LINKAGES AMONG RESEARCH, EXTENSION AND FARMERS - A REVIEW

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ABSTRACT

Whether the agricultural research succeeds or fails as a catalyst to any nation’s development depends largely on how well researchers and extension personnel communicate and cooperate with each other. In this regard, close and reciprocal interaction among research, extension and farmers is mandatory which could lead to design and delivery of appropriate technology. The status of linkages between research and extension, extension and farmers and research and farmers has been highlighted and also the indicators which could measure the linkage strength among the above actors in the development are reviewed.

For development of agriculture, an effective linkage between the research, extension and clients is the pre-requisite besides meeting the other requirements as input supply, market outlet and related infrastructure. Most important interpretation for agricultural researchers is that the needs of farmers should be adequately mapped and considered while designing the research agenda. Whether the agricultural research succeeds or fails as a catalyst to any nation’s development depends largely on how well researchers and extension personnel communicate and cooperate with each other. Comprehending the linkage among these three actors of development have been the matter of interest to the social scientists, and the literature has witnessed a tremendous shift in the form, nature and pattern as explained by several researchers. While some of them have explained linkage only on single parameter, others have attempted to make it multi-dimensional. The information generated in this process requires to be reviewed and synthesised in order to make a useful literature-pool to be used by development administrator and researchers alike. In the present article, authors have attempted to make detailed elaboration of the intangible issue i.e. linkages among the three actors in agriculture development, on all possible dimensions.

STATUS AND TRENDS OF COMMUNICATION RESEARCH

Since sixties, a large number of studies have been undertaken on farmers, extension and research interaction, but the system approach was missing and the study remained confined on communication behaviour of different segments of farmers-extension-research continuum. Most of the Indian studies reported diverse communication channels/sources in the different stages of the innovation decision process. Personal cosmopolite channels were reported important (Kapoor, 1966; Sarkar, 1981; Singh, 1989), followed by personal localite channel (Ernest, 1973; Sawant et al., 1979) at the knowledge stage. Similarly, importance of these channels/sources were recognized at persuasion stage (Reddy and Singh, 1977; Babu and Sinha, 1985) and at decision making stage (Rogers and Pitzer, 1960; Sinha and Prasad, 1966; Singh, 1989) of innovation-decision process. It was also highlighted that for technically complex information, cosmopolite channels were important (Sandhu, 1967; Singh and Jha, 1971). Studies in later eighties showed the influence of mass media on Indian farmers as a source of information (Tyagi and Sohal, 1984; Bhagat and Mathur, 1985; Gupta, 1991).

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India, albeit, maintained that agricultural communication, by and large, followed a system approach (Singh, 1988). This consisted of three distinctive subsystems; the research system, the extension system and the client system. This approach, however, was highly top-down in nature and suggested that the function of client system were the "adoption of innovation" and "feedback".

Jones (1990) used a system perspective to apply a holistic approach to a relevant defined whole and the activities within it. He emphasized the flexibility of the system as a concept. Similarly, studies by Singh (1970), Havelock (1971), Nagell (1980), Swanson et al. (1984), Ambastha (1986), Samantha (1990), Delman (1991) and Rolling and Engel (1992) unequivocally agreed that a system perspective was helpful to a discussion of information transfer in agriculture. In the consonance with above authors, Malik (1993), Bharati (1993), Singh (1994) and Gupta (1998) studied the communication among research, extension and farmers with linkage systems perspective.

LINKAGES BETWEEN RESEARCH AND EXTENSION

Most of the early attempts to understand the linkages between research and extension were in the form of communication linkage. This envisaged the information flow pattern between these two in terms of information input, information processing and information output pattern (Lionberger and Chang, 1970; Ambastha and Singh, 1977; Sanoria and Singh, 1978; Reddy, 1984; Verma, 1987; Alzahrwal, 1992; Singh, 1998). At the same time, however, authors like Lionberger and Chang (1970) and Ganorkar and Khonde (1979), Reddy (1984) highlighted the media and methods used by researchers and extensionists to communicate with each other. They reported that personal contact, training, meeting, extension activities, literature and radio were some of those media and methods. Such type of studies lacked linkages perspective and hence the extent of mutual and reciprocal interaction between research and extension could not be explored and worked out. However, to strengthen the process of design and delivery of agricultural technology, the need for strong reciprocal linkages between research and extension was greatly recognized (Jain, 1970; Azad, 1975; Rao and Sohal, 1978). From late eighties, there have been growing awareness at global fora to strengthen the research and extension linkage to a maximum possible extent. Seegers and Kaimowitz (1989), after reviewing the survey of research-extension link in 18 countries concluded that although extension feedback to research is more common in higher resources system, extension workers are also the main source of researchable ideas in any country. Based on the study of Souder (1980) on impact of linkage in product development by the research and development projects in USA, Kaimowitz (1990) derived two key lessons applicable for any research managers. These were - a) vitality of strong link with extension workers and farmers for technology development and delivery, and b) according high priority to solve linkage related problems. Rolling (1989) and Merill-Sands et al. (1990) also held the similar opinion.

