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A Study on Profile Characteristics of Stakeholders of Rythu Bharosa Kendras (RBKs)

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Authors' contributions

This work was carried out in collaboration among all authors. Author PGK conceptualized and designed the research. Author AN conducted the study on profile and collected the data from the stakeholders. All authors read and approved the final manuscript.

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ABSTRACT

In this modern era, farmers encounter difficulties in receiving timely services from extension agents. So, technological advancement in quality of services, speed in deliverables and precision actions are possible by creating proper interface between farmers, scientists, extension officers, service providers etc. and by bringing innovation/sustainable interventions in agriculture and allied sector. With this context as a new extension reform, Government of Andhra Pradesh has launched Rythu Bharosa Kendras. The study was carried out in Srikakulam, Prakasam and Chittoor districts of Andhra Pradesh. A total of 409 stakeholders were selected, among them 361 were farmers and 12 were scientis, 24 MAOs/DAOs, 12VAAs were selected for the study. The objective of the study was to know the profile of stakeholders of RBKs. The results of the study showed that majority of the farmers had medium extension contact (41.83%), medium mass media exposure (39.33%), medium innovativeness (42.66%), medium training undergone (38.23%), medium digital literacy (45.43%), medium possession of digital tools (44.88%), medium frequency of use of digital tools (44.32%), medium perception on RBKs(43.77%), medium information sharing behaviour (45.16%). In case of stakeholders most of them had high mass media exposure (45.63%), medium innovatveness (64.58%), medium training undergone (72.92%),high digital literacy (50.00%),medium possession of digital tools (45.83%),high frequency of use of digital tools (50.00%), medium perception on RBKs (52.08%) and medium information sharing behaviour (56.25%) and the chi-square were done to know the siginificance difference. From the above results it is clear that most of the farmers were belonged to medium to high level so there is a need to enhance their knowledge and use of digital technologies which helps to provide better connections and communication among these farmers to get up-to-date information with the latest agricultural practices and innovations. Regarding stakeholders most of them belonged to medium to high level because it enables them to access and disseminate information more effectively by using digital tools and also helps in bridging the information gap. This dual approach will facilitate a more integrated and efficient agricultural information system, ultimately benefiting the entire agricultural community.

Keywords: Profile; farmers; RBKs; VAAs/VHAs; MAOs/DAOs; scientists.

1. INTRODUCTION

The farmers as producers of food must have an enabling environment for access to know-how and do-how for realizing the full potential of modern agricultural technology and should be empowered in taking initiatives and decisions which will only help in shaping the future of farmer’s economy. In Each stage of agricultural production requires specific decision from farmers. Farmer's need latest information on seeds, pest and diseases, weed management, agronomy practice and market price, quantity and quality needed to the market, agricultural credit/loan and storage method to help them in decision making.

But the traditional extension are facing several problems such as training all extension personnel to understand technology and address farmers' queries in agriculture and allied sectors is costly. One major issue is that the traditional extension system often provides irrelevant information to specific clients and fails to reach all farmers. Additionally, there are limited opportunities to improve performance, and there is a lack of accountability for the advice given. The traditional system operates in a one-way manner, pushing information to farmers without a proper feedback mechanism. Other barriers to effective technology transfer include low and inadequate extension contact and insufficient printed information.

For a message to pass from a university research station to Farmers' Training Centers (KVKs) and finally to the farmer, it involves many intermediaries, making it a time-consuming process. As the message passes through various layers, its quality often degrades. Additionally, most extension personnel require extensive training to communicate effectively with both the research system and other groups. The capacity of the extension system is very limited, struggling to reach all villages and farmers who need continuous and proper information dissemination. The current agricultural extension system cannot meet the demand for new, market-oriented agricultural information (Ajit, 2004).

In order to better the economic circumstances of farmers of Andhra Pradesh (AP) and to revitalize the agricultural sector, the government of AP has taken a right initiative by establishing Rythu Bharosa Kendras (RBKs) as a most novel, effective and efficient platform for knowledge dissemination and to provide farmers with quality inputs and allied services. RBKs shall be a one stop shop for supply of government certified agri (seeds, fertilizers and pesticides) and allied sectors inputs to the farmers.

