Original Research Article

IMPACT OF RYTHU BHAROSA KENDRA'S AS PERCEIVED BY THE FARMERS

ABSTRACT

Rythu Barosa Kendras (RBKs) introduced as part of government initiatives to support farmers, aims to provide a wide range of services and resources to rural farming communities in Andhra Pradesh. The perception and utilization of these RBKs have emerged as crucial elements in the overall agricultural landscape of the State. The impact of these services from the farmer's point of view has been a matter of concern for the overall improvement of the RBK's. This study throws a light on the impact of the RBK services using non-parametric statical methods. The results revealed that the variables such as caste, annual income and source of information show a significant influence on the perception of services. However, none of the variables examined show a significant influence on the utilization of these services. The study found that Agricultural Extension Officers (AEOs) played a significant role as the major source of information for farmers. Availability of inputs like manures, pesticides, etc., improving infrastructure and facilities were some of the constraints mentioned by the famers. Addressing these issues will enable the RBKS to perform in a much more vibrant way thereby enhancing the agriculture production in the State.

Key Words: Rythu Bharosa Kendra, Utilisation, Perception, constraints, Chi-square test.

INTRODUCTION

Rythu Bharosa Kendra, also known as RBK, is an agricultural support system implemented in the Indian state of Andhra Pradesh. Introduced by the state government, Rythu Bharosa Kendra aims to provide comprehensive assistance to farmers, covering various aspects of agriculture and rural development. The term "Rythu Bharosa" translates to "Farmer's Trust" in the Telugu language, reflecting the program's commitment to supporting the farming

community. The establishment of Rythu Bharosa Kendra centers across the state signifies the government's dedication to empowering farmers and improving their livelihoods. Rythu Bharosa Kendra serves as a one-stop destination for farmers, offering a wide range of services and facilities (Chowdary et al. 2022). These centers are equipped with modern infrastructure and trained personnel who provide farmers with essential information, technical guidance, and resources required for successful farming practices. The aim is to enhance agricultural productivity, promote sustainable practices, and ensure the economic well-being of farmers.

Some of the key services provided at Rythu Bharosa Kendra include (Saifuddin et al. 2023):

1. Advisory Services: Farmers can seek expert advice and guidance on crop selection, pest control, fertilizer management, and other agricultural practices. The centers provide up-to-date information on weather conditions, market trends, and government schemes relevant to agriculture.

2. Soil Testing: RBK centers offer soil testing facilities, allowing farmers to assess the nutrient content and fertility of their soil. This helps in determining appropriate fertilizers and amendments required for optimal crop growth.

3. Seed Distribution: High-quality seeds of various crops, including hybrid and improved varieties, are made available to farmers at subsidized rates. This ensures that farmers have access to quality seeds that can improve crop yields and resilience.

4. Farm Equipment and Machinery: RBK centers provide access to agricultural machinery and equipment on a rental basis, reducing the financial burden on individual farmers. This enables small and marginal farmers to adopt modern technologies and practices without incurring significant capital costs.

5. Training and Workshops: The centers organize training programs and workshops to educate farmers about advanced farming techniques, water management, organic farming, and other relevant topics. This knowledge sharing helps farmers enhance their skills and stay updated with the latest agricultural practices.

Rythu Bharosa Kendra plays a crucial role in strengthening the agricultural sector and empowering farmers in Andhra Pradesh. By providing comprehensive support and resources, these centers contribute to the overall development and welfare of the farming community, ensuring sustainable agricultural practices and improved livelihoods. The present study was carried out to examine the perception and utilization of each services offered by the RBK's and also enumerate the constraints faced by the farmers.

MATERIALS AND METHODS

The study conducted in 2021, utilized an Ex-post facto research design to explore the perception and utilization of RBK services among farmers in the East Godavari district. For each of the RBK services, farmers were asked to rate whether the service is perceived (perceived and not perceived) and utilized (utilized and not utilised). Constraints faced by the farmers were also listed and prioritize the constraints that need immediate attention or intervention to improve the RBK services for farmers based on percentage analysis.

The survey focused on the district of East Godavari in Andhra Pradesh, specifically chosen due to its high number of RBKs within the Godavari zone. Among the 64 mandals in East Godavari, the study purposively selected Peddapuram, Jaggampeta, P. Gannavaram, and Amalapuram, as these mandals had the highest concentration of RBKs.

To ensure a representative sample, a multi-stage sampling process was employed. In the first stage, 12 villages were selected, with 3 villages chosen from each block. Subsequently, a simple random sampling method was used to select 5 respondents from each village, resulting in a total sample size of 60 respondents.

