

Effectiveness of *Tata Kisan Sansar* in Technology Advisory and Delivery Services in Uttar Pradesh

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ABSTRACT

The effectiveness of an organisation can be defined as how well it performs its activities to attain the pre determined objectives. In this present context of agriculture where public, private and collaborated public-private organisation are working in India, it is necessary to study how effective they are in there respective goals. As in general a private extension agencies delivers inputs and some others provides advisory services in addition to formers. The present study was conducted in the private extension organisation, Tata Kisan Sansar (TKS) in Aligarh district of Uttar Pradesh. An ex-postfacto research design was used for this study. The data was collected from 50 Tata Kisan Sansar member farmers. The effectiveness of the private organization in technology advisory and delivery services was measured by effectiveness index developed for this purpose. The study revealed that the extension services rendered by Tata Kisan Sansar were found to be medium in effectiveness by majority of the farmers (54 per cent). About 46 per cent of farmers found the extension service is highly effective. The extension services rendered by Tata Kisan Sansar were found to be medium in effectiveness by majority of the farmers (54 per cent) and 46 per cent of farmers found the extension service to be high in effectiveness. The Tata Kisan Sansar, the private initiative provides inputs, services, which is better in accessibility, quality and timeliness to the farmers. The constant advisory support in addition leads to better adoption of technologies which further leads to increase in yield and income and ultimately satisfaction of the farmers.

Key words: Effectiveness; *Tata Kisan Sansar*; Private extension;

The Indian farmers are facing severe challenges of climate change, pest and diseases, irrigation, water, credit etc. The total cultivable land is shrinking, the grain area per person in India has shrunk steadily for several decades in 1950 it was 0.22 hectares and is now below 0.10 hectares less than half that in 1950. It is projected that in 2050 the figure will be as less as 0.06 hectares per person (Larsen, 2003), so the big question on food security has been raised. Along with this, the economic liberalization and WTO agreement have made the market place uncertain and unpredictable. Increased fiscal deficits in several developing countries and in several cases, problems of poor management of public programmes over the last decade have redirected attention towards how to make extension cost-effective and responsive to specific farmer's needs and at the same time, this has generated increased attention towards reforms of public sector agricultural service

provision in many countries in which government extension services are criticized for being inefficient and out of touch with needs of their clients and the wider society (Carney, 1998).

Indian extension system is mainly state based extension system and it is least concerned with providing extension education to farmers in terms of teaching and motivation clients to adopt enterprise but for services more attention is being paid. Extension service in India is, therefore oriented towards transfer of technology to the farmers. It is also concern with advisory services. Though extension education and extension service are the two pillars of extension, in extension service there are a few areas are taken care of by public extension system. To make farmers more responsive and progressive, and prepared to face the challenges, agriculture has to place a greater responsibility to agricultural extension sector.

There is desperation among the farming community as to what to grow and where to get the information to make best use of their limited resources. In the present context there are pluralistic extension agencies working in the field of extension for providing various kinds of services. Private firms and service providers became important and new sources of market and technical information, usually without government support, whereas the public research institutions continued to work on their traditional lines of research (Pardey, et.al., 2006). When the usefulness of information from extension is being questioned, it has been seen that private sector firms are increasingly doing their own agricultural research and expanding their role as information providers. Thus different specialized information is available to farming community (Wolf, 1998).

In order to reach a huge population of farmers of India, the role of extension in transferring technologies has to be effective and efficient. Therefore, it is necessary to assess the effectiveness of extension agencies working at ground level. Keeping this in view, the study was conducted to assess the effectiveness of a private extension system, *Tata Kisan Sansar* in technology advisory and delivery services.

METHODOLOGY

The study was conducted in *Tata Kisan Sansar*, a private extension organisation of Aligarh district in Uttar Pradesh. The reason behind selection of Aligarh district are as i) Aligarh TKS was established in 2002 and is one of the forerunner in Uttar Pradesh ii) naturally well established and regarded as one of the ideal iii) Research & Development wing working as Centre for Agri-solution and Technology for all India basis is also situated here. So for the above mentioned reason Aligarh district was selected for study. For the present study an *ex-post facto* research design was used. The data was collected from 50 farmers, who had taken the membership of *Tata Kisan Sansar*. A structured interview schedules were developed to collect the data from respondents.