The government of AP has taken a initiative by establishing Rythu Bharosa Kendras (RBKs) to improve farmers' economic welfare and boost the agriculture industry . RBKs are one-stop shop that offers government-certified agricultural supplies (including insecticides, fertilisers, and seeds) along with essential allied services. RBKs also streamline access to crucial inputs, reduce costs, and eliminate the middle man, thereby increasing farmers' profitability. RBKs also serve as knowledge centres, providing farmers with the resources and training sessions, professional guidance, and the most recent information on best practices in agriculture. The holistic support provided by RBKs ensures that farmers receive timely, reliable, and effective assistance, ultimately contributing to their economic stability and the overall growth of the agricultural sector in Andhra Pradesh.

2. METHODOLOGY

Andhra Pradesh state was purposively selected. One district each from three regions of the state viz., Chittoor (from Rayalaseema region), Prakasam (from Coastal region) and Srikakulam (from North Coastal region) were selected purposively based on highest number of RBKs. Four mandals from each district were selected randomly, one RBK from each mandal was selected by following simple random sampling thus making a total 12 RBKs. From each selected RBK, 361 respondents were selected by using Stratified Random Sampling with Proportional allocation method. Again Stakeholders were selected, from each RBK one VAA was selected, thus making a total 12 VAAs/VHAs,from each mandal one MAO was selected, thus making a total 12 MAOs/DAOs,from each district four scientists working in either KVK/DAATTCs/Research stations was selected, thus making a total 12 scientists and from each District Agricultural Office four Agricultural officers were selected purposively who are coordinating the RBK activities, thus making a total 12 Agricultural officers. The data was collected through a structured comprehensive interview schedule and analyzed using mean standard deviation, frequencies, percentages and chi-squre for drawing meaningful interpretations.

2.1 Arithmetic Mean ($\overline{X}$)

It is defined as the sum of all values of the observations divided by the total number of observations. Symbolically it is represented as $\overline{X}$.

$$\text{Arithmetic mean } (\overline{X}) = \frac{\Sigma xi}{n} = \frac{x_1 + x_2 + ... x_n}{n}$$

Where,

$\overline{X}$ = Arithmetic mean

xi = Value of i^{th} item of *x*

i = 1, 2……n

n = Total number of respondents

2.2 Standard Deviation (S.D.)

It is positive square root of the mean of the squared deviations taken from arithmetic mean. It was used to find out the variation in the score in the dependent and independent variables and for categorization of respondents. It is represented by symbol ϭ

$$\text{S.D. } (\sigma) = \sqrt{\frac{1}{n}\left[\Sigma x^2 - \frac{(\Sigma x)^2}{n}\right]}$$

Where,

Σx^2 = Sum of squares of observations

$(\Sigma x)^2$ = Square of sum of 'x' values

n = Number of observations.

2.3 Chi-Square TEST (χ^2)

Chi square is a statistical test used to test the association between two categorical variables. The Chi-square statistic (χ^2) used for the study was under.

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)}{E_i}$$

Where,

O_i = Observed frequencies

E_i = Expected frequencies

n = Number of cells (or classes)

3. RESULTS AND DISCUSSION

3.1 Profile Characteristics of Stakeholders of Rbks

This can be accomplished by investigating the stakeholders profile (farmers and others such as VAAs/VHAs, MAOs/DAOs and scientists).