The collected data were organized and analyzed using various statistical tools, including frequency and percentage distributions, mean weight scores, the Chi-square test, the Mann-Whitney U test, and the Kruskal-Wallis test. These analytical methods allowed for a comprehensive examination of the data and the evaluation of patterns and associations.

Statistical tools used (Gibbons & Chakraborti 2010):

Chi-square tests allow us to determine if the observed frequencies in different categories significantly deviate from the expected frequencies. This helps in understanding the influence of variables on the perception and utilization of RBK services.

The formula for calculating the chi-square (χ^2) statistic in a chi-square test of independence is as follows:

$$\chi^2 = \Sigma [(O - E)^2 / E]$$

where:

χ^2 represents the chi-square statistic,

Σ denotes the summation symbol,

O indicates the observed frequency in each cell of the contingency table,

E represents the expected frequency in each cell of the contingency table.

The **Mann-Whitney U test,** also known as the Wilcoxon rank-sum test, is a non-parametric statistical test used to determine if there is a significant difference between the distributions of two independent groups.

The formula for calculating the Mann-Whitney U statistic is as follows:

$$U = R - (n1 * (n1 + 1))/2$$

where:

- U represents the Mann-Whitney U statistic,
- R denotes the sum of ranks for one of the groups,
- n1 indicates the sample size of the first group.

The **Kruskal-Wallis test** is a non-parametric statistical test used to determine if there are significant differences between the distributions of three or more independent groups.

The formula for calculating the Kruskal-Wallis test statistic is as follows:

$$H = [(12 / (N * (N + 1))) * \sum (R_i^2 / n_i)] - 3 * (N + 1)$$

where:

- H represents the Kruskal-Wallis test statistic,
- N denotes the total number of observations across all groups,
- R_i indicates the sum of ranks for group i,
- n_i represents the sample size of group i.

RESULTS AND DISCUSSION

1. Demographic profile of the respondents

From table 1, it can be concluded that the middle-age group had the highest representation, constituting the majority of the respondents (53%). The highest educational level achieved by most respondents was high school (33%). The majority of the respondents were engaged in farming as their occupation (95%). Backward Caste (BC) had the highest representation (63%), followed by Other Caste (OC) (22%), and Scheduled Caste (SC)

(15%). The largest group of respondents (43%) had farming experience ranging from 21 to 30 years, followed by those with more than 30 years of experience (27%).

Table 1. Demographic profile of the respondents

S.No.	Variable	Frequency	Percentage
Age			
1	<35 yrs (Young)	9	15.0
2	36-54 yrs (Middle)	32	53.3
3	> 55yrs (Old)	19	31.7
Education			
1	Illiterate	8	13.3
2	Primary	18	30.0
3	Highschool	20	33.3
4	Inter/poly	7	11.7
5	UG	7	11.7
6	PG	0	0.0
Occupation			
1	Farming	50	95
2	Farming+Business	10	5
Caste			
1	ST	0	0
2	SC	9	15
3	BC	38	63.3
4	OC	13	21.7
Farm experience			
1	<10	3	5
2	20-30	15	25
3	21-30	26	43.3
4	>30	16	26.7
Land Holding			
1	<5	31	51.7
2	5 to 10	16	26.7
3	> 10	13	21.7
Annual Income			
1	<50,000	19	31.7
2	50,000 to 1,00,000	24	40
3	> 1,00,000	17	28.3
Family size			
1	Up to 5 members	55	91.7
2	>5 members	5	8.3
Family type			
1	Joint	10	16.7
2	Nucleus	50	83.3
Social participation			

1	No Membership	42	70
2	Membership	18	30
Extension contacts			
1	Frequently	23	38.3
2	Some times	30	50
3	Rarely	7	11.7
Source of Information			
1	Scientists	4	6.7
2	ADA	5	8.3
3	AO	8	13.3
4	AEO	3	5.0
5	MPEOs/VAAs	17	28.3
6	Farmers/others	9	15.0
7	Input dealers	14	23.3

The majority of respondents had a landholding size of less than 5 acres (52%). The largest group of respondents (40%) had an annual income ranging from 50,000 to 1,00,000. The majority of respondents (92%) had a family size of up to 5 members, and most of them belonged to a nucleus family (83%). The majority of respondents did not have any membership in social organizations (70%). Regarding extension contact, the majority of respondents reported having it sometimes (50%), followed by frequent contact (38%) and rare contact (12%). The highest acceptance of information on agriculture-related schemes and others was from MPEOs/VAAs (28%), followed by input dealers (23%), farmers/others (15%) and AO (13%). The lowest participation was from AEO (5%) followed by ADA (8%) and Scientists (7%). The above findings are in line with the findings of Olaniyi and Adewale (2014), Francis (2018), Panda *et al*. (2019) and Sarnaik *et al*. (2020).

