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Impact assessment of technical knowledge gain among beneficiary farmers through Kisan Mobile Advisory Services

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Abstract

Agriculture in India faces multiple challenges such as climate variability, pest and disease incidences, declining soil health, rising input costs, and market uncertainties, which necessitate timely, location-specific, and need-based technical information for sustainable farm management. In this context, ICT-based extension approaches, particularly mobile phone–enabled services, have emerged as effective complements to conventional extension systems. The present study assessed the impact of Kisan Mobile Advisory Services (KMAS) on the technical knowledge of 120 beneficiary farmers using a descriptive research design. Technical knowledge was measured before and after exposure to KMAS across fifteen areas of agricultural technology through a structured interview schedule. The impact was analyzed using mean score comparison, paired t-test, and percentage change. The findings revealed a significant improvement in farmers' technical knowledge after KMAS intervention, with a noticeable shift from low to medium and high knowledge categories. The mean knowledge score increased from 25.90 to 28.80, and the calculated t-value (3.414) was significant at the 0.05 level. Overall, a higher proportion of farmers (40%) exhibited a medium level of impact, indicating that KMAS is an effective, scalable, and cost-efficient ICT-based extension tool for enhancing farmers' technical knowledge and supporting informed decision-making.

Keywords: KMAS, technical knowledge

Introduction

Agriculture continues to be the backbone of rural livelihoods in India, supporting a large proportion of the population and playing a critical role in food security and economic stability. However, the sector is increasingly confronted with challenges such as climate variability, emerging pest and disease problems, declining soil health, rising input costs, and market uncertainties. In this dynamic environment, timely access to credible, location-specific, and need-based technical information has become a decisive factor influencing farm productivity and sustainability.

Traditionally, the dissemination of agricultural technologies has relied heavily on interpersonal extension methods such as farm visits, demonstrations, training programmes, and group meetings. While these approaches remain valuable, their outreach is often constrained by limited manpower, vast geographical coverage, and time-bound requirements. The widening farmer–extension worker ratio has further intensified the communication gap between research institutions and farming communities. Consequently, innovative approaches that complement conventional extension systems are essential to ensure effective transfer of agricultural knowledge.

In recent years, Information and Communication Technology (ICT) has emerged as a powerful enabler in agricultural extension, transforming the way information is generated, shared, and utilized. Among various ICT tools, mobile phones have gained prominence due to their affordability, portability, and widespread penetration in rural areas. Even small and marginal farmers now possess access to mobile connectivity, making it a practical medium for delivering agricultural advisories directly to farmers' hands.

Kisan Mobile Advisory Services (KMAS) is one such ICT-based extension intervention designed to bridge the information gap by providing farmers with short, precise,

and timely advisories through Short Message Service (SMS). The service operates on a linear communication framework wherein agricultural experts generate validated technical messages, which are transmitted through mobile networks and received directly by registered farmers. These advisories typically cover critical aspects of agriculture and allied sectors, including crop production practices, pest and disease management, nutrient management, weather-based advisories, livestock management, market information, and farm mechanization Parganiha *et al* 2012 [7].

KMAS is implemented through a collaborative institutional framework involving organizations such as Indian Council of Agricultural Research, State Agricultural Universities, and Krishi Vigyan Kendras, which ensure scientific accuracy and local relevance of the messages. Advisory content is periodically customized according to seasonal requirements, agro-climatic conditions, and farmers' feedback, thereby enhancing its utility and applicability. The use of regional languages has further improved comprehension and acceptance among farmers.

Beyond information delivery, KMAS has the potential to strengthen farmers' technical knowledge, enhance decision-making capacity, and reduce production risks by enabling preventive and corrective actions at the right time. Unlike face-to-face extension methods, mobile-based advisories ensure simultaneous reach to a large number of farmers with minimal cost and time, making it a scalable and sustainable extension model. Sanjay *et al*. 2009 [8].

Despite the expanding coverage of KMAS, systematic empirical evidence on its effectiveness—particularly in terms of knowledge acquisition by beneficiary farmers—remains limited at the micro level. Understanding how far these advisories contribute to improving farmers' technical knowledge is essential for refining content strategies, improving delivery mechanisms, and enhancing the overall impact of mobile-based extension services.

Objective

To assess the impact of Kisan Mobile Advisory Services on the technical knowledge gained by beneficiary farmers.

