhance its educational resources. As indicated by The World Bank (1997), supply of appropriate technology is essential if extension investments are to be worthwhile and especially for public sector extension. When a continuous supply of technological improvements is lacking, returns on the cost of service given decline. Available technologies reach acceptance levels by farmers while no new relevant technologies are forthcoming. Sub-Saharan Africa is no exception and it is important to consider how access to information on new technology can be maintained to avoid reliance on basic standard recommendations that do not meet information needs of farmers.

Purpose of Paper

Based on review of literature this paper uses a philosophical perspective of issues arising from the weak status of research and extension linkages. The linkage concepts are discussed and their implication on information needs in extension organizations. Of
particular significance is the influence linkages have in replenishing information requirements in extension systems and its’ meaning for the training and education goals of extension organizations. The relevance of alternative and complementary linkages that provide reliable sources of information to sustain information needs for extension programs is suggested.

Theoretical/Philosophical Themes

Linkage and Information Concepts and their Relevance in Agricultural Extension

In sub-Saharan establishing a linkage with research institutions has been used as a strategy to insure extension agents are up-to-date with current research findings. The research-extension linkage however is well documented as being weak in many studies on agricultural extension. The gap existing between research institutions and extension organizations is often regarded as an institutional problem yet to be resolved in many sub-Saharan African countries (The World Bank, 2001).

Linkage is described by Agbamu (2000) as the communication and presence of a working relationship among two or more organizations with a common goal. The aim of the relationship is for regular contact and improved productivity. Agbamu (2000) refers to Havelock (1986) who argues that when barriers between two systems are permeable, messages and information flow one to the other creating a link. Kaimowitz, Snyder, & Engel (1989) define linkage mechanisms as specific organizational procedures used to maintain research-technology transfer links. The links may be officially sanctioned and follow specific patterns or they may be informal, based on personal relationships. Their studies on linkage mechanisms in developing countries, present approaches of formal linkage mechanisms, which include: subject matter specialists, publications, demonstrations, meetings and farming systems programs. These are linkage strategies common in many extension systems of sub-Saharan countries. Formal linkages are to an extent institutionalized and expected to follow a set of rules, informal linkages are rarely given much recognition.

Agriculture research and extension are examples of two systems that can be linked by information flow and feedback. The farmer falls in between research and extension and is expected to be the main target and beneficiary of their activities. Constraints that affect this research-extension linkage would therefore affect the outputs of farmers. Effective links would enhance output through the availability of information on improved agricultural technology and practices. The importance of insuring effective linkage maybe appreciated from a study completed in developed and developing countries to investigate existing research and extension linkages. The study by Agbamu (2000) proposes policy changes that foster institutional reorganization. It is also necessary to strengthen individual organizations to overcome the widely acknowledged weaknesses in research and extension linkages.

Agricultural Extension Systems Service for Farmers

The importance of public extension systems is justified by the realization that government funded extension services can effectively educate and advise farmers. Through public extension, farmers can obtain information that helps them reduce risks in farming. As Rivera & Cary (1997) point out, public extension systems function as coordinating organizations by regulating and providing service to clients who may otherwise not be reached by private organizations. The role of extension can be understood from a study completed in Kenya on agricultural knowledge and information systems (AKIS) by Rees,

The findings by Rees et al (2000) indicate that 40 to 70% of the respondents acknowledged the importance of the Ministry of Agriculture within which extension services are housed as an important source of information. However, farmers and extension personnel expressed their dissatisfaction with the quality and frequency of their interactions. Although 16 to 33% of the farmers reported receiving technical information, most of them indicated that information flow in this category was particularly deficient. Management of diseases in crops, acquiring certified seeds and appropriate varieties among other related practices were some subject matter areas of concern to farmers. The authors conclude that information problems in extension are constraints which if not addressed will continue to make government extension systems ineffective.

To the extension agent who works closely with the farmer, adequate technical knowledge is needed to help solve the farmer’s problems. Reliable and easy to access information sources become crucial, especially when the extension agent in contact with the farmer is not knowledgeable in a given subject. The extension administrator responsible for implementing agricultural development policy also needs sufficient information in order to make informed decisions. How to obtain information to meet the educational objectives of the extension organization is, therefore, a long-term commitment (van den Ban & Hawkins, 1996). Having a sustainable information system requires that information sources are reliable, offer practical alternatives and be an ongoing activity. To keep up with farmers’ needs, extension systems need to be continuously updated with viable alternatives.

Research and Extension Systems

Extension organizations have the important role of linking farmers to information on improved agricultural technologies. In an evaluation of the National Extension Project in Kenya, Gautam (2000) reports inadequate and infrequent meetings between extension agents and researchers. There is also a lack of adaptive research that incorporates extension agents in generating new messages. Subject Matter Specialists (SMS) in Kenya are for instance quoted as stating that the reduced number of training sessions is a result of having “nothing to say”. Such a situation creates concern and requires intervening strategies that will provide the regular flow of new information. The World Bank (2001) indicates that if Extension organizations are to fulfill their educational role effectively, they need access to current and improved agricultural practices. The presence of reliable, uninterrupted knowledge and information sources will provide extension agents with an educational resource base to provide improved agricultural recommendations for farmers. The Training and Visit (T&V) extension system adapted in several countries of sub-Saharan Africa for instance sought to improve extension information systems through strong research and extension linkages. T & V was specifically designed to deliver technical messages regularly and in time to farmers (Benor & Baxter, 1984).

