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Relationship between socio-economic and communication characteristics of farmers and the impact of Kisan Mobile Advisory Services (KMAS)

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Abstract

The present study was conducted to determine the relationship between selected independent variables and the impact of Kisan Mobile Advisory Services (KMAS) with respect to agricultural technological information obtained by beneficiary farmers. The study was carried out in Patan block of Jabalpur district, Madhya Pradesh, covering 120 KMAS beneficiary farmers selected from twelve villages using a multi-stage random sampling design. Data were collected through a structured and pre-tested interview schedule. Pearson's product-moment correlation coefficient was used to determine the relationship between dependent and independent variables at 0.05 and 0.01 levels of significance. The results revealed that educational level, annual income, cropping system, marketing behaviour, mass-media exposure, innovativeness, and number of problems sent to KVK scientists had a positive and significant relationship with KMAS impact, while appropriateness of message showed a negative but significant correlation. The study highlights the importance of localized message delivery, ICT literacy, and participatory feedback mechanisms for strengthening KMAS effectiveness.

Keywords: Kisan mobile advisory services, KMAS, socio-economic characteristics

Introduction

The use of information and communication technologies (ICTs) in agriculture has emerged as a key factor in modernizing extension systems in India. Kisan Mobile Advisory Services (KMAS) provide farmers with timely, relevant, and location-specific information through mobile phones. This platform enables farmers to make informed decisions related to crop production, pest and disease management, weather forecasting, and market information. These advisories bridge the gap between research institutions and farming communities, enhancing productivity and sustainability.

Despite their benefits, the impact of KMAS differs across regions and farmers due to variations in socio-economic, psychological, and communication characteristics. Analyzing these relationships helps identify which farmer traits are associated with higher levels of KMAS utilization and impact. The present study was designed to examine the correlation between selected independent variables and the impact of KMAS with respect to agricultural technological information obtained by beneficiary farmers.

Materials and Methods

Research Design

A descriptive research design was used because it

effectively describes existing conditions and provides adequate interpretation of relationships between variables.

Area of Study

The study was conducted in Patan block of Jabalpur district, Madhya Pradesh, chosen purposively due to the active operation of KMAS through Krishi Vigyan Kendra (KVK), Jabalpur.

Sampling Design and Sample Size

A multi-stage random sampling design was adopted. Jabalpur district was selected purposively, followed by random selection of Patan block. Twelve villages—Benikheda, Rojha, Nunsar, Luhari, Baroda, Sukha, Kantora, Aarcha, Hatepur, Saraud, Khaeri, and Udna—were randomly selected. Ten KMAS beneficiary farmers were chosen randomly from each village, making a total of 120 respondents.

Data Collection

Primary data were collected using a structured and pre-tested interview schedule through personal interviews. The schedule covered respondents' socio-economic, psychological, and communication characteristics and their perceptions of KMAS advisories.

Variables and Their Measurement

Independent variables included Age, Educational level, Caste, Size of landholding, Family size, Annual income, Farm mechanization, Cropping system, Gender, Marketing behaviour, Information seeking behaviour, Mass-media exposure, Appropriateness of message, Innovativeness, and Number of problems sent to KVK scientists for solutions. The dependent variable was Impact of KMAS with respect to agricultural technological information obtained by beneficiary farmers. Variables were measured through scoring methods and standardized scales and categorized into three levels: low, medium, and high.

Statistical Analysis

Data were analyzed using Pearson's product-moment

correlation coefficient (r) to determine the degree and direction of relationships. Significance levels were tested at 0.05 and 0.01 levels of probability.

Results

The correlation analysis revealed that among the fifteen independent variables studied, seven variables—educational level, annual income, cropping system, marketing behaviour, mass-media exposure, innovativeness, and number of problems sent to KVK scientists—were found to have positive and significant relationships with the impact of KMAS. One variable, appropriateness of message, showed a negative but significant relationship, whereas the remaining variables were found to be non-significant.

Table 1: Correlation between dependent and independent variables

S. No.	Independent variable	Correlation coefficient 'r'
1.	Age	0.049NS
2.	Educational level	0.273**
3.	Caste	-0.038NS
4.	Size of land holding	0.089NS
5.	Family size	0.005NS
6.	Annual income	0.312*
7.	Farm mechanization	0.060NS
8.	Cropping system	0.421*
9.	Gender	-0.020NS
10.	Marketing behaviour	0.253**
11.	Information seeking behaviour	0.023NS
12.	Mass-media exposure	0.197**
13.	Appropriateness of message	-0.228*
14.	Innovativeness	0.712**
15.	Number of problems sent to KVK scientist for solution	0.572**

**= 0.01% level of probability

*= 0.05% level of probability

Non-Significant Variables

Variables such as age ($r = 0.049$), caste ($r = -0.038$), size of landholding ($r = 0.089$), family size ($r = 0.005$), farm mechanization ($r = 0.060$), gender ($r = -0.020$), and information-seeking behaviour ($r = 0.023$) did not show any significant relationship with the impact of KMAS. This indicates that socio-personal traits like age, caste, or gender do not directly affect how farmers benefit from KMAS advisories. It implies that KMAS is inclusive and equally beneficial to farmers irrespective of their social background, land size, or gender, provided they have access to mobile technology and advisories.