3.2 Profile Characteristics of Farmers of RBKs

The data given in Table 1 indicated that more two fifth (41.83%) of the farmers in all the three regions were found to fit in the medium level of extension contact followed by high (38.50%) and low (19.67%) level of extension contact. The Chi-square test of independence for distribution of farmers had shown $\chi 2 = 47.388$*with p value of 0.03, concluding that distribution of extension contact was related and significantly associated with the region.The above statistics suggest that, in terms of informal sources, majority of the respondents frequently maintained extension contact with the input dealers, followed by friends and neighbors. On the other side, respondents occasionally keep in contact with the successful farmers through extension personnel, followed by relatives. Regarding the formal source of extension contact, majority of the respondents frequently maintained extension contact with Village Agriculture Assistants (VAA)/ Village Horticulture Assistants (VHA) followed by Agricultural Extension Officers (AEO) for information. On the other hand, farmers occasionally keep extension contact with Mandal Agricultural Officers (MAOs), succeeded by KVK/DAATTC scientists and village panchayat members.When seeking information, respondents used more frequently different informal sources than the formal sources. The cause could be the easy accessibility of informal sources. According to other formal sources, the technical staff (VAA/VHA/VSA/VFA) of RBKs frequently maintained extension contact with the respondents as they could able to deliver timely information at village level. The results were consistent with those of Smitha and Jahagirdhar [1].

Regarding mass media exposure more than one third (39.33%) of the farmers had medium level of mass media exposure nearly followed by (32.69%) with high and (27.98%) with low levels of mass media exposure. The Chi-square test of independence for distribution of mass media exposure of the farmers had shown $\chi^2 = 42.954$** with p value 0.00 concluded that distribution of mass media exposure was related and significantly associated with the region. From the above results, most of the farmers belonged were medium to high mass media exposure. This might be due to most used mass media among farmers were mobile phones and television. where, mobile phone was used to get weather and market information through SMS and television helps to gain knowledge and visualize the benefits about scientific agriculture technologies. This result is similar to the findings of Babu et al. [2] and Anuhya et al. [3].

In case of innovativeness less than half (42.66%) of the farmers had medium level of innovativeness followed by high (30.19%) and low (27.15%) levels of innovativeness. The Chi-square test of independence for distribution of mass media exposure of the farmers had shown $\chi^2 = 66.496$** with p value 0.00 concluded that distribution of innovativeness was related and significantly associated with the region. Majority of the respondents had medium to high levels of innovativeness, which might be attributed to their frequent contact with extension agents and VAAs/VHAs, helping them to adopt the latest technology. Additionally, the farmers might be motivated to try new innovations to increase their income. Consequently, the farmers inclined towards technologies disseminated through digital tools, which could provide them with higher income, prompting a medium level to high level of innovativeness. However, some farmers remain orthodox and prefer following traditional technologies, thinking that new technologies as potentially risky to adopt. This result was in agreement with Adhikari [4].

Pertaining to trainings undergone more than one third (38.23%) of the farmers had undergone medium level of trainings, followed by low (36.28%) and high (25.49%) levels of trainings. The Chi-square test of independence for distribution of trainings undergone of the farmers had shown $\chi^2 = 15.184$** with p value 0.04 concluded that distribution of trainings undergone was related and significantly associated with the region. Most of the farmers received medium to

low trainings. The above results might be due to fact that the farmers participated in the training sessions conducted by KVKs and organisations. Inadequate planning and organization of training programmes by agencies is one of the reason and also farmers are busy with their farm operations, lack of interest in sparing their time to participate in the training programmes and lack of awareness among a small number of respondents regarding the value of training programmes were some of the probable reasons for the remaining farmers to be in the low category of training. Few people fit into the high level of training category since they understood how crucial training was important in achieving proficiency and any activity they undertook. The above finding draws support with the studies of Murai (2016).