PERCEPTION AND UTILISATION:

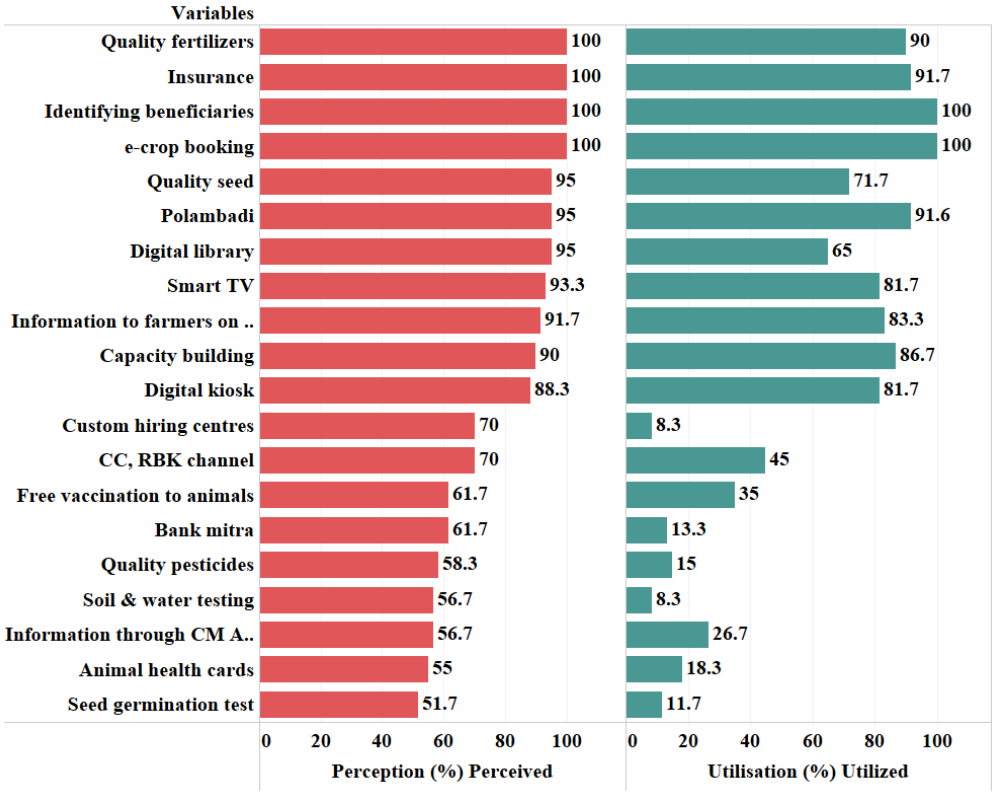

Fig 1: Percentage of farmers perceived and utilized the services of RBK's.

1. **Perceived Facilities**: More than half of the respondents perceived all the services offered by the RBK's. Additionally, all respondents perceived the e-crop booking facility, free crop insurance/animal insurance, and identifying beneficiaries for various government schemes. The findings are accordance with the study reported by Salam and Khan (2020), Somanje *et al.* (2021) and Saifuddin *et al.* (2023).

2. **Utilized Facilities**: The facilities that were utilized by a significant proportion of respondents include e-crop booking (100%), identifying beneficiaries for various government schemes (100%), free crop insurance/animal insurance (91.7%), Polambadi/thotabadi/pasu vigyan badi (91.6%), quality fertilizers (90%), capacity building programs in recent advances in agriculture (86.7%), management information on crop health (83.3%) and quality seed (71.7%). This trend was also witnessed by Chowdary *et al.* (2022).

It is important to note that while certain facilities were widely perceived, the utilization rates varied. The facilities with the highest utilization rates included e-crop booking, identifying beneficiaries for various government schemes, free crop insurance/animal insurance. These conclusions highlight the importance of promoting and

facilitating the utilization of various agricultural facilities and services among farmers, as well as the need to address any barriers that may hinder the utilization of perceived facilities.

