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An analysis on farmer extension information needs fulfilment by extension service systems in Telangana

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Abstract

Agriculture plays a crucial role in the socio-economic development of India, providing livelihood to a significant portion of the population. Telangana, one of India's youngest states, has a rich agricultural heritage with diverse agro-climatic conditions. The state's agricultural productivity is influenced by various extension service systems that facilitate the dissemination of knowledge, technologies, and practices among farmers. Agricultural extension services act as a bridge between research institutions and the farming community, ensuring the adoption of modern techniques and sustainable practices. This paper focused on the information needs of farmers from three extension service systems in Telangana i.e., Public, Private and NGO extension service systems. *Ex-post facto* research design was adopted for the study with a total sample of 135 farmers. From the analysis, it was found that the Mean Fulfilment Score of farmers of public extension service system for all the four components was higher compared to MFS of farmers of private and NGO extension service systems.

Keywords: Public, private, NGO, extension service systems

Introduction

In modern agriculture, information is a critical input. Over time, farming has become increasingly knowledge-intensive. As Bertolini (2004) ^[2] emphasizes, knowledge and information play a crucial role in accelerating agricultural development by enhancing production, marketing, and distribution. Agricultural information interacts with other production factors, such as land, labour, capital, and managerial skills, ultimately improving their productivity when the information is relevant, reliable, and useful (Vidanapathirana & Nisansala, 2012) ^[9].

Maningas *et al.* (2000) ^[6] highlight that access to information empowers farmers by enabling better control over their resources and decision-making. Without access to new knowledge, farmers often rely on traditional agricultural methods and oral recommendations from peers (Kalusopa, 2005) ^[5]. In such cases, farming decisions are primarily based on experience, trial and error, and conventional practices (Mittal & Tripathi, 2009) ^[7]. BIRTHAL *et al.* (2015) ^[3] found that farmers who actively use information sources except sub-marginal farmers achieve significantly higher net returns per hectare, with greater benefits as their information use increases. Given the complexities of agricultural production, farmers require

information on various aspects at different stages before adopting new technologies. Their information needs include weather forecasts, pest outbreaks, input availability (such as seeds and fertilizers), improved cultivation techniques, pest and disease management, and market prices (Aker, 2010) ^[1]. Additionally, farmers exhibit different levels of engagement in seeking and utilizing information. The structure of organizations involved in agricultural information dissemination also plays a key role (Demiryurek *et al.*, 2008) ^[4].

Sulaiman and Sadamate (2000) ^[8] observed that nearly half of the farmers were willing to pay for extension services, largely due to diversification into high-investment, non-food crops that require more specialized knowledge. Agricultural extension remains a key instrument for agricultural development worldwide, serving both as a means of technology transfer and human resource development. Traditionally, agricultural extension was viewed as the application of scientific research and new knowledge to farming practices through farmer education. Today, however, it encompasses a wide range of activities organized by professionals from various disciplines to benefit the farming community. Agricultural extension provides situational and need-based knowledge and skills to

rural farmers engaged in traditional agriculture in informal settings. It is an educational process aimed at fostering positive changes in farmers' behaviours. The origins of agricultural extension services are unclear, but the modern extension system is believed to have emerged in Ireland in the mid-19th century. In India, efforts toward rural and agricultural development were initiated by visionary individuals in the past. However, after independence, the central and state governments took on the responsibility of implementing extension programs. Agricultural extension services involve offering advisory support, helping farmers identify challenges and opportunities, and sharing relevant information with them.

Agriculture plays a transformative role in society and contributes to national development. Agricultural products help address food security challenges, and an advanced agricultural sector relies heavily on information and knowledge. By leveraging available resources effectively, farmers can enhance productivity and meet their agricultural needs. Research and development are key drivers of agricultural progress, as knowledge generation fosters innovation and improvements in farming practices. Ultimately, agriculture and information are deeply interconnected. Adequate, timely, and affordable access to information is essential for farmers to carry out daily farming activities and market their produce efficiently. Since agriculture holds significant economic importance, particularly in developing countries, effective information dissemination is crucial to meeting farmers' needs and driving sustainable agricultural development.