Table 1. Distribution of the farmers based on their profile characteristics

Category	Srikakulam (n=168)		Prakasam (n=70)		Chittoor (n=123)		Andhra Pradesh(n=361)		Chi square
	F	%	F	%	F	%	F	%	
1. Extension contact									
Low	28	16.67	13	18.57	30	24.40	71	19.67	
Medium	69	41.07	29	41.43	53	43.08	151	41.83	χ^2= 47.388*;
High	71	42.26	28	40.00	40	32.52	139	38.50	P=0.03
Mean	25.15		24.00		24.97		24.80		
S.D	2.43		2.20		2.62		2.56		
2. Mass media exposure									
Low	46	27.38	25	35.71	30	24.39	101	27.98	**χ^2=42.954**;**
Medium	64	38.10	33	47.15	45	36.59	142	39.33	**P=0.00**
High	58	34.52	12	17.14	48	39.02	118	32.69	
Mean	19.47		19.17		19.72		19.60		
S.D	1.46		1.20		1.23		1.45		
3. Innovativeness									
Low	42	25.00	25	35.71	31	25.20	98	27.15	
Medium	75	44.64	30	42.86	49	39.84	154	42.66	χ^2=66.496**;
High	51	30.36	15	21.43	43	34.96	109	30.19	P=0.00
Mean	34.42		35.82		37.71		35.80		
S.D	2.66		2.786		2.42		2.95		
4. Training undergone									
Low	51	30.35	40	57.14	40	32.52	131	36.28	
Medium	68	40.48	18	25.71	52	42.28	138	38.23	χ^2=15.184*;
High	49	29.17	12	17.15	31	25.20	92	25.49	P=0.04
Mean	1.72		1.60		1.88		1.86		
S.D	0.67		0.76		0.75		0.74		
5. Digital literacy									
Low	48	28.57	21	30.00	35	28.46	104	28.80	
Medium	80	47.62	33	47.14	51	41.46	164	45.43	χ^2=96.708**;
High	40	23.81	16	22.86	37	30.08	93	25.77	P=0.00
Mean	53.55		52.30		52.05		52.92		
S.D	2.56		2.60		1.77		2.27		
6. Possession of digital tools									
Low	79	47.02	33	47.14	50	40.65	162	44.88	
Medium	59	35.12	20	28.57	44	35.77	123	34.07	
High	30	17.86	17	24.29	29	23.58	76	21.05	χ^2=17.512;
Mean	10.25		10.07		10.00		10.44		P=0.230
S.D	2.25		2.37		2.14		2.44		
7.Frequency of use of digital tools									
Low	37	22.02	20	28.57	15	12.20	72	19.94	
Medium	70	41.67	38	54.29	52	42.27	160	44.32	
High	61	36.31	12	17.14	56	45.53	129	35.74	χ^2=122.115**;
Mean	21.47		20.58		20.62		21.32		P=0.00
S.D	2.67		1.47		2.36		2.46		

Category	Srikakulam (n=168)		Prakasam (n=70)		Chittoor (n=123)		Andhra Pradesh(n=361)		Chi square
8. Perception on RBKs									
Low	30	17.86	15	21.43	18	14.63	63	17.45	
Medium	66	39.28	30	42.86	62	50.41	158	43.77	χ^2=51.390**;
High	72	42.86	25	35.71	43	34.96	140	38.78	P=0.00
Mean	25.15		24.00		24.97		24.80		
S.D	2.43		2.20		2.62		2.56		
9. Information sharing Behaviour									
Low	27	16.07	11		21				
Medium	78	46.43	36	15.71	49	17.07	59	16.34	
High	63	37.50	23	51.43	53	39.84	163	45.16	χ^2=70.043**;
				32.86		43.09	139	38.50	P=0.00
Mean	34.54		35.27		35.71		35.43		
S.D	2.60		2.65		2.39		2.62		

In reference to digital literacy that nearly half (45.43%) of the farmers had medium level of digital literacy followed by low (28.80%) and high (25.77%) levels of digital literacy. The Chi-square test of independence for distribution of digital literacy of the farmers had shown χ^2 =96.708** with p value 0.00 concluded that distribution of digital literacy was related and significantly associated with the region. The digital literacy of farmers is medium due to widespread availability and affordability of smartphones and internet services in rural areas have significantly increased access to digital tool and it helps to get market prices, and real-time information. Moreover, on-going support from extension agents and Village Agricultural Assistants (VAAs/VHAs) encourages continuous engagement with digital platforms.This finding is in conformity with the findings of Adelakun and Olupitan [5] and Borah [6].