CHI-SQUARE TEST RESULTS

Table 2. Association between independent variables and Perception score

Variables	Perception			Chi square value
	Low	Medium	High	
Age				6.98^{NS}
Young	1	2	6	
Middle	11	10	11	
Old	3	3	13	
Education				17.33^{NS}
Illiterate	0	1	7	
Primary	6	1	11	
Highschool	5	7	8	
Inter/poly	3	4	0	
UG	1	2	4	
Occupation				7.92^{NS}
Farming	14	9	27	
Farming+Business	1	6	3	
Caste				19.5***
SC	1	1	7	
BC	5	12	21	
OC	9	2	2	
Farm Experience				5.20^{NS}
<10	0	2	1	
20-30	4	2	9	
21-30	8	7	11	
>30	3	4	9	
Land holding				10.38^{NS}
<5	3	7	21	
5 to 10	7	4	5	

> 10	5	4	4	
Annual Income				13.83***
<50,000	1	5	19	
50,000 to 1,00,000	7	5	5	
> 1,00,000	7	5	6	
Source of Information				21.05**
Scientists	1	0	3	
ADA	1	2	2	
AO	4	4	0	
AEO	0	0	3	
MPEOs/VAAs	6	4	7	
Farmers/others	1	0	8	
Input dealers	2	5	7	
Family Size				1.96^{NS}
Up to 5 members	15	13	27	
>5 members	0	2	3	
Family type				0.24^{NS}
Joint	3	2	5	
Nucleus	12	13	25	
Social participation				2.69^{NS}

Based on the chi-square analysis, it was found that variables such as caste and annual income exhibited a high level of significance at a 1% level. Additionally, the source of information was found to be significant at a 5% level of significance. These results strongly suggest that these variables played a significant role in influencing the perception of services provided by RBK's.

Table 3. Association between independent variables and Utilization score

Variables	**Utilization**			**Chi square value**
	Low	Medium	High	
Age				3.49^{NS}

Young	1	2	6	
Middle	10	9	13	
Old	8	4	7	
Education				
Illiterate	3	1	4	
Primary	5	6	7	
Highschool	5	7	8	6.30^{NS}
Inter/poly	4	0	3	
UG	2	1	4	
Occupation				
Farming	17	13	20	1.40^{NS}
Farming+Business	2	2	6	
Caste				
SC	4	2	3	
BC	10	12	16	3.79^{NS}
OC	5	1	7	
Farm Experience				
<10	1	1	1	
20-30	5	3	7	0.41^{NS}
21-30	8	7	11	
>30	5	4	7	
Land holding				
<5	8	8	15	1.85^{NS}
5 to 10	7	4	5	
> 10	4	3	6	
Annual Income				
<50,000	5	7	13	5.90^{NS}
50,000 to 1,00,000	9	4	4	
> 1,00,000	5	4	9	
Source of Information				
Scientists	1	1	2	
ADA	3	0	2	

AO	2	4	2	9.16 NS
AEO	0	1	2	
MPEOs/VAAs	4	4	9	
Farmers/others	3	3	3	
Input dealers	6	2	6	
Family Size				
Up to 5 members	19	13	23	2.56NS
>5 members	0	2	3	
Family type				
Joint	4	2	4	0.41NS
Nucleus	15	13	22	
Social participation				
No Membership	13	12	17	1.00NS
Membership	6	3	9	
Extension contacts				
Frequently	2	1	4	0.80NS
Some times	10	8	12	
Rarely	7	6	10	

Upon analyzing the data, it is evident that none of the variables demonstrated a significant association with the utilization of services provided by RBK's. The data suggests that the variables examined did not have a substantial impact on the utilization of RBK's services.

Table 4. Results of Kruskal-Wallis test with respect to perception

Variables	**Category**	**Mean score**	**Test statistic**
Caste	SC	38.83	14.22***
	BC	33.46	
	OC	16.08	
Annual Income	<50,000	39.50	13.53***
	50,000 to 1,00,000	23.44	
	> 1,00,000	24.67	
Source of Information	Scientists	36.13	15.21NS

	ADA	29.00	
	AO	15.50	
	AEO	45.50	
	MPEOs/VAAs	26.97	
	Farmers/others	41.33	
	Input dealers	32.11	

In order to determine the contribution of different independent variables to the perception of RBK's services, the Kruskal-Wallis test was conducted. This test aimed to identify the category of independent variables that had the greatest impact on perception. The findings revealed a distinct pattern, indicating that the SC category had the highest mean score (38.83) in terms of perception of RBK's services, surpassing both the BC and OC categories. This implies that individuals in the SC category had a stronger perception of RBK's services compared to those in the BC and OC categories. The perception of RBK's services was found to be higher among individuals with an annual income of less than Rs. 50,000/-, followed by those with an annual income of more than Rs. 1 lakh. However, it is worth noting that the source of information was found to be non-significant in relation to the perception of RBK's services. Despite this, it was identified that Agricultural Extension Officers (AEOs) served as the primary source of information for farmers, followed by neighbors. Although the source of information did not show a significant impact on perception, AEOs played a prominent role in providing information and knowledge about RBK's services to farmers.