Methodology

The present study employed a descriptive research design to assess the impact of Kisan Mobile Advisory Services (KMAS) on the technical knowledge of beneficiary farmers. The study was conducted among 120 KMAS beneficiary farmers, selected from the study area.

Technical knowledge of the respondents was measured before and after exposure to KMAS across fifteen areas of agricultural technology, namely crop production, plant protection, weed management, manure and fertilizer management, improved varieties, vegetable and fruit production, farm machinery, weather forecasting, market information (mandi bhaw), dairy, poultry, fishery, and Krishi Vigyan Kendra (KVK) ongoing programmes Singh *et al*. 2021 [9].

A three-point continuum scale was used to assess knowledge level, where scores of 1, 2, and 3 were assigned to low, medium, and high knowledge, respectively. Based on the total score obtained, respondents were categorized into low (15–25), medium (26–35), and high (36–45) knowledge levels Vishvakarma *et al.* 2019 [10].

Primary data were collected through personal interviews using a structured and pre-tested interview schedule, while secondary information was obtained from Krishi Vigyan Kendra, Jabalpur. Agrawal *et al*. 2012 [1]

The impact of KMAS was analyzed by comparing mean knowledge scores before and after exposure. A paired t-test was applied to test the significance of difference between the two means, and percentage change was calculated to assess the extent of improvement in technical knowledge.

Results and Discussion

The data presented in table 1 show that the KMAS beneficiary farmers according to their technical knowledge obtained on different area of technology before using Kisan mobile advisory services and after using. The overall average of all the aspects was categorized as low, medium and high knowledge category i.e. 51.6, 49.4 and 19.00, respectively. Whereas after using KMAS the overall average of different area of technology were also categorized as low, medium and high technical knowledge obtained i.e. 34.6, 60.6 and 24.8, respectively.

It can be inferred from the table that majority of the KMAS beneficiary farmers had overall average 49.4 before using KMAS whereas after using KMAS the overall average has been increased to 60.6 of all the listed area of technology.

Table 1: Distribution of KMAS beneficiary farmers according to their technical knowledge obtained on different area of technology before and after KMAS

S. No.	Area of technology	Before KMAS			After KMAS		
		Low	Medium	High	Low	Medium	High
1.	Crop production	45	50	25	20	67	33
2.	Plant conservation	50	48	22	25	65	30
3.	Weedicide	58	42	20	36	56	28
4.	Manure	61	41	18	41	55	24
5.	Fertilizer	64	39	17	44	54	22
6.	Improved variety	52	48	20	36	60	24
7.	Vegetable production	47	49	24	25	64	32
8.	Fruit production	51	47	22	27	70	29
9.	Farm machinery	48	56	16	32	64	18
10.	Weather forecasting	39	56	25	24	56	32
11.	Mandi bhaw	48	54	18	41	55	23
12.	Dairy	56	48	14	45	59	20
13.	Poultry farming	50	57	13	43	61	18
14.	Fishery	55	53	12	45	60	14
15.	KVK on-going programmes	48	52	20	35	60	25
	Total	774	740	286	519	909	372
	Overall average	51.6	49.4	19.00	34.6	60.6	24.8

Table 2: Mean score of technical knowledge obtained by the KMAS beneficiary farmers

S. No.	Category	Number of respondents	Mean		Calculated t-value	Table value
			Before	After		
1.	Impact of KMAS	120	25.90	28.80	3.414*	1.65

Table.2. reveals that the mean score for impact of KMAS before and after intervention of KMAS. The data indicated variation of two mean 25.90 and 28.80 respectively. However, when these means were subjected to t-test the calculated value of 't' was found to be 3.414, which was greater than table value of 't' (1.65) at 0.05% probability level. Thus, it can be concluded that there was significant difference before and after intervention of KMAS with respect to technical knowledge obtained by beneficiaries.

