A study on different AKIS actors on agricultural knowledge and information dissemination

ABSTRACT:

The study on the Agricultural Knowledge Information System (AKIS) in the Jalpaiguri District of West Bengal (2017-2023) aimed to understand the actors involved and their inter-linkages for disseminating agricultural knowledge and information. It focused on three blocks: Jalpaiguri Sadar, Maynaguri, and Dhupguri. The findings indicated a high linkage diversity (average value of 0.79), suggesting a dense network of connections among actors. However, the linkage strength was weak (average value of 0.15), highlighting that while a broad network of interactions exists, the effectiveness of these connections needs improvement. Despite challenges in mobilizing officials for data collection, the study provided valuable insights into the AKIS in the district.

Keywords: AKIS, Actors, Linkage Diversity, Linkage Strength, Jalpaiguri

INTRODUCTION:

Agricultural Knowledge and Information Systems (AKIS) form an integrated framework that combines agricultural research, extension, and education to generate and disseminate new knowledge to farmers. This network comprises various actors and perspectives, including farmers, researchers, educators, extension agents, local leaders, NGOs, the private sector, and more. These actors collaborate to support decision-making, problem-solving, and innovation in agriculture through processes such as knowledge creation, transformation, transmission, storage, retrieval, integration, diffusion, and utilization. The effectiveness of AKIS lies in its ability to create synergistic systems where research and extension are seen as interconnected participants in a unified system. This interconnection facilitates the translation of research findings into practical farming practices through strong links and relationships between the actors.

Many developing countries face challenges with poor collaboration between national agricultural research and extension organizations, as well as with different categories of farmers and farm organizations. By improving farmers' access to agricultural information and strengthening the linkages between various actors, AKIS can better target and serve the needs of farmers. The role

of extension services and information transfer has evolved significantly over the past few decades, yet extension policies and approaches have often lagged behind these technological advancements. The influence of social network linkages on the dissemination of agricultural knowledge is critical, as effective information links can accelerate the adoption of new technologies. Conversely, poor information links can hinder the transfer and uptake of technology among rural farmers in emerging nations.

This study aims to investigate the actors involved in AKIS and their inter-linkages with respect to agricultural knowledge and information dissemination, highlighting the importance of these networks in achieving agricultural development and prosperity for farmers.

METHODOLOGY

The study was conducted in the Jalpaiguri district of West Bengal from 2017 to 2023, focusing on three randomly selected blocks: Jalpaiguri Sadar, Maynaguri, and Dhupguri. It assessed the linkage of various institutional sources responsible for the generation and dissemination of agricultural knowledge and information. These linkages were measured across five dimensions:

1. Policy and Administrative Dimension
2. Research Dimension (technology generation and backstopping)
3. Extension Dimension (technology dissemination through training and demonstration)
4. Resource Dimension (manpower and fund sharing)
5. Service Dimension (product marketing, consultancy, etc.)

The study included a variety of organizations:

- Public Organizations: Krishi Vigyan Kendra, line departments (agriculture, animal resources, fishery, horticulture, soil conservation, etc.), Agricultural Technology Management Agencies, banks.
- Private Organizations: Input dealers, corporate sectors.
- NGOs
- Farmers' Producer Organizations

- Farmers Clubs

The quantity and quality of linkages among the actors were assessed using two constructs: Linkage Strength and Linkage Diversity. Linkage Strength measures the quantitative achievement of an actor based on the total number of dimensions of linkage established within an AKIS. On the other hand, Linkage Diversity highlights the qualitative expansion of linkages built by an actor with all other actors participating in the AKIS.

RESULTS AND DISCUSSIONS

In the Jalpaiguri district, the agricultural knowledge and information network consists of public, private, non-governmental, autonomous, and farmer networks as actors within the AKIS. Table 1 presents the AKIS actors and their services in the agricultural knowledge and information network.

Table 1: AKIS services undertaken by different actors of AKIS in Jalpaiguri district.

AKIS actors	AKIS services undertaken (Superscript indicates Block under study)	Key for AKIS services
1. Krishi Vigyan Kendra	ACFGHIJKMN^{1,2,3}	A=Input supply; B=Output marketing; C=Market information; D=Loans and other forms of credit; E=Providing subsidy; F=Technology backstop; G=Training for knowledge development; H=Training for production skill development; I=Training for business skill development; J= Providing educational services; K=Providing welfare services; L= Facilitate access to development institution for different services; M= Implementing govt. development schemes; N=Providing weather, climate and
2. Agriculture department	ACEFGHJKM^{1,2,3}	
3. Horticulture department	AEFGMN^{1,2,3}	
4. Animal Resource department	AFGHIM^{1,2,3}	
5. Fishery department	ACDEFGHM^{1,2,3}	
6. Soil Conservation department	GHM^{1,2,3}	
7. Agricultural Technology Management Agency	ACEFGHM^{1,2,3}	
8. Farmers Club	ABCHM^{1,2,3}	
9. Farmer Producer Organization	ABCHM^{1,2,3}	
10. Farmer’s Cooperative	AGKM^{1,2,3}	
11. Private Company	A^{1,2,3}	
12. Input Dealer	A^{1,2,3}	