Objective

To analyze the extension information needs and expectations of the farmers from selected extension service systems

Methodology

In this study, state of Telangana was purposively selected and all the three agro climatic zones were considered for selection of districts. i.e., North, South and Central zones. One district from each zone, thus a total of three districts

were selected randomly for the study viz., Rangareddy, Warangal and Karimnagar. With respect to the selection of extension service systems, in case of public extension service systems, *Krishi Vigyan Kendra, District Agricultural Advisory and Transfer of Technology Centres* and *State Department of Agriculture* were selected purposively. In case private extension system, *Corteva, Syngenta* and *Bioseed* companies were selected purposively. Under NGO extension service system, *Centre for Sustainable Agriculture (CSA), Modern Architects of Rural India (MARI), Sankalp* and *Sarvodaya* were selected purposively. Fifteen farmers from each extension service system were selected from the list of farmers provided by the selected extension service system using random number generator.

The data from the farmers on extension information needs was collected with the help of closed-ended schedule. Data collected was analyzed and interpretations were drawn based on results. Mean Perceived Score (MPS), Mean Fulfilment Score (MFS) and Kruskal Wallis Test were used in the study for drawing the conclusions related to the information needs of the farmers.

Results and Discussion

The data was collected from the farmers on extension information needs were analysed, interpreted, and accordingly the following results and conclusion were drawn.

A. Extension information needs fulfilment and their comparison across three extension service systems

Table 1: Farmers' needs related to crop production and extent of their fulfilment from the agricultural extension service system (n=135)

S. No.	Extension service system	MFS
1.	Public Extension Service System	41.17
2.	Private Extension Service System	32.82
3.	NGO Extension Service System	28.11

*MFS: Mean Fulfilment Score

Table 2: Kruskal Wallis test for MFS among farmers of public, private and NGO extension service systems and level of significance(n=135)

Extension service system	n	Mean rank
Public Extension Service System	45	92.60
Private Extension Service System	45	66.51
NGO Extension Service System	45	44.89
Total	135	
Kruskal Wallis Test Statistics		
Chi-Square		34.048
df		2
Sig.		0.000

It can be concluded from the above tables that the public, private, NGO extension service systems were fulfilling the information needs related to crop production by providing information on selection of varieties and sources of good quality seeds, land preparation, soil fertility parameters, soil testing facilities, equipment and implements required for agricultural operation, different sources and availability of fertilisers, recommended dosage of fertilisers for crops,

details of registered dealers for fertilisers, scheduling and methods of irrigation for the crops and quality parameters of irrigation water. From the table 2. it can be inferred that public extension services (92.60) were significantly superior in the fulfilment of the crop production needs of farmers followed by private (66.51) and NGO (44.89) extension service systems.

Table 3: Farmers’ needs related to crop protection and extent of their fulfilment from the agricultural extension service systems (n=135)

S. No.	Extension service system	MFS
1.	Public Extension Service System	31.11
2.	Private Extension Service System	25.26
3.	NGO Extension Service System	23.15

Table 4: Kruskal Wallis test for MFS among farmers of public, private and NGO extension service systems and level of significance (n=135)

Extension service system	n	Mean rank
Public Extension Service System	45	87.98
Private Extension Service System	45	66.13
NGO Extension Service System	45	49.89
Total	135	
Kruskal Wallis Test Statistics		
Chi-Square		21.726
df		2
Sig.		0.000

It can be concluded that the public, private, NGO extension service systems were fulfilling the information needs related to crop protection by providing information on different pesticides and their uses, preventive gear during application of pesticides, preventive measures for controlling pests and diseases, different weedicide chemicals for controlling weeds, nutrient requirement and knowledge on symptoms of nutrient deficiency and ETL. From the table 4. it can be inferred that public extension services (87.98) were significantly superior in fulfilment of the crop protection needs of farmers followed by private (66.13) and NGO (49.89) extension service systems.

Table 5: Farmers’ needs related to crop harvesting and post-harvest and extent of their fulfilment from the agricultural extension service systems (n=135)

S. No.	Extension service system	MFS
1.	Public Extension Service System	20.73
2.	Private Extension Service System	16.37
3.	NGO Extension Service System	15.11

Table 6: Kruskal Wallis test for MFS among farmers of public, private and NGO extension service systems and level of significance (n=135)

Extension service system	n	Mean rank
Public Extension Service System	45	89.40
Private Extension Service System	45	62.80
NGO Extension Service System	45	51.80
Total	135	
Kruskal Wallis Test Statistics		
Chi-Square		22.190
df		2
Sig.		0.000

It can be concluded that the public, private, NGO extension service systems were fulfilling the information needs related to crop harvesting and post-harvest by providing information on maturity indices of different crops, proper time of harvesting, methods of harvesting of different crops, methods of processing the produce for better price in the market, value addition of farm produce, storage of produce, latest machines and technologies for grading. From the table 6. it can be inferred that public extension services (89.40) were significantly superior in the fulfilment of the crop harvesting and post-harvest needs of farmers followed by private (62.80) and NGO (51.80) extension service systems.