Positive and Significant Variables

A positive and significant relationship was observed between educational level ($r = 0.273$) and the impact of KMAS, implying that better-educated farmers are more capable of understanding, interpreting, and applying scientific information received through mobile advisories. Similar findings were reported by Manaswi and Noor *et al.* (2020) [5], highlighting education as a major factor in ICT adoption and utilization.

The annual income ($r = 0.312$) also exhibited a significant positive relationship with KMAS impact, suggesting that farmers with higher income have greater access to smartphones, data services, and resources required to act upon received information.

The cropping system ($r = 0.421$) showed a positive and significant relationship, indicating that farmers practicing diversified or intensive cropping systems tend to use KMAS more frequently, as their information needs are broader. Similarly, marketing behaviour ($r = 0.253$) and mass-media exposure ($r = 0.197$) were positively and significantly related to KMAS impact. This shows that farmers who are market-oriented and regularly access agricultural media are more likely to understand and implement KMAS advisories effectively.

The innovativeness ($r = 0.712$) variable displayed the highest positive correlation, signifying that more innovative farmers are highly responsive to new technologies and methods shared through KMAS. These results are consistent with Rani *et al.* (2017) [6] and Dechamma *et al.* (2020) [2], who emphasized the role of innovativeness in the adoption of ICT tools.

The number of problems sent to KVK scientists ($r = 0.572$) also had a strong positive correlation, indicating that farmers who actively interact with scientists and seek solutions are more likely to gain meaningful information through KMAS, thereby enhancing its overall impact.

Negative and Significant Variable

Interestingly, appropriateness of message ($r = -0.228$) exhibited a negative and significant correlation with the impact of KMAS. This might be due to farmers perceiving

some messages as irrelevant or not timely for their local conditions. It points to a potential gap between message content and farmers' actual field problems. Therefore,

strengthening message customization and developing locally relevant advisories could improve KMAS effectiveness.

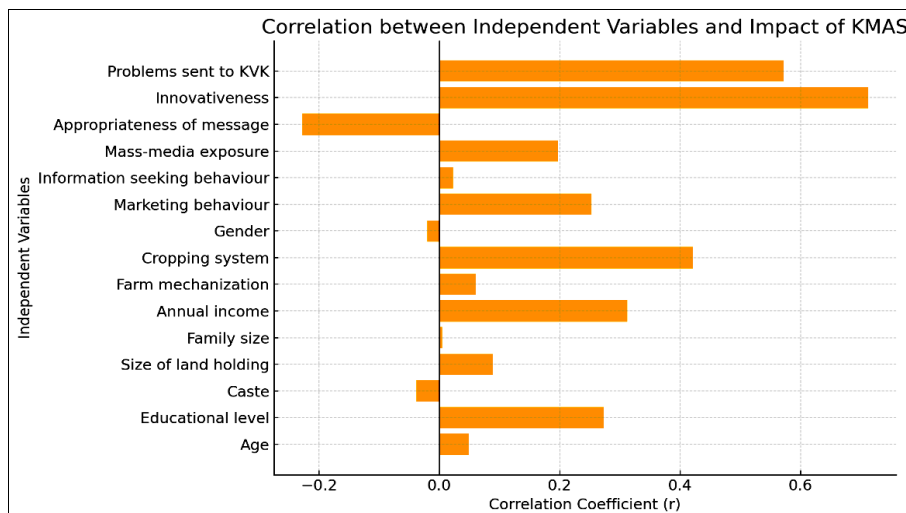


Fig 1: Correlation between independent variables and impact of KMAS

Discussion

The results reaffirm that the use and effectiveness of KMAS are influenced more by farmers' behavioural and psychological characteristics than by purely socio-economic traits. Farmers who are more educated, innovative, and proactive in seeking interaction with scientists show higher levels of benefit from KMAS advisories. This highlights the importance of designing ICT-based interventions that emphasize capacity-building, personalized communication, and user feedback loops.

The findings align with previous studies by Manaswi *et al.* (2019), Noor *et al.* (2020) [5], and Rani *et al.* (2017) [6], who reported that literacy, market linkage, and openness to innovation are crucial in maximizing the benefits of mobile-based extension services. Thus, KMAS can be strengthened by improving its content accuracy, ensuring local relevance, and promoting farmer participation in message development.

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