Impact was also measured by finding before and after scores of agricultural technical information obtained by beneficiaries through KMAS. After adopting KMAS the score obtained was thus categorized into 3 categories *viz.* low impact, medium impact and high impact

Table 3: Distribution of KMAS beneficiary farmers according to their per cent change in technical knowledge obtained by beneficiary farmers before and after KMAS

S. No	Categories	Before		After		% change
		F	%	f	%	
1.	Low (15 to 25 score)	62	51.66	44	36.60	15.06
2.	Medium (26 to 35 score)	42	35.00	48	40.00	2.00
3.	High (36 to 45 score)	14	11.66	28	23.40	11.74
	Total	120	100.00	120	100.00	

The data presented in Table 3. shows that before using the KMAS facilities the status of farmers was 51.66 per cent farmer's low knowledge whereas 35.00 percent of the farmer's medium knowledge and only 11.66 per cent of the farmers had high knowledge before using KMAS. While after using KMAS 36.60 per cent of the KMAS beneficiary farmers had low knowledge whereas 40.00 percent of the KMAS beneficiary farmers had medium knowledge and only 23.40 per cent of the KMAS beneficiary farmers had high knowledge level. The per cent changes in their knowledge level were 15.06, 2.00 and 11.74 per cent in low, medium and high respectively. Chouhan *et. at.* 2016 [3].

Thus, it can be inferred that higher percentage (40.00%) of the KMAS beneficiary farmers had medium impact of KMAS with respect to agricultural technical knowledge obtained by beneficiary farmers**.** As far as the per cent change is concerned, low knowledge had maximum (15.06%) per cent change among all the three category.

Table 4: Overall score of knowledge of KMAS beneficiary farmers

S. No	Categories	Frequency	Percentage
1.	Low (15 to 25 scores)	44	36.60
2.	Medium (26 to 35 scores)	48	40.00
3.	High (36 to 45 scores)	28	23.40
	Total	120	100.00

The data presented in Table 4 shows that out of total 36.60 per cent of the KMAS beneficiary farmers had low knowledge level whereas 40 percent KMAS beneficiary farmers had medium knowledge level while only 23.40 per cent of the KMAS beneficiary farmers had high knowledge level after using KMAS facilities.

Thus, it can be inferred that higher percentage (40.00%) of the KMAS beneficiary farmers had medium knowledge level with respect to agricultural technological information obtained by beneficiary farmers**.**

In relation to impact of KMAS in terms of overall technical knowledge of KMAS beneficiary farmers regarding different technological area revealed that under low, medium and high knowledge the average was 51.6, 49.4 and 19.00, respectively before using KMAS facilities whereas after using Kisan Mobile Advisory Services facilities it was recorded 34.6, 60.6 and 24.8 respectively. Asaba *et al.*2026 [2].

The mean score for impact of KMAS before and after intervention of KMAS. The data indicated variation of two mean 25.90 and 28.80 respectively. However, when these means were subjected to t-test the calculated 't' value was found to be 3.414* which was greater than table value of 't' (1.65) at 0.05%probability level. Thus, it can be concluded that there was significant difference before and after intervention of KMAS with respect to technical knowledge obtained by beneficiaries.

After intervention of Kisan Mobile Advisory Services, on technical knowledge of beneficiary farmer's highlight that higher percentage i.e. 40 per cent found medium level of impact among the beneficiary farmers and there was significant difference at the level of impact on technical knowledge of KMAS beneficiary farmers before and after joining the KMAS facilities. The KMAS facilities were able to create a significance impact on the technical knowledge of KMAS beneficiary farmers. This finding is similar to that of Shankaraiah.

The observed shift in the distribution of farmers from low to medium and high knowledge categories after exposure to Kisan Mobile Advisory Services (KMAS) may be attributed to the timely, location-specific, and need-based information delivered directly to farmers' mobile phones. Prior to KMAS, a majority of respondents fell under low and medium knowledge levels due to limited access to updated technological information and irregular extension contact. After KMAS intervention, the proportion of farmers in the medium and high knowledge categories increased, indicating that repeated advisories, reminders, and seasonal recommendations helped reinforce learning and improve comprehension of recommended practices across different technological areas.

The significant difference between the mean technical knowledge scores before (25.90) and after (28.80) KMAS intervention, as confirmed by the calculated *t* value (3.414), highlights the effectiveness of KMAS as an ICT-based extension tool. Mobile advisories enabled farmers to receive real-time solutions to field problems, weather-based alerts, and crop-specific guidance, thereby reducing information gaps and enhancing decision-making ability. The predominance of farmers in the medium impact category (40%) suggests that while KMAS substantially improved awareness and understanding, factors such as education

level, experience, and frequency of message utilization may have influenced the extent of knowledge gain. These findings corroborate earlier results reported by Shankaraiah, who also noted a significant improvement in farmers' technical knowledge following mobile-based advisory interventions.

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