For the purpose of measuring effectiveness an index was developed. The effectiveness index comprises of i) Input delivery system, ii) Types of service provided

by the organization iii) Extent of adoption of technology disseminated by them iv) Increased yield of the farmers who had adopted the technologies delivered by the organization v) increase in profit of those farmers, and vi) Farmers perception about the organization's performances which reflects their satisfaction. These indicators are described below:

Input delivery system : Under the first indicator i.e. Input delivery system, availability of inputs, accessibility, quality, cost of inputs etc. were studied on three point continuum scale. The highest was scored 3 and lowest 1. Timeliness of service was scaled in two point continuum i.e. Yes-2 and No-1.

Types of service provided : Under the second indicator i.e. Types of service provided, three sub category of service viz. Advisory services, Diagnostic services and Extension services were analyzed. Here also availability of service, timeliness and nature of problem solving were studied. Among this, availability was measured on three point continuum and rest two on two points.

Extent of adoption of technology : The extent of adoption was measured for the recommended cultivation practices of potato and wheat in which the TKS was rendering integrated services. The extent of adoption was measured as per cent of adoption of recommended practices as given bellow.

$$\text{Extent of adoption} = \frac{\text{Actual practice}}{\text{Recommended practices}} \times 100$$

Increased yield of farmers : Increased yield was calculated by subtracting the earlier yield per acre of the crop before intervention of TKS from present yield after intervention of TKS. Following formula was used:

$$\% \text{ increase in yield} = \frac{\text{Increase in yield per acre}}{\text{Earlier yield per acre per year}} \times 100$$

Increased income of farmers : Increased income was calculated by subtracting the earlier income per hector of the crop before intervention of TKS from present profit after intervention of TKS. The following formula was used:

$$\% \text{ increase in income} = \frac{\text{Increased in income per hector}}{\text{Earlier income per hector}} \times 100$$

Satisfaction index : The farmer's satisfaction of extension service based on the index prepared by Kumar, (2005) was used after necessary modification.

There was 7 statements which had been scored on five point continuum strongly agree-(5), agree-(4), undecided-(3), disagree-(2) and strongly disagree-(1). The highest score one can obtain is 35 and lowest 7. The responses were added to get satisfaction score. The satisfaction index was calculated bellow.

$$\text{Farmers satisfaction index} = \frac{\text{Individual score obtained}}{\text{Maximum score}} \cdot 100$$

The respondents were classified into five categories from very low to very high level by dividing the score into five classes of equal interval.

Effectiveness index : The effectiveness index is prepared based on the above mentioned parameters is calculated by the following equation.

$$EI = \frac{IDS * W1 + DS * W2 + EA * W3 + IY * W4 + II * W5 + FS * W6}{W1 + W2 + W3 + W4 + W5 + W6}$$

Where,

- EI – Effectiveness index
- IDS – Mean score of Input delivery system
- DS – Mean score of delivery of services
- EA – Score of Extent of Adoption
- IY – Per cent increase in yield
- II – Per cent increase in Income
- FS – Farmer's satisfaction score

Wi are respective weight as per mean of experts rating to the above components.

Table 1. Category of Inputs Delivery of Tata Kisan Sansar (N=50)

Category of Inputs	Availability	Accessibility	Quality	Timeliness	Cost
Very low (0-20)	-	-	-	-	-
Low (21-40)	-	-	-	1 (2%)	-
Medium (41-60)	9 (18%)	3 (6%)	-	14 (28%)	-
High (61-80)	40 (80%)	47(94%)	22 (44%)	20 (40%)	19 (38%)
Very high (81-100)	1(2%)	-	28 (56%)	15 (30%)	31(62%)
Mean	65.55	65.88	83.55	66.33	82.99
S.D	7.18	5.38	9.40	1.36	8.57

in delivery mechanism especially supply of inputs of all crops growing seasons and delivering through the different spokes. Quality and timeliness was very high because Tata has sophisticated chemical research system, a mission, punctuality and accountability. Though the costs of inputs were very high as compared to the other agencies but for sake of quality products many farmers were ready to pay for that.

Delivery of Services: The delivery of different services like crop advisory services, services to farm machinery, entrepreneurial services, communication services,

RESULTS AND DISCUSSION

Effectiveness of Tata Kisan Sansar: Input delivery system: The input delivery system has sub categories in the following heads like availability of inputs, accessibility of inputs, quality, timeliness of inputs supply, and cost of inputs. The responses of 50 *Tata Kisan Sansar* Member farmers are described in Table 1.