At the national level, it was found that the linkage between CSIR and ICAR at higher level and coordination between district level information delivery system for agriculture, industry, cottage, etc. was quite weak (Gupta, 1991).

Singh et al. (1991) stated that in the training and visit system, there is well-defined linkage structure at all level, i.e., central, state, regional and district. It was, however, a matter of great concern that these linkage points were not functioning as anticipated in the programmes in some states. Rahiman (1991)
also revealed the presence of appreciable structural linkage between extension and research system, but the functional linkage was not that encouraging.

Malik (1993) found that the linkage between research and extension personnel of various levels and cadre was inadequate in Haryana owing to number of limiting factors. Similarly, in a comprehensive study of dairy development in Haryana with a systems perspective, Bharati (1993) noted that there was considerable gap between the means of desired interaction and actual interaction between research and extension personnel.

Singh (1994) reported that most of the research and extension personnel (about 63%) expressed rare (1-5%) to very low (6-15%) extent of functional linkage between them. His study also revealed that there was relatively better linkage between research and extension in agriculture (20%) than in livestock (4-5%). On the various parameters of functional linkage, respondents from college of agriculture and SDA felt a good linkage on communication, decision making and training in that order. However, very poor communication linkage between research and extension was noted between College of Veterinary and SDAH. On the other parameters, viz., planning, team work, decision making and supply and services, the functional linkage was poor. In a study to understand the dairy knowledge and information system (DKIS) in the Karnal district of Haryana, Gupta (1998) reported weak to absent linkage between research and extension within National Dairy Research Institute (NDRI), Karnal and between NDRI and State Department of Animal Husbandry (SDAH).

With respect to the effective functional linkage between research and extension, several researchers have argued about the effectiveness of functional linkage vis-a-vis their organizational arrangements. Some of them have supported to keep research and extension in the same organization, while others have advocated for their separation. Bourgeois (1989) have cited two major advantages of merging research and extension in one organization. First, organizational proximity can promote a shared goal and facilitate communication and collaboration between them. Second, merging assume to increase efficiency. Kessaba (1989), Pineiro (1989) and Antholt (1990) also reiterated the similar arguments. Trents (1989), however, on the basis of his experience in Gambia, said that merging two groups in one institution/unit is no guarantee that they will work together. More clearly, merging at the institutional or team level would not eliminate the need to manage links, it can make the need still more acute. In the similar orientation, Eponou (1993) found that integration of research and transfer was rated as fair to good in only one of the five subsystems, where two groups were merged. On the other hand, Kaimowitz (1989) opined that research and technology transfer in one organization create stronger link between them and it should be considered only under certain situation. On the basis of comparative analysis of two institutions in Colombia, he identified following requirements:

- Research and technology transfer share a common goal and sharply focused area of concern,
- Human, financial and managerial resources are adequate to support linkage activities, and
- Managers have a strong commitment to make the two group work together without politicizing them.

Kaimowitz (1989) further argued that where these conditions do not hold, it is probably better to keep the two activities separate.

LINKAGES BETWEEN EXTENSION AND FARMERS

There is hardly any sense of the technologies unless and until these are delivered to the ultimate users. The effective dissemina-
tion of the appropriate technology is a function of the effective interaction between extension personnel and the farmers. This part of article reviews the earlier works done with respect to reciprocal interaction between extension and farmers.

The work by Aukhouri (1973), Ambastha and Singh (1976) and Sridhar and Reddy (1977) revealed that extension personnel used office calls, farm and home visits, group meeting, training and demonstrations as the main channels/media of interaction with farmers. Similar findings were also reported by Reddy (1984), Babu and Sinha (1985), Verma, (1987) and Rao (1992). Similarly, Malik (1993) and Singh (1998) studied the interaction and communication dynamics between extension and farmers, and reported a number of media utilized by them. Various studies only indicated the media/sources commonly utilized by farmers in order to seek information related to improved farming. The most important sources and methods used were extension workers, progressive farmers and friends (Ganorkar and Bhugal, 1978; Ganorkar and Khonde, 1979); opinion leaders, veterinary officers (Sawant et al., 1979; Reddy, 1984) and group discussion, cosmopolite and mass media sources, and farmer-to-farmer approach (Singh, 1989; Hall, 1992; Sihag and Grover, 1992; Malik, 1993).

These literature indicate that extension-farmer continuum was studied in isolation and researchers seldom attempted to study interaction between these two actors of development with linkage perspective. In yet another improved version of investigation, Gupta (1998) studied linkage of farmers and extension personnel from the view points of joint diagnosis of problem to design and implementation of solution together. The author, however, could not find any encouraging strength of linkage between two. Extension and farmers interaction was observed to be top-down in nature and almost nil participation of clients was noted in development activities. The similar findings were also reported by Sharma and Rao (1998).