Regarding to possession of digital tools less than two fifth (44.88%) of the farmers belonged to low possession of digital tools category followed by medium (44.88%) and high (21.05%) possession of digital tools categories. The Chi-square test of independence for distribution of possession of digital tools of the farmers had shown χ^2 =17.512 with p value 0.230 concluded that distribution of possession of digital tools was not related and not significantly associated with the region. Low possession of digital tools is due to lack of digital infrastructure in rural areas, such as reliable electricity and high-speed internet, discourages the farmers to investment in digital tools. Some of the farmers possess medium possession of digital tools, this might be the reason that at present mobile phones are easily affordable and could be used by even illiterate farmers. The use of mobile phones also indicated that it provide scope in the future if it was used for the purpose of agriculture and other rural development purposes. Ongoing developments in the field of digital technologies might have attracted the farmers towards use of different digital tools such as mobiles. The farmers were aware of the advantages of digital technologies as they were using them for getting the benefits of other government programmes. These findings were in agreement with that of Naik [7] and Madhuri [8].

In case of frequency of use of digital tools more than two fifth (44.32%) of the farmers belonged to medium category in frequency of use of digital tools followed by high (35.74%) and low (19.94%) categories. The Chi-square test of independence for distribution of possession of digital tools of the farmers had shown χ^2 =122.115** with p value 0.00 concluded that distribution of frequency of use of of digital tools was related and significantly associated with the region. On overall, mobile phone was regarded as the most frequently used digital tool, among the farmers. Mobile phones are were used by the farmers for social communication, contacting middle men for marketing of produce and contacting experts on real time basis for getting agricultural advisories. However, television was also used very frequently by the farmers. It was also reported that the use of radio is lower as compared to mobile phones and television. Kisan Call Centres were rarely used by the farmers because of less awareness about existing call centres in Andhra Pradesh. The present finding of the study was in coherence with Sonalgupta [9] and vivek [10].

Pertaining to perception of RBKS less than half (43.77%) per cent of the farmers had medium perception on RBKs followed by high (38.78%) and low (17.45%) perception on RBKs. The Chi-square test of independence for distribution of perception on RBKs of the

farmers had shown χ^2 =51.390** with p value 0.00 concluded that distribution of perception on RBKs was related and significantly associated with the region. perception of farmers on Rythu Bharosa Kendras is medium to high because these centers provide a comprehensive and reliable source of agricultural support and services that are crucial for their farming operations. RBKs offer farmers access to high-quality inputs like seeds, fertilizers, and pesticides, ensuring they can obtain necessary resources convenient at fair prices. Additionally, RBKs serve as information hubs where farmers receive real-time updates on weather, market prices, and best practices, which help them make informed decisions. This holistic support system enhances their productivity, reduces uncertainties, and contributes to their overall well-being, leading to a positive perception among the farming community. The above finding is in accordance with the finding of Darshan [11] and Saifuddin [12]

In relation to information sharing behaviour less than half (45.16%) of the farmers had medium information sharing behaviour followed by high (38.50%) and low (16.34%) information sharing behaviour. The Chi-square test of independence for distribution of information sharing behaviour of the farmers had shown χ^2 =70.043** with p value 0.00 concluded that distribution farmers information sharing behaviour was related and significantly associated with the region. The information sharing behavior of farmers is medium to high because exchanging knowledge and experiences is vital for addressing common agricultural challenges and improving practices. Farmers frequently share information about successful techniques, pest and disease management, weather patterns, and market trends with their peers through informal networks, community meetings, and social media platforms. This collaborative behavior helps them to inform about new developments, access practical solutions, and adopt innovative practices that enhance productivity and sustainability. This finding was in conformity with Darsana [13] and Meena et al. [14].