Table 1 depicted the input delivery system of *Tata Kisan Sansar*, the inputs was found to be medium in availability by 18 per cent of farmers, high by 80 per cent and very high by only 2 per cent. The inputs were found to be high in accessibility by 94 per cent of farmers. In case of quality of inputs it was found to be high by 44 per cent and very high by 56 per cent of farmers. As per farmers response about timeliness of input delivery was found to be very high i.e. 30 per cent of farmers, high to 40 per cent and medium to 28 per cent of farmers. The cost of inputs was perceived as to high by 38 per cent of farmers and very high to 62 per cent of the farmers as compared to the other extension system delivering the same inputs.

In inputs delivery, the availability and accessibility of inputs were high in TKS denoting the effectiveness

diagnostic services etc. of *Tata Kisan Sansar* was further sub categorized under availability, timeliness and problem solving in nature. The results are depicted in Table 2.

Table 2 presented the services rendered by *Tata Kisan Sansar* were found to be high in availability by majority (88 per cent) of the farmers and very high by 4 per cent of them. Timeliness of services was found to be high by majority of farmers (56 per cent) and very high by 18 per cent. In case of problem solving nature of services were found to be high by maximum number

of farmers (60 per cent) and very high by 28 per cent of them. Provision of different services to the farmers is one of the mandates of Tata Kisan Sansar. These shows the organization is efficient in delivering the services to farmers.

Table 2. Category of Delivery of Services by Tata Kisan Sansar (N=50)

Category of service	Availability	Timeliness	Problem solving
Very low (0-20)	-	-	-
Low (21-40)	-	1 (2%)	1 (2%)
Medium (41-60)	4 (8%)	12 (24%)	5 (10%)
High (61-80)	44 (88%)	28 (56%)	30 (60%)
Very high (81-100)	2 (4%)	9 (18%)	14 (28%)
Mean	69.11	69.11	76.44
S.D	6.41	1.37	1.54

Extent of Adoption: The *Tata Kisan Sansar* was promoting different region specific crops. In the study area maximum farmers were cultivating wheat. That’s why wheat crop was selected to study the extent of adoption. There were several recommendations in wheat cultivation prescribed by the agronomist of *Tata Kisan Sansar*. Among them six practices, one in variety, two in crop nutrition, two in plant protection and one in irrigation were selected. The results are given bellow.

Table 3 (a): Adoption of Recommended practices in Wheat (N=50)

S.No.	Recommended practices	No.	(%)
1	Variety (PBW 343/ PBW 373/ HD 2733)	37	74
2	Customized Fertilizer for Wheat	33	66
3	Foliar Nutrition Doses	31	62
4	Plant Protection Chemicals (Thiram, Carbendazim, Chlorpyriphos etc)	40	80
5	Herbicides (2-4-D, Sulphosulfuron, Pendimethalin)	30	60
6	Irrigation 3 in (CRI, Booting, Dough stage)	36	72

Table 3(a) depicted maximum numbers of farmers (80 per cent) adopted the plant protection chemicals recommendation, 74 per cent of farmers adopted recommended high yielding varieties of wheat, as the organization is appointed specialized agronomist for proper guidance of farmers. Whereas 66 per cent adopted customized fertilizer (a product of *Tata chemicals*), 62 per cent adopted foliar nutrition dose for

wheat, these products are new in the research area. It had a very good response among the farmers as yield has increased in considerable amount. In case of herbicide application 60 per cent of farmers adopted herbicide doses. In average 69 per cent of farmers adopted the recommended practices.

Table 3(b) Extent of overall Adoption of recommended practices of wheat (N=50)

S. No.	Category	No.	(%)
1	Very low (0-20)	-	-
2	Low (21-40)	1	(2%)
3	Medium (41-60)	11	(22%)
4	High (61-80)	21	(42%)
5	Very high (81-100)	17	(43%)
	Mean	69.00	
	S.D	1.5	

Table 3(b) describes majority of farmers (42 per cent) has highly adopted the recommended practices and 43 per cent of farmers adopted the recommended wheat practices very highly (more than 80 per cent adoption).This finding is similar with *Kumar (2005)*. The reason for high level of adoption of wheat practices were periodic field visit by *TKS* agronomist, provision of adequate supply of inputs, and seasonal field demonstration in each village.