13. NABARD	DEFGHILM[1,2,3]	ecological services. 1=Jalpaiguri Sadar block 2=Maynaguri block 3=Dhupguri block
14. Nationalized Bank	DM[1,2,3]	
15. Microfinance Institute	DM[1,2,3]	

It is evident from Table 1 that among the different actors, Krishi Vigyan Kendra, the Agriculture Department, the Fishery Department, NABARD, and the Agricultural Technology Management Agency undertake the highest number of AKIS services in the Jalpaiguri district. They are followed by the Horticulture Department, the Animal Resource Department, Farmers Clubs, Farmer Producer Organizations, Farmers Cooperatives, the Soil Conservation Department, Nationalized Banks, Microfinance Institutes, Private Companies, and Input Dealers, which provide a limited number of services. It is also observed that all the actors provide comparable types of services across all the studied blocks in the Jalpaiguri district. This suggests that Jalpaiguri is uniform in its access to the services of AKIS actors based on their functions. The consistency in service provision indicates that the district is uniformly served by AKIS actors across its various blocks.

Table 2: Inter-Linkage among AKIS actors in Jalpaiguri district.

AKIS Actors	**Linkage Diversity** (Densest=1, Thinnest=0)			**Linkage Strength** (Strongest=1, Weakest=0)		
	Jalpaiguri sadar	**Maynaguri**	**Dhupguri**	**Jalpaiguri sadar**	**Maynaguri**	**Dhupguri**
1. Krishi Vigyan Kendra	**0.91**	**0.91**	**0.92**	**0.38**	**0.34**	**0.39**
2. Agriculture department	**0.90**	**0.89**	**0.89**	**0.29**	**0.26**	**0.26**
3. Horticulture department	**0.82**	**0.82**	**0.82**	**0.16**	**0.13**	**0.13**
4. Animal Resource department	0.74	0.74	0.74	0.09	0.09	0.09
5. Fishery department	0.74	0.84	0.81	0.09	0.18	0.15
6. Soil Conservation department	0.78	0.78	0.78	0.13	0.13	0.13
7. Agricultural Technology Management Agency	**0.88**	**0.86**	**0.81**	**0.25**	**0.24**	**0.17**
8. Farmers Club	**0.88**	**0.88**	**0.86**	**0.29**	**0.28**	**0.25**
9. Farmer Producer Organization	**0.88**	**0.88**	**0.88**	**0.29**	**0.28**	**0.28**
10. Farmer's Cooperative	0.80	0.80	0.67	0.05	0.05	0.03
11. Private Company	0.86	0.86	0.86	0.07	0.07	0.07
12. Input Dealer	0.75	0.67	0.75	0.04	0.03	0.04
13. NABARD	**0.84**	**0.84**	**0.84**	0.11	0.11	0.11
14. Nationalized Bank	0.63	0.63	0.63	0.04	0.04	0.04
15. Microfinance Institute	0.50	0.50	0.50	0.02	0.02	0.02
Average Value	***0.79***	***0.79***	***0.78***	***0.16***	***0.15***	***0.14***
Statistical Implication (Kruskal Wallis Test)	*H=0.151 (p=.927)*			*H=0.071 (p=.965)*		

Table 2 presents the quality and quantity of linkages among the actors of AKIS in the Jalpaiguri district of West Bengal. The table shows that Krishi Vigyan Kendra (KVK) achieved

the highest position in both linkage diversity and linkage strength among all actors. KVK is a district-level institute that serves as a knowledge and information resource center to promote agricultural and rural development. Its activities are spread across the district, building links with all other actors in an AKIS through a convergence mode.

Similarly, the Agriculture Department, Farmers Clubs, Farmer Producer Organizations, Agricultural Technology Management Agency (ATMA), and the Horticulture Department play significant roles in agricultural and rural development. The values of both linkage diversity and strength for Krishi Vigyan Kendra, Farmers Clubs, and Farmer Producer Organizations reflect this fact. Line departments such as Agriculture, ATMA, and Horticulture also contribute significantly to agricultural knowledge and information dissemination. In an era of pluralistic extension, all service providers are interconnected to deliver agricultural services to end-users. Such interrelated networks enhance performance, which may stimulate increased agricultural productivity.

The average values of linkage diversity among all the AKIS actors in different study blocks indicate that the quality of inter-linkages is high, whereas the strength of these linkages is lower, supporting previous findings. This observation suggests that the inter-linkage network among the actors at the block level is dense but not particularly strong.

According to the Kruskal-Wallis test (H-value), both linkage diversity and linkage strength are not significant, revealing that the entire district is homogeneous in terms of interlinkages among AKIS actors for agricultural knowledge and information exchange.

CONCLUSION

Jalpaiguri, located in northern West Bengal, features a diverse array of actors in its Agricultural Knowledge and Information Systems (AKIS), including public, private, autonomous, individual, and non-governmental organizations. These stakeholders are interconnected across five key dimensions: policy and administration, research, extension services, resources, and direct services. The district shows a high linkage diversity (average value=0.79), indicating a dense network among AKIS actors, despite relatively weak linkage strength (average strength value=0.15). This study explores the intricate connections facilitating agricultural information dissemination across various state organizations to benefit local farmers.

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