3.3 Profile Characteristics of Stakeholders of RBKs (other than farmers)

The outcomes in the Table 2 showed that 45.83 per cent of the stakeholders had high level of mass media exposure followed by medium (43.75%) with and low (10.42%) levels of mass media exposure. The Chi-square test of independence for distribution of mass media exposure of the stakeholders had shown χ^2 = 48.627** with p value 0.00 concluded that distribution of mass media exposure was related and significantly associated with the region. Mass media exposure is highly beneficial for scientists and agricultural officers at the grassroots level. It enables them to disseminate research findings and innovative agricultural practices to a wider range of farmers, facilitating the rapid adoption of new technologies by farmers and it helps in raising awareness about critical issues such as pest outbreaks, climate change impacts, and new crop varieties, ensuring timely and informed responses. Mass media serves as a platform for knowledge exchange, where scientists and agricultural officers can engage with the public, gather feedback, and understand the real-world challenges faced by the farmers. The present finding of the study was in partial accordance with Darshan [13], Kushwala [15] and Anuhya et al. [3].

Regarding innovativeness majority (64.58%) of the stakeholders had medium level of innovativeness followed by high (20.84%) and low (14.58%) levels of innovativeness. The Chi-square test of independence for distribution of innovativeness of the stakeholders had shown χ^2 =72.000** with p value 0.00 concluded that distribution of innovativeness was related and significantly associated with the region. From the above table, it was observed that, stakeholders had medium to high levels of innovativeness because innovativeness helps them in continuous development and application of new technologies and practices to improve agricultural productivity, sustainability, and resilience. Scientists get knowledge on new technologies and practices through research and development, whereas AOs and VAAs/VHAs adapt and implement these innovations at the grassroots level. This collaborative ecosystem fosters a culture of innovation essential for addressing evolving agricultural challenges and enhancing food security. The findings of this study are in agreement with the findings of study conducted by Sakthivel and Kanagasabapathi [16], Shanmuka [17] and Adhikari [4].

In case of trainings undergone majority (72.92%) of the stakeholders had undergone medium level of trainings followed by high (18.75%) and low (8.33%) levels of trainings. The Chi-

square test of independence for distribution of the stakeholders had shown χ^2 =32.857** with p value 0.00 concluded that distribution of trainings undergone was related and significantly associated with the region. The results of the study showed that the training levels of scientists, village agriculture assistants, and agriculture officers are medium to high because it helps them in understanding of advanced agricultural practices, technologies, and the latest research developments. Comprehensive training equips them with the necessary knowledge and skills to innovate, solve agricultural problems, and effectively transfer knowledge to farmers and other stakeholders. In-service training is very important for farm scientist as it help in improving and updating their skills, to be able to increase their job performance. This extensive training is crucial for ensuring they can contribute effectively to agricultural productivity, sustainability, and resilience. The finding is in accordance with the findings of Joblaew et al*.* [18], Babu et al*.* [2] and Nikhitha et al*.* (2021).

Table 2. Distribution of the stakeholders based on their profile characteristics

Category	VAAs/VHAs (n=12)		MAOs/DAOs (n=24)		Scientists (n=12)		Overall (n=48)		Chi square
	f	%	F	%	f	%	F	%	
1. Mass media exposure									
Low	3	25.00	2	8.33	0	0.00	5	10.42	
Medium	7	58.33	10	41.67	4	33.33	21	43.75	χ2=48.627**;
High	2	16.67	12	50.00	8	66.67	22	45.83	P=0.00
Mean	19.16		21.08		22.00		20.89		
S.D	1.02		0.66		0.85		1.30		
2. Innovativeness									
Low	4	33.33	2	8.33	1	8.33	7	14.58	
Medium	6	50.00	17	70.83	8	66.67	31	64.58	
High	2	16.67	5	20.84	3	25.00	10	20.84	χ2=72.000**;
Mean	33.75		40.16		41.91		38.77		P=0.00
S.D	1.28		1.80		0.79		3.33		
3. Training undergone									
Low	2	16.67	2	8.33	0	0.00	4	8.33	
Medium	9	75.00	18	75.00	8	66.67	35	72.92	χ2=32.857**;
High	1	8.33	4	16.67	4	33.33	9	18.75	P=0.00
Mean	2.5		4.08		4.33		3.66		
S.D	1		0.51		0.49		0.95		
4. Digital literacy									
Low	2	16.67	2	8.33	0	0.00	4	8.33	
Medium	9	75.00	8	33.33	3	25.00	20	41.67	χ2=73.524**;
High	1	8.33	14	58.34	9	75.00	24	50.00	P=0.00
Mean	83.83		88.08		90.33		87.35		
S.D	1.26		1.44		0.88		2.63		
5. Possession of digital tools									
Low	4	33.33	6	25.00	2	16.67	12	25.00	
Medium	6	50.00	10	41.67	6	50.00	22	45.83	χ2=46.747**;
High	2	16.67	8	33.33	4	33.33	14	29.17	P=0.00
Mean	9.83		10.33		13.00		10.89		
S.D	0.71		1.23		1.04		1.62		
6.Frequency of use of digital tools									
Low	2	16.67	3	12.50	1	8.33	6	12.50	
Medium	4	33.33	5	20.83	9	75.00	18	37.50	
High	6	50.00	16	66.67	2	16.67	24	50.00	χ2=54.224**;
Mean	41.83		44.00		44.58		43.60		P=0.00
S.D	1.02		1.20		0.90		1.64		