Increase in yield of wheat crop : Tata Kisan Sansar is providing some specific innovative technologies to farmers and promoting wheat production in the study area. Therefore it was necessary to find out increase in yield of wheat crop. The results are given bellow:

Table 4. Per cent increase in yield (N=50)

S.No.	Per cent increase in yield	No.	(%)
1	0 – 10	-	-
2	11 – 20	31	(62%)
3	21 – 30	17	(34%)
4	31 - 40	2	(4%)
	Mean	20.07	
	S.D	4.83	

Table 4 showed in case of majority (62 per cent) of farmers, yield has increased up to 20 per cent whereas in case of 34 per cent of farmers the yield of wheat was increased to 21 to 30 per cent. In case of majority (62 per cent) of farmers the yield has increased up to 20 per cent. The findings make consonance with the findings of *Kumar and Vijayaragavan (2007)*.

The reason for increase in yield was higher level of adoption, availability of inputs at doorstep of farmers, timeliness of input delivery and services.

Increase in income of farmers : Increase in yield of wheat has to be translated into increased net profit which is one of the most important elements from the effectiveness point of view. The Table 5 is showing increase in income of farmers.

Table 5. Increase in income in per cent (N=50)

S.No	Percentage increase in income	No.	%
1	20 - 30	1	(2%)
2	31 - 40	21	(42%)
3	41 - 50	19	(38%)
4	51 - 60	5	(10%)
5	61 - 70	3	(6%)
6	71 - 80	1	(2%)
	Mean	43.8	
	S.D	9.37	

Table 5 depicted the increase in income of the farmers; in case of majority of the farmers (42 per cent) income was increase in 31 to 40 per cent where as incase of 38 per cent of farmers' income had increased up to 50 per cent of their earlier income by wheat. It had been found that in comparison to increase in yield there was incident of more increase in income in wheat. This can be attributed to the high level of adoption of improved practices as recommended by Tata Krishi Vikas Kendra, a district level center or hub for technology evaluation and backstopping, providing proper credit facilities for better investment, proper marketing facilities, and value addition initiatives and mediation of *Tata Kisan Sansar*.

Table 6. Categories of farmers based on satisfaction score (N=50)

S.No	Category	Class	No.	%
1	Very low	7 – 12.6	-	-
2	Low	12.7 – 18.2	-	-
3	Medium	18.3 – 23.8	-	-
4	High	23.9 – 29.4	36	(72%)
5	Very high	29.5 - 35	14	(28%)
	Mean	27.84		
	S.D	2.69		

Maximum possible score - 35

Minimum possible score - 7

Satisfaction of farmers towards extension services provided by TKS : The objective of extension is to increase farmers yield, income and other attributes which leads to increase in farmers satisfaction. The levels of farmers satisfaction towards the extension services provided by TKS is presented in Table 6 bellow. The Table shows majority of the farmers (72 per cent) have high levels of satisfaction whereas 28 per cent of farmers have very high level of satisfaction towards private extension services. No one was found to be medium, low or very low in satisfaction towards the inputs and extension services provided by TKS. The findings are similar with the findings of *Kumar (2005)*. *Effectiveness of Tata Kisan Sansar in technology delivery*: The effectiveness of Tata Kisan Sansar was measured based on index developed by using the above mentioned parameters. The result is given bellow.

Table 7. Effectiveness of extension service of TKS as perceived by farmers (N=50)

S.No	Category of effectiveness	%
1	Very low (0-20)	-
2	Low (21-40)	-
3	Medium (41-60)	54 %
4	High (61-80)	46 %
5	Very high (81-100)	-
	Mean	59.14 %
	S.D	4.45

The data in Table 7 showed that the extension services rendered by Tata Kisan Sansar were found to be medium in effectiveness by majority of the farmers (54 per cent). About 46 per cent of farmers found the extension service to be high in effectiveness. No farmers found the extension services of TKS at low, very low or very high level of effectiveness. The result was quite contrasting with findings of *Kumar and Vijayaragavan (2007)*.

CONCLUSION

The *Tata Kisan Sansar* initiative provide inputs, services, which is better in accessibility, quality and timeliness to the farmers. The constant advisory support in addition leads to better adoption of technologies which further leads to increase in yield and income and ultimately satisfaction of the farmers. The study has inquired each and every level, denoting the effectiveness

of the private organization. The salient findings reveals that cost of inputs is high as perceived by the farmers in comparison to the other market available brands. The effectiveness of Tata Kisan Sansar can be further increased through reducing the cost of inputs and

covering more numbers of farmers under their business that would be beneficial to both of the organization and farmers of India.

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