Table 5. Constraints faced by the farmers in reach of RBK services

S.No.	Constraints	Yes		No	
		Frequency	%	Frequency	%
1	Non-availability of seeds and fertilizers on time	60	100	0	0
2	Non-availability of green manure & fodder crop seeds	60	100	0	0
3	Non-availability of micronutrients at RBK	60	100	0	0
4	Inputs are not provided on credit basis	60	100	0	0

5	Non-supply of farm machinery/implements/equipment/tarpaulin	60	100	0	0
6	No cold storages/godowns for storage of inputs/produce	60	100	0	0
7	No marketing facilities both for agriculture and horticulture crops at RBK level	60	100	0	0
8	Insufficient staff at RBK	60	100	0	0
9	Non availability of pesticides at RBK	56	93	4	7
10	Non availability of information on crop loan eligibility from bank mitra/representative at RBK	55	92	5	8
11	Disrupts faced by the farmers in selling of produce at Paddy Procurement Centres (PPC) at RBKs and late payments for the marketed product	50	83	10	17
12	Insufficient infrastructure facility at RBK	52	87	8	13
13	Problems faced both in issue of cards from RBK and use of Crop Cultivator Rights Cards (CCRC) by tenant farmers with crop owner	48	80	12	20
14	No training programmes on organic farming	45	75	15	25
15	Not aware on RBK services	41	68	19	32
16	Non availability of cattle feed, non-issue of animal health cards and milk collection centres at RBKs	10	17	50	83

1. Availability of inputs: Farmers consistently highlighted several challenges related to the availability of essential inputs such as seeds, fertilizers, green manure, micro nutrients, and pesticides. These constraints need urgent attention as they were reported as major obstacles by 100% of the surveyed farmers.

2. Infrastructure and facilities: Issues related to infrastructure and facilities were also prominent concerns. Farmers expressed the need for cold storages/godowns, farm machinery/implements/equipment, marketing facilities, and sufficient staff at RBKs. Addressing these constraints is crucial for enhancing the efficiency and effectiveness of RBK services.

3. Information and support: Farmers indicated a lack of access to information regarding crop loan eligibility, training programs on organic farming, and awareness of RBK services. Providing comprehensive information and support to farmers can help them make informed decisions and maximize the benefits of RBK services.

4. Transactional challenges: Constraints related to credit-based inputs and disruptions in selling produce at Paddy Procurement Centres (PPC) were reported by a significant percentage of farmers. These challenges can have a direct impact on the farmers' financial stability and livelihoods and should be addressed to ensure smooth transactions and timely payments.

5. Tenant farmers' rights: The survey highlighted problems faced by tenant farmers regarding the issue and use of Crop Cultivator Rights Cards (CCRC) with crop owners. Resolving these issues can contribute to fostering a more equitable and supportive environment for tenant farmers.

6. Animal husbandry-related constraints: While not as prevalent as other constraints, the non-availability of cattle feed, animal health cards, and milk collection centers at RBKs were mentioned as challenges. Addressing these concerns can improve the overall support provided to farmers engaged in animal husbandry activities. The above findings are in conformity with the findings of Chowdary *et al.* (2022) and Saifuddin *et al.* (2023).

By understanding and addressing these prioritized constraints, policymakers, RBK authorities, and agricultural stakeholders can work towards enhancing the delivery of services and support to farmers, ultimately leading to improved agricultural productivity, farmer welfare, and rural development.

CONCLUSION

The present study looked into the perception and utilization of the services offered by the RBKs in Andhra Pradesh from farmer’s point of view using non-parametric statistical analysis. It was evident that those belong to SC category and those with an annual income of

less than Rs. 50,000/- have shown a higher perception of RBK's services, efforts can be focused on reaching out to and catering to the specific needs and preferences of this target group. While the source of information was found to be non-significant, it was identified that Agricultural Extension Officers (AEOs) played a significant role as the major source of information for farmers. Hence, it is necessary to strengthen AEOs' roles. Recognizing the significant influence of AEOs as a source of information, it is crucial to enhance their training, support, and resources. This can enable them to effectively disseminate information about RBK's services to farmers and address any queries or concerns they may have. In addition to this, addressing the challenges related to the availability of inputs, improving infrastructure and facilities, providing comprehensive information and support to farmers, resolving transactional issues, ensuring tenant farmers' rights, and addressing constraints in animal husbandry, RBKs can better serve farmers and enhance their overall agricultural productivity and livelihoods.

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