

IMPACT OF MOBILE BASED AGRO ADVISORY SERVICES ON THE FARMERS

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ABSTRACT

The study conducted in Beed and Nanded districts of Maharashtra's Marathwada region assessed the impact of mobile-based agro advisory services across various dimensions. Data were collected using a pretested interview schedule. Findings revealed that a majority of respondents consistently fell into the medium impact category across all parameters, both before and after adopting mobile advisories. Specifically, agricultural information impact rose slightly from 67.91% to 68.75%, while market information impact increased from 69.17% to 76.67%. Psychological impact showed a slight decline post-adoption (from 74.17% to 68.34%), yet remained predominantly in the medium category. Social impact findings were mixed, with 69.58% before and 73.75% after adoption, and a separate measure showing 70.00% post-adoption. Economic impact also remained largely medium, with 65.42% of respondents in this category. Overall, 63.33% of respondents experienced medium-level impact from mobile-based agro advisory services, followed by 20.00% in the low category and 16.67% in the high category. The results suggest that mobile advisories have helped maintain or slightly improve farmers' access to agricultural, market, psychological, social, and economic information, reinforcing their utility as a consistent support tool for rural communities. However, the dominance of the medium category across indicators also points to scope for further enhancement in service effectiveness.

Keywords : *impact, mobile based agro advisory services, agricultural extension, market information, psychological impact*

INTRODUCTION

In the last few decades, information and communication technologies (ICTs) have provided immense opportunities for the social and economic development of rural people. Mobile telephony is one such technology that has developed significantly in the past few years, with the subscription rate in developing countries going up from 22 per 100 inhabitants in 2005 to 91.8 per 100 inhabitants in 2015. Mobile technology goes beyond geographic, socioeconomic, and cultural barriers, and this large increase in mobile subscriptions, along with the recent roll out of 3G and 4G technology, can play a big role in the development of rural people (Pratik and Vinaya, 2022).

Mobile phones are devices that can create, store, access, and share information anytime, anywhere. When teamed with extension and advisory services, they can help improve the livelihoods of rural people by getting much needed timely information to their fingertips at potentially low cost. So-called mobile-based extension and advisory services (MBAS) enable value-added services, such as mobile agro-services, which help farmers monitor their crops through mobile phones. While value-added services are generally fairly accessible to all the farmers in rural areas,

machine-to-machine services are more cost intensive and require infrastructure that is often not present in developing countries (Sarvanan and Bhattacharjee, 2015; Pratik and Vinaya, 2021; Pratik et al., 2023).

Overview

The potential and utilization of ICT tools by farmers have been extensively studied across India, including dairy farmers and those using mobile advisory systems. mKisan is a mobile-based agricultural extension platform developed under the National e-Governance Plan – Agriculture (NeGP-A) (Gandhi and Veeraghavan, 2011). It leverages SMS, USSD, IVRS, and voice messages to deliver timely, location-specific advisories to farmers in their local languages even without internet access. India has seen a surge in mobile-based agro-advisory experiments like IKSL, RML, Kisan Sanchar, Fisher Friend, M-Krishi, and the Kisaan SMS Portal. These platforms use SMS, voice messages, and mobile apps to deliver timely information on weather, market prices, farming practices, government schemes, and technologies. The use of mobile phones has shown a significant socio-economic impact on Indian agriculture (Mittal et al., 2010; Prajapati et al., 2025; Kumar et al., 2025; Kumar et al., 2024; Hossain et al., 2024; Anusha et al., 2023), and SMS-based

agricultural information has demonstrated a positive impact on Indian farmers (Fafchamps and Minten, 2012).