Category	VAAs/VHAs (n=12)		MAOs/DAOs (n=24)		Scientists (n=12)		Overall (n=48)		Chi square
7. Perception on RBKs									
Low	1	8.33	3	12.50	1	8.33	45	10.42	
Medium	7	58.34	12	50.00	6	50.00	25	52.08	χ2=20.375*;
High	4	33.33	9	37.50	5	41.67	18	37.50	P=0.02
Mean	28.5		28.33333		29		28.5		
S.D	0.6742		0.651339		1.128152		0.850532		
8. Information sharing Behaviour									
Low	1	8.33	3	12.50	0	0.00	4	8.33	
Medium	8	66.67	12	50.00	7	58.33	27	56.25	
High	3	25.00	9	37.50	5	41.67	17	35.42	χ2=36.514**;
Mean	36.83		39.00		40.41		38.8		P=0.00
S.D	1.11		1.47		0.51		1.69		

Pertaining to digital literacy exactly half (50.00%) of the stakeholders had high level of digital literacy followed by medium (41.67%) and low (8.33%) levels of digital literacy. The Chi-square test of independence for distribution of digital literacy of the stakeholders had shown χ^2 =73.524** with p value 0.00 concluded that distribution of digital literacy was related and significantly associated with the region. It was indicated from the table that majority of the stakeholders had high to medium level of digital literacy because of their work, increasingly relies on digital tools for research, data analysis, communication, and implementation of agricultural practices. High digital literacy enables scientists to conduct sophisticated research, collaborate globally, and access the latest scientific information. For village agriculture assistants, it allows effective dissemination of information, use of precision farming tools, and real-time problem-solving with farmers. Agriculture officers benefit from digital literacy by efficiently managing agricultural programs, monitoring development programs and making data-driven policy decisions. This proficiency in digital technologies enhances their productivity, facilitates innovation, and improves the overall efficiency and impact of their work in advancing modern agriculture.This result is similar to the findings of Hassani (2022),

In reference with possession of digital tools more than two fifth (45.83%)of the stakeholders belonged to medium possession of digital tools category followed by high (29.17%) and low (25.00%) categories. The Chi-square test of independence for distribution of possession of digital tools of the stakeholders had shown χ^2 =46.747 with p value 0.00 concluded that distribution of possession of digital tools was related and significantly associated with the region. The possession of digital tools helps scientists, village agriculture assistants, and agriculture officers disseminate technology by enabling efficient and widespread communication of research findings, innovations, and best practices. Digital tools such as social media, mobile apps, online platforms, and precision agriculture technologies facilitate real-time sharing of information and training materials, allowing these professionals to reach a larger and more diverse audience quickly. They can conduct virtual workshops, provide remote support, and tailor information to specific local needs, enhancing the adoption of new technologies and practices among farmers. This accelerates the transfer of knowledge, improves decision-making, and ultimately boosts agricultural productivity and sustainability. The above finding draws support with the studies of Avilesh [19].