Table 7: Farmers’ needs related to agricultural marketing and finance and extent of their fulfilment from the agricultural extension service systems (n=135)

S. No.	Extension service system	MFS
1.	Public Extension Service System	16.57
2.	Private Extension Service System	14.02
3.	NGO Extension Service System	13.45

Table 8: Kruskal Wallis test for MFS among farmers of public, private and NGO extension service systems and level of significance (n=135)

Extension service system	n	Mean rank
Public Extension Service System	45	90.56
Private Extension Service System	45	66.58
NGO Extension Service System	45	51.32
Total	135	
Kruskal Wallis Test Statistics		
Chi-Square		28.737
df		2
Sig.		0.000

It can be concluded that the public, private, NGO extension service systems were fulfilling the information needs related to crop finance by providing information on agricultural crop loans and insurance, Kisan Credit Card, loans and credit terms for new business/ entrepreneurship, subsidies given by the government for agricultural sector and procedure on enrol for available government schemes. From the table 8. it can be inferred that public extension services (90.56) were significantly superior in the fulfilment of the crop finance needs of farmers followed by private (66.58) and NGO (51.32) extension service systems.

Table 9: Overall farmers information needs and fulfilment by the agricultural extension service systems (n=135)

Information needs	Crop production		Crop protection		Crop harvesting & post-harvest		Agricultural marketing & finance		Overall	
	MPS	MFS	MPS	MFS	MPS	MFS	MPS	MFS	OMPS	OMFS
Public	33.06	41.17	26.37	31.11	17.88	20.73	14.93	16.57	23.06	27.39
Private	28.97	32.82	23.73	25.26	15.62	16.37	13.66	14.02	20.49	22.11
NGO	26.22	28.11	22.22	23.15	14.84	15.11	12.54	13.45	18.95	19.95

*OMPS: Overall Mean Perception Score *OMFS: Overall Mean Fulfilment Score

Table 10: Kruskal Wallis test for OMFS among farmers of public, private and NGO extension service systems and level of significance (n=135)

Extension service system	n	Mean rank
Public Extension Service System	45	86.57
Private Extension Service System	45	64.53
NGO Extension Service System	45	40.43
Total	135	
Kruskal Wallis Test Statistics		
Chi-Square		10.741
df		2
Sig.		0.006

Three extension service systems (public, private and NGO) were compared to know the significant difference exists in overall fulfilment of different extension information needs of farmers. Kruskal Wallis test was used for the comparison between overall needs fulfilled by extension service systems. Since, the p-value was found to be less than 0.05, it can be inferred that there was significant difference among extension service systems with respect to the overall fulfilment of different extension information needs. OMFS, Kruskal Wallis test statistics and its level of significance are portrayed in table 9,10. and the results were found to be significant at $p < 0.01$ level of significance.

B. Expectations of farmers from extension service systems

From the above tables it is clear that public extension service system has been catering and fulfilling the major information needs of the farmers, but still there are areas where public extension system can fulfil the information needs by providing the information on selection of varieties and sources of their good quality seeds and techniques of seed quality management and practices for storage seeds. Public extension service system should provide information on cultivation of suitable crops according to soil type of your farm and knowledge on use/ techniques of operation of agricultural machineries. Extension personnel should educate the farmers on water efficiency, quality parameters of irrigation water. Public extension service system should provide information on the methods of processing of the produce, crop loans and insurance, subsidies given by Govt. for agricultural sector.

Private and NGO extension service systems should focus on providing information on techniques for seed quality management, selection of quality seeds, cultivation of suitable crops on land, liquid fertilisers, fertiliser dosages for field crops, scheduling of irrigation, quality parameters of irrigation water, preventive gears including masks and apron, selection of weedicides, symptoms of nutrient deficiency, value addition of produce and crop loans and insurance.

Conclusion

The study compared the services of public, private, and NGO agricultural extension services in Telangana in fulfilling farmers' extension information needs across four key areas: crop production, crop protection, crop harvesting and post-harvest, and agricultural marketing and finance. Results showed that public extension services consistently outperformed private and NGO services in meeting farmers'

needs across all categories, with significantly higher Mean Fulfilment Scores (MFS).

The Kruskal-Wallis test confirmed statistically existence of significant differences among the three systems, with public extension services ranking highest in providing critical agricultural information, followed by private and NGO services. There was a significant difference among extension service systems with respect to the overall fulfilment of different extension information needs.

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Conflict of Interest

There is no conflict of interest

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