While studies highlight mobile phones' potential to help farmers manage risks, their real impact depends on delivering timely, actionable, and relevant messages—especially during emergencies like frost or floods (Mittal, 2012). Effective advisories must build awareness and decision-making capacity. Research on the role of MBAS in enhancing farm productivity has also been conducted (Patil and Chavhan, 2020), as has research on ICT tools in agricultural extension specifically within the Marathwada region (Deshmukh and Ahire, 2021). Furthermore, a comparative analysis of three ICT projects from India in agricultural development has also been documented (Meera et al., 2004). M-services enhance phone utility by: Expanding access to diverse information, enabling networking and financial transactions (e.g., m-payments), and bridging the digital divide for rural poor lacking landlines or internet. However, success depends on affordability, digital literacy, and content relevance. In agriculture, m-services can empower smallholders and subsistence farmers with low productivity and limited tech access. Globally, companies like SAP, Nokia, Reuters, and Google are piloting m-service innovations in agriculture, health, and education.

Genesis

The portal addresses challenges in traditional extension services limited manpower, vast geography, and diverse agro-climatic needs by using mobile telephony to bridge the gap between experts and farmers, especially in rain-fed and remote areas.

Enable two-way communication

Farmers receive advisories and can send queries. Reach every farm household using mobile phones (38 crore rural mobiles vs. 9 crore farm households). Centralize and monitor advisory dissemination. Integrate farmer databases from KVKs, SAUs, and government departments. Overcome digital divide with SMS-based services.

Unique Features

Block-level targeting by crop/activity. Dashboard with message tracking and query review. 3000+ activated experts across 12 languages. 70 lakh farmers subscribed. Integration with 20+ services like market prices, agromet advisories, Kisan Call Centres, and buyer-seller platforms.

OBJECTIVE

To study the impact of mobile based agro advisory services on the farmers of Marathwada region.

METHODOLOGY

The present study was conducted in Beed and Nanded district of the Marathwada region of Maharashtra state which were selected purposively for the research study on the basis of maximum number of users of mobile based agro advisory services. From these two districts four talukas i.e., two talukas from each district were selected purposively for the research study. The list of respondents was obtained from the state agriculture department and accordingly the sample size was finalized. Overall, 240 farmers from the two districts were purposively selected for the present study. Out of 240 samples 120 from Beed i.e., 60 from Ashti taluka and 60 from Ambajogai taluka were selected. The other 120 were constituted from Loha and Kandhar from Nanded district. In further, distribution of sample size, 12 respondents from one village so likewise 5 villages from each taluka were selected. The final total of villages was 20 from these two districts. Ex-post facto research design was adopted for this study. The data were collected with the help of pretested interview schedule from the respondents as per their convenience at their home or farms. The statistical methods and tests such as frequency, percentage, mean, standard deviation, co-efficient of correlation, multiple regressions, and Z test were used for the analysis of data. Summated rating scale by Rensis Likert (1932) and Edwards (1957) was used to develop and standardize the scale for measuring impact of mobile based agro advisory services in Marathwada region.

RESULTS AND DISCUSSION

(1) Impact of Agricultural information due to MBAS

Impact of agricultural information means the impact caused by the information provided through mobile based agro advisories were worked out by using the statistical tools and the results obtained are presented in the following table.

From the table it is revealed that, before adoption of the mobile based agro advisory services majority (67.91%) of the respondents were in medium category followed by 16.67 per cent of the respondents were in low category and the rest were found in high category of impact. Whereas, when they adopted these mobile based agro advisories there score categories were doubled and then they found as majority (68.75%) of the respondents were in medium category followed by 21.25 per cent in high category and 10.00 per cent were in low category of impact of agricultural information. The Z value of before and after adoption of mobile based agro advisory services was found highly significant at 0.01 level of probability which indicate that there was very significant difference in before using mobile based agro advisory services and after using them.

Table 1: Distribution of respondents according to the impact of Agricultural Information due to Mobile based agro advisory services

(n=240)

Sr. No.	Category	Score	Before adoption	Score	After adoption	'Z' value
			F	%	F	%
1	Low	Upton 9	40	16.67	Up to 20	24
2	Medium	9 to 15	163	67.91	21 to 25	165
3	High	16 and above	37	15.42	26 and above	51
Mean			8.65		12.02	
S.D.			1.00		1.11	

It was observed from the results that, majority (65.83%) of the respondents were found in medium category of impact followed by 17.50 per cent were in low category and 16.67 per cent were found in high category of impact of agricultural information due to mobile based agro advisory services. The probable reason may be the age of the respondents as it was found in middle age category i.e., 35

to 55 years. The respondents who were in old category were unaware about such technologies. The respondents who were educated and were ready to adopt innovation were of middle-aged category. The reason for medium impact was the unsure and disbelief on the delivered advisories through mobile based agro advisory services.