**LINKAGES BETWEEN RESEARCH AND FARMERS**

In order to develop synchronous perception about meaningful research, the scientists and the farmers have to develop a systematic interaction on a symbiotic basis. A system may ensure more meaningful research which would have direct bearing on farmers economy (Pant, 1994). In the similar vein, Rolling (1989) advocated the direct links of research with farmers in order to ensure that research focuses on priority needs and problems. He further argued that this reversal is essential if applied research is to produce the technology required to fuel agricultural development. In further elaboration, Biggs (1989) identified four distinct modes of farmers participation in research and these were contract participation, consultative participation, collaborative participation and collegiate participation. Gadewar and Ingle (1993) also supported these modes of farmers participation. Merill-Sands et al. (1990), however, were doubtful that involving farmers in research is not easy. The farmers' participation was more difficult than initially expected. Involving farmers actively in priority setting, planning and review of research were challenging to institutionalize. Yet, Rolling (1989) and Ashby (1990) positively argued that the full benefits of participation are gained only when farmers have active role in setting the course of action. Investigating the absence of linkage between research and farmers, Pickering (1985) found that it was the richer farmers who benefitted from improved recommended technologies, since recommendations based on optimal returns to particular enterprise were often too difficult or risky for a small farmer to apply. Moreover, lack of such feedback also made the research system unrespon-
The works done during seventies to mid eighties, researchers like Ambastha and Singh (1977), Reddy (1984) and Verma (1987) and others studied linkage using single parameter, i.e., communication, and this was operationalised as the media/channel/sources used by researchers, extension personnel and farmers to exchange, disseminate and receive the information. Even in early nineties, Malik (1993) and Bharati (1993) studied the linkage on only parameter of communication, yet in a bit improved version.

The global scenario, however, was different. In order to strengthen the linkage between research and technology transfer, ISNAR conducted studies in nine developing nations. Kaimowitz (1987), during these studies, identified common areas of functions between research and technology transfer in terms of communication, training, and services, input feedback, and testing and adaptive researches.

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As Prasad and Reddy (1991) has rightly pointed out the linkage being intangible in nature, measuring the same is often difficult. During late eighties and nineties, however, some of development administrators and research managers have attempted to identify the parameters/indicators/variables on which linkage strength could be assessed. In the present subhead, hence, parameters used by earlier researchers have been reviewed.

The literature reviewed in above subheads clearly indicated that research-extension-farmers linkages were studied in terms of several mutually exclusive continuum. Haverkort and Rolling (1984), however, stressed that agricultural development requires a "mix of conditions". Haverkort et al. (1988) further advocated for participatory technology development in which farmers, researchers and extension workers cooperate in the effort to improve technology. They also argued that the target population should be involved in policy formulation and decision making right from beginning. Samanta (1991) suggested that farmers group and field workshop could be few useful way to help elicit farmers' ideas to improve communication and foster local initiative. Discussing about Korean perspective, Cho (1996) highlighted the systematic participation of extension specialists in research through institutionalized meetings and others alike forum. Similarly, Balakrishna (1997) strongly advocated for the mutual and reciprocal interaction among researchers, extension personnel and farmers.
Similarly, Singh (1994) measured the extent of linkage between scientific and extension personnel on the indicators like planning, decision making, implementation, evaluation, communication, team work, supply and services, and training in his study conducted in U.P.

Nawab and Lawrence (1995) in their study on linkage among research, extension and farmers in Pakistan used the indicators like communication, participation in research and extension activities and feedback as the important parameters to link them with each other.

Gupta (1998) studied linkage among research, extension and farmers on the parameters like joint identification, planning and designing, and implementation of research and extension activities.

CONCLUSION

The literature reviewed in above sub-heads revealed that in most of the early efforts to explain linkage between research, extension and farmers, the only parameter considered was communication and it was operationalised as the media/channel/method used by the researchers, extension personnel and farmers to interact with each other. It was, however, noticed that some of the workers at global and national level attempted to investigate into this matter by including a few more parameters. Literature also revealed that except extension-farmers linkage, the linkage on the other two combinations, i.e., Research-Extension and Research-Farmers were absent to weak and in some cases moderate. Based on the above trends of literature, following points are recommended for the extension researchers:

• Attempt should be made to investigate into the existing structural linkage mechanisms developed by the concerned organisation/department to combine research, extension and farmers.

• In future studies on linkages, more number of parameters/indicators of functional linkages should be taken in order to come out with better understanding of the linkage.

• Attempts should be made to quantize the strength of functional linkage between researchers, extension personnel and farmers. This objectivity will be greatly useful to the development administrators, extension managers and policy makers to design the linkage strategy as effectively as possible. However, a qualitative study with case study approach is not ruled out in future investigation.

• The factors affecting the strength of linkage are required to be objectively identified and delineated in future researches.

• Besides the above three, more number of actors of development as input supplier, financial institutions, rural institutions and other informal sources of knowledge and information as traditional wisdom, farmer-farmer linkage and alike should be included in future investigations.

REFERENCES