Extension systems are expected to guide, provide expert information and be mentors, as they help farmers find solutions to their problems. Providing a range of options from which farmers can choose is therefore central to the learning process (van den ban & Hawkins, 1996). Moris (1991) indicates the need to replace ‘top-down’ conveyor belt model that dominates research-extension linkages in Africa. The linear characteristic of the research-extension relationship has not provided extension systems with incentives to
develop their own information bases. The linear system has created a dependency on research for new technologies, which leaves extension systems in a state of ineffectiveness when such linkages fail. Gautam (2000) points out that when progress in the generation of technology is slow and there is limited adaptive research, new messages diminish. Training sessions and field visits by extension agents become repetitive and unproductive. Consequently, staff motivation and morale decline as was observed in the National Extension Project (NEP) II in Kenya.

Role of Other Institutions in Extension Service

The linear research extension models in sub-Saharan Africa borrow heavily from the adoption/diffusion process. Diffusion research has overlooked the role of the farmer in the development of innovations and the determination of their usefulness to different categories of farmers (van den Ban & Hawkins, 1996). Although the knowledge of farmers is often acknowledged, their contributions are yet to be officially documented by extension institutions as important information references. Rural people are an important source of knowledge for agricultural development and their time-tested systems of production attest to the existing wealth of agricultural knowledge (van Crowder, Lindley, Bruening & Doron, 1999). Moris (1991) stresses the importance of identifying and evaluating farmers’ indigenous technical knowledge and also encouraging farmer-farmer information exchange. Vertical top-down extension methods need to be replaced by horizontal communication linkages that encourage two-way flow of information.

Non-Governmental Organizations (NGOs) are now recognized in developing countries of sub-Saharan Africa in their success in reaching the poor. NGOs have developed and provided information to farmers especially when extension has been ineffective. Extension agencies however have not considered the role NGOs could undertake in extension information systems (ISNAR, 1998; van den Ban & Hawkins, 1996). Universities and colleges have trained most of the extension agents working in ministries of agriculture in developing countries of Africa. However, agricultural extension programs are rarely planned with input from universities because of institution separation. Universities, however have comparative advantage in terms of dynamism in research over national government organizations. The contributions of universities to agricultural development can be promoted through improving linkages with users of research and focusing research on farmers’ needs. As centers of research, universities can be a reliable information source for extension agents strengthening the agricultural extension information system (ISNAR, 1998).

Extension organizations, research institutions, farmers groups and organizations and universities are all stakeholders in the extension educational process. Through drawing from the information available in different institutions, extension organizations can insure that extension agents have access to relevant information at all times. Any previous associations among these institutions have been informal and operating on temporary interactions. Institutionalizing the linkages among all stakeholders however would make the linkages more permanent and formal. As Kaimowitz et al (1989) pointed out, formal mechanisms enhance mutual expectations and grow with time. Formal mechanisms have the potential to increase commitment to the development of a strong information system within the extension organizations. Collaboration, bottom-up information flow and horizontal linkages among the contributors should characterize the model for sustaining the agricultural extension information system.
Conclusion
An extension system should display ability to be effective and efficient in achieving its educational goals. Revitalizing research-extension linkage in developing countries of sub-Saharan Africa is one way of meeting information needs of extension organizations. At the same time collaboration with other organizations and institutions can enrich the agricultural extension information systems and their capacity to enhance agricultural development. Exploring and institutionalizing linkages with other organizations presents a viable strategy for extension organizations to obtain current information and educational resources for use when reaching out to farmers. It would also help maintain the relevance of public extension systems in the 21st century.

Universities are a reliable source of information that has not been exploited by extension organizations. Interest in collaborating with universities beyond training of extension agents provides the challenge for farmer focused research useful to extension organizations. Farmers have a wealth of agricultural knowledge used in many farm operations that extension has rarely tapped. Recognizing and officially acknowledging farmer input in agricultural extension information system can be significant in extension program planning efforts. Non-governmental organizations have contributed tremendously in training and educating farmers and can supplement information needs to extension organizations. The challenge for extension organizations is therefore, to explore mechanisms that will expand and maintain information sources, and improve storage, production and dissemination of information. Effective partnerships will however need to be supported by government policy that recognizes the potential contribution of each institution in the agricultural development process.

Educational Importance
The role of any extension organization is to educate farmers so that they can make decisions that improve agricultural production. In sub-Saharan Africa, public extension organizations still play an important role in coordinating agricultural information for the many subsistence farmers. Organizational strategies that overcome information constraints are crucial in view of the existing weak research and extension linkages. The effectiveness of extension agents depends not only on the skills they bring with them into the organization but on continuous ability to address the emerging information needs of farmers. To explore ways of sustaining agricultural knowledge/information systems is to confirm the importance of educating farmers to meet agricultural development goals. Constant access to current agricultural knowledge and information is also a motivating factor towards professionalism among of extension agents when dealing with agricultural production issues encountered by farmers.

References