(2) Impact of market information due to MBAS

Table 2: Distribution of respondents according to the impact of Market Information due to Mobile based agro advisory services

(n=240)

Sr. No.	Category	Score	Before adoption	Score	After adoption	'Z' value
			F	%	F	%
1	Low	Up to 5	44	18.33	Up to 12	21
2	Medium	6 to 10	166	69.17	13 to 15	184
3	High	11 and above	30	12.50	16 and above	35
Mean			7.30		13.7	
S.D.			2.24		1.75	

It was found that majority (69.17%) of the respondents before adoption of mobile based agro advisory services were in medium category followed by 18.33 per cent were in low category and 12.50 per cent in high category. The mean and standard deviation were found as 7.30 and 2.24 respectively. Whereas after using the mobile based agro advisory services majority (76.67%) of the respondents were found in medium category, followed by 14.58 per cent in high category and 8.75 per cent were in low category. The mean and standard deviation were found as 13.7 and 1.75 respectively. The Z value of before and after adoption of mobile based agro advisory services was found highly significant at 0.01 level of probability which indicate that there was very significant difference.

It was found from the results that, majority (60.42%) of the respondents were belonged to medium category of impact followed by 26.25 per cent of them belonged to low category and 13.33 per cent of the respondents belonged to high category of impact of market information due to mobile based agro advisory services. Impact of market information was found in medium category as the respondents were less sure about the delivered prices of different agricultural commodities and the rumours spread by the local marketers about the price fluctuations. Those who are educated and using various media like print and electronic media they are sure about the delivered advisories on market information and hence they adopt such technologies easily.

(3) Psychological impact due to MBAS

Table 3: Distribution of respondents according to the psychological impact due to Mobile based agro advisory services (n=240)

Sr. No.	Category	Score	Before adoption	Score	After adoption	'Z' value
			F	%	F	%
1	Low	Up to 5	44	18.33	Up to 12	44
2	Medium	6 to 9	178	74.17	13 to 18	164
3	High	10 and above	18	7.50	19 and above	32
Mean			7.15		13.99	
S.D.			1.94		1.58	

It was found that majority (74.17%) of the respondents before adoption of mobile based agro advisory services were in medium category, while 18.33 per cent were in low category and very few (0.75%) were found in high category. The mean and standard deviation were found as 7.15 and 1.94 respectively. Whereas after adopting the mobile based agro advisory services majority (68.34%) of the respondents were found in medium category, followed by 18.33 per cent were in low category and 13.33 per cent were in high category. The mean and standard deviation were found as 13.99 and 1.58 respectively. The Z value of before and after adoption of mobile based agro advisory services was found highly significant at 0.01 level of probability which indicate that there was very significant difference.

From the results it was revealed that, 67.92 per cent of the respondents were found in medium category of impact followed by 19.58 per cent were in low category and 12.50 per cent of them were found in high category of psychological impact due to mobile based agro advisory services. Farmers using mobile based agro advisory services were doubtful about the given information through mobile phones as they don't get the source of the information and could not check the authenticity of the given information. These things make them psychologically tentative about the use of said advisories. But those who are getting information on their mobile phone and they have knowledge about the said advisories and its source adopts it very easily.