Regarding frequency of use of digital tools nearly half (50.00%) of the stakeholders belonged to high category in frequency of use of digital tools followed by medium (37.50%) and low (12.50%) categories. The Chi-square test of independence for distribution of possession of digital tools of the stakeholders had shown χ^2 =54.224** with p value 0.000 concluded that distribution of frequency of use of digital tools was not related and not significantly associated with the region. From the above statistics it is indicated that mostly mobile phones are indispensable for real-time communication, allowing agricultural experts to send timely updates, alerts, and personalized advice directly to farmers. This instant connectivity helps address urgent issues such as pest outbreaks or unexpected weather changes, thereby mitigating potential losses and improving crop management. Enhances the ability of scientists and agricultural officers to effectively

communicate, educate, and engage with the farming community. The present finding of the study was in conformation of Sonalgupta [9], Vivek [10] and Kavaskar and sharmila [20].

In case of perception on RBKs majority (52.08 %) of the stakeholders had medium perception on RBKs followed by high (37.50%) and low (10.42%) perception on RBKs. The Chi-square test of independence for distribution of perception on RBKs of the stakeholders had shown χ^2 =20.375* with p value 0.02 concluded that distribution of perception on RBKs was related and significantly associated with the region. Perception on RBKs among stakeholders is medium to high because these centers serve as vital hubs for supporting and empowering farmers with comprehensive agricultural services. For scientists and agriculture officers, RBKs become a point of contact for implementing and monitoring agricultural policies and programs, while village agriculture assistants find them essential for connecting with and assisting the farming community. This integrated support system fosters trust and enhances agricultural productivity and sustainability, explaining the positive perception of RBKs. This result was in agreement with Darshan [13] and Saifuddin [12].

In relation to information sharing behaviour more than half (56.25%) of the stakeholders had medium information sharing behaviour nearly followed by high (35.42%) and low (8.33%) information sharing behaviour. The Chi-square test of independence for distribution of the stakeholders information sharing behaviour of the other stakeholders had shown χ^2 =36.514** with p value 0.00 concluded that distribution of information sharing behaviour was related and significantly associated with the region. The information sharing behavior of scientists, village agriculture assistants, and agriculture officers is medium to high because collaboration and knowledge exchange are fundamental to their roles in advancing agricultural practices and addressing challenges. Scientists engage in peer-reviewed publications, conferences, and collaborative research projects to share their findings with the scientific community and inform policymaking. Village agriculture assistants disseminate information about best practices, new technologies, and market trends to farmers through extension programs, workshops, and community meetings to foster innovations and productivity at the grassroots level. Agriculture officers facilitate information sharing among stakeholders, including farmers, government agencies, and research institutions, to ensure that resources, expertise, and insights are shared effectively, ultimately contributing to improved agricultural outcomes and sustainable development. The present finding of the study was in coherence with Darsana [13] and Meena et al. [14],[21,22].

4. CONCLUSION

The results of the study indicate that the majority of farmers exhibit medium to low levels in their profile characteristics. This suggests a significant need to enhance their knowledge and use of digital technologies. Additionally, it is essential to provide better connections and communication among these farmers to ensure they are well-informed and up-to-date with the latest agricultural practices and innovations. On the other hand, stakeholders belonged to medium to high low levels in their profile characteristics. This enables them to access and disseminate information more effectively by using digital tools. By using their knowledge and capabilities, stakeholders can play a crucial role in bridging the information gap. They can ensure that help in empowering them to make informed decisions and improve their agricultural productivity. Thus, there is a need to improve farmers' digital literacy and networking skills. Stakeholders should be encouraged to use digital technologies for information dissemination. This dual approach will eventually benefit the agricultural community as a whole by enabling a more integrated and effective agricultural information system.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author hereby declare that generative AI technologies such as Large Language Models, etc have been used during writing or editing of manuscripts. Such as Google bard, Quillboat and some AI tools.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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