(4) Social impact due to MBAS

Table 4: Distribution of respondents according to the social impact due to Mobile based agro advisory services (n=240)

Sr. No.	Category	Score	Before adoption	Score	After adoption	'Z' value
			F	%	F	%
1	Low	Up to 6	45	18.75	Up to 14	28
2	Medium	7 to 11	167	69.58	15 to 18	177
3	High	12 and above	28	11.67	19 and above	35
Mean			8.69		15.99	
S.D.			2.45		2.26	

The findings in this category were found in before adoption of mobile based agro advisory services majority (69.58%) of the respondents were found in medium category, followed by 18.75 per cent in low category and 11.67 per cent were in high category. The mean and standard deviation were 8.69 and 2.45 respectively. Whereas the findings after using these advisories were found as, majority (73.75%) of the respondents were found in medium category while 14.58 per cent were in high category and 11.67 per cent were found in low category of impact. The mean and standard deviation were 15.99 and 2.26 respectively. The Z value of before and after adoption of mobile based agro advisory services was found highly significant at 0.01 level of probability which

indicate that there was very significant difference.

The results revealed that, majority (60.84%) of the respondents were found in medium impact category followed by 24.58 per cent were from low category and 14.58 per cent were from high category of social impact due to mobile based agro advisory services. The respondents who are using mobile based agro advisory services are getting social involvement due to their upgraded knowledge about agricultural practices. The study tours, exhibition, melas are again bringing the farmers together. Hence due to mobile based agro advisory services farmers are coming together and sharing their knowledge with one another.

(5) Economic impact due to MBAS**Table 5: Distribution of respondents according to the economic impact due to Mobile based agro advisory services**

(n=240)

Sr. No.	Category	Score	Before adoption	Score	After adoption	'Z' value
			F	%	F	%
1	Low	Up to 7	30	12.50	Up to 15	40
2	Medium	8 to 11	177	73.75	16 to 19	168
3	High	12 and above	33	13.75	20 and above	32
Mean			9.10		17.19	
S.D.			2.19		2.10	

The findings in this category were found in before adoption of mobile based agro advisory services majority (73.75%) of the respondents were found in medium category, followed by 13.75 per cent were found in high category, and 12.50 per cent in high category. The mean and standard deviation were 9.10 and 2.19 respectively. Whereas the finding after using these advisories were found as, majority (70.00%) of the respondents were in medium category, followed by 16.67 per cent in low category and 13.33 per cent were found in low category of impact. The mean and standard deviation were 17.19 and 2.10 respectively. The Z value of before and after adoption of mobile based agro advisory services was found highly significant at 0.01 level of probability which indicate that there was very significant difference.

From the results it was revealed that, majority (65.42%) of the respondents were belonged to medium category of impact followed by 20.42 per cent of them were in low category and 14.16 per cent of them were in high category of economic impact due to mobile based agro advisory services. Mobile based agro advisory services are providing exact and accurate technical knowledge to the farmers on their phones due to which the use of agricultural inputs is optimum and hence reduces economic losses of the farmers. As they are using the technical information given by the experts which help them to produce better from their farm and hence, they are fetching good returns.

(6) Overall impact

The major findings in overall impact of the mobile based agro advisory services was found as, majority of the respondents (63.33%) were found in medium category followed by 20.00 per cent of them were in low category and 16.67 per cent were found in high category of overall impact.

CONCLUSION

Digital literacy is the key point that should be focused by the Government particularly in the rural areas by organizing Digital literacy programmes which will

boost the use of technologies in agriculture (Khodifad and Solanki 2023, Bharath et.al. 2024). Network and connectivity issues are also the huge problem rural community is facing. Government should take appropriate steps to improve the network and connectivity in the rural India. Credibility of the advisory should be improved in greater extent and location specific technologies should be delivered accurately so that farmers will be benefited (Patil and Patel 2021). Market information and weather information should be accurately provided to the farmers on time so that farmers can harvest maximum profit from farming. State Agriculture department should focus on improving accuracy of timely weather advisories. Overall, it is important to use the advanced mobile phone friendly technologies in agriculture in order to reduce the gap between lab to land.

RECOMMENDATIONS

- (1) The State Agriculture Department should invest in improving the accuracy and timeliness of weather advisories to help farmers make better, profit-maximizing decisions on harvest and cultivation.
- (2) The Government must prioritize the organization of Digital Literacy programmes in rural areas to ensure that all farmers can effectively utilize advanced mobile phone technologies in agriculture.

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CONFLICT OF INTEREST

No conflict of Interest among the researchers.

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