

Association between Profile Characteristics and Attitude of Farmers towards Mobile Phone Based Agro-Advisories (MBAs) on Cotton Crop

K. Madan Mohan Reddy¹, I. Sreenivasa Rao², M. Srinivasulu³, G.D. Satish Kumar⁴ and G.E.CH. Vidyasagar⁵

¹Scientist, DAATT Centre, Agricultural Research Station, PJTSAU, Karimnagar, (Telangana), India.

²Professor, Extension Education Institute (EEI), Rajendranagar, Hyderabad, (Telangana), India.

³Coordinator, Electronic Wing, PJTSAU, Hyderabad, (Telangana), India.

⁴Principal Scientist, Indian Institute of Oilseed Research (IIOR), Hyderabad, (Telangana), India.

⁵Professor, Department of Agronomy, College of Agriculture, PJTSAU, Hyderabad, (Telangana), India.

(Corresponding author: K. Madan Mohan Reddy*)

(Received 01 October 2021, Accepted 19 November, 2021)

(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The lack of ample man power of extension personnel is the major constraint in dissemination of information to Cotton farmers at right time across the country. The ratio of farmer to extension worker is continuing as a challenge for extension system. The challenge can be met by using potential of Information and Communication Technologies in place of manual intervention to meet the location specific information needs of the farmers. Hence the present study was carried out in three agro-climatic zones of Telangana State with the objective of studying the relationship between selected profile characteristics and attitude of farmers towards mobile phone based agro-advisories (MBAs) on cotton crop. For the purpose of study two forty (240) cotton growing farmers were selected. Experimental research design was followed. For this purpose method of summated rating scale developed by Likert's (1932) was used which consists of 15 statements. Data were collected by personal interview method. The collected data were processed through descriptive statistics, correlation analysis and multiple regression analysis. The study reveals that half of the respondents had favourable attitude towards mobile phone based agro-advisories. The correlation analysis revealed that education, innovativeness, achievement motivation, farm size, extension participation, experience in mobile usages, e-readiness, possession of electronic gadgets, degree of IT savvyness and information cost were found to have positive and significant relationship with the attitude of the respondents towards MBAs. Further, Multiple Linear Regression analysis showed that all the independent variables put together contribute 75.50 per cent of the total variation in the attitude of the farmers towards MBAs, leaving the rest to extraneous factors.

Keywords: Attitude, Mobile Phone Based Agro-advisories (MBAs), Correlation, Multiple Linear Regression.

INTRODUCTION

Over the years, Agriculture Extension has been at the fore front in the delivery of adequate information to the farming community not only for increasing productivity but also to improve their standard of living. Keeping in view of the demand for agricultural growth, evolutionary changes were made in transfer of technology to reach the farming community effectively. The Information and Communication Technology (ICT) is one of the important counterparts which made the agriculture extension more realistic and quite interesting. The ICT enabled extension systems are acting as a key agent for changing agrarian situation and farmers' lives by improving access to information and sharing knowledge.

Information is a valuable input through which farmers adopt new technologies to make the farming more profitable. The application of ICT offers wider possibilities, there by strengthening transfer of

technology between research and extension system and further onward transmission to the end users. The production, processing, storing, retrieving and transfer of knowledge to different stake holders in Agriculture has changed a lot because of the recent advances in Information and Communication Technologies. The asymmetry in information of various sectors like agriculture can be resolved by using Telecommunications more specifically by using mobile phones. The access and reach to telecommunication especially mobile telephony increased by gradual and regulated expansion of infrastructure under telecommunication. The new basic necessity for all types of rural and urban people is mobile phone. Mobile phone has become one of the best communication technologies to agriculture with its fast sharing capacity. Mobile phone plays multi role likes SMS, voice message, video call, picture, internet, e-mail, WhatsApp, and agriculture application apps for access

the agriculture information such as cultivation practices, selection of crops and varieties, pest and disease, application of fertilizers, irrigation, harvesting, market price, export details and weather advisories. Mobile Phone Based Agro-advisory Services (MPBAS) has achieved rapid growth in recent years. Agriculture is one among all the sectors that benefitted from mobile phone usage in modern days (Samah *et al.*, 2009). The positive attitude of farmers towards ICT's will magnify farmer's agricultural productivity and socio economic status (Meera *et al.*, 2004). Hence, it has been planned to study the relationship between selected profile characteristics and attitude of farmers towards mobile phone based agro-advisories (MBAs) on cotton crop. Samatha (2011) observed that attitude towards ICTs use is proportionately linked to higher education, achievement motivation, information seeking behaviour, farming experience, extension contact, economic status, scientific orientation and innovativeness. Though the relationship was not significant, it is observed the age and favourable attitude towards ICTs are linked disproportionately whereas the land holding and socio-politico participation are linked proportionately. Thus, it can be concluded that the attitude towards ICTs use is independent of age, socio-politico participation and land holding.

Ganesan *et al.*, (2013) observed that when it comes to usage of Mobile Multimedia Agricultural Advisory System (MAAS) services there is no impact of age and land holding size. The frequent use of Mobile Multimedia Agricultural Advisory System (MAAS) services is negatively correlated with education and level of innovativeness. Another interesting observation is that frequency of using information services and education are not at all associated.

Kanavi, (2014) indicated that there is a positive and significant relationship with utility of Kisan Mobile Advisory Service (KMAS) and variables such as age, education, innovative proneness, achievement motivation, decision making ability, cropping pattern, extension contacts, economic motivation, and where as the Farm size, annual income, mass media utilization and cosmopolitaness had no significant relationship with utility of Kisan Mobile Advisory Service (KMAS).

MATERIALS AND METHODS:

Since Cotton is one of the important commercial crops in all three zones (Southern, Central and Northern Telangana Zones) of Telangana state the present study is carried out in all three agro-climatic zones. Three

Districts one from each of the three agro climatic zones where cotton crop is cultivated extensively is selected purposefully. 80 cotton farmers with mobile phones and willing to get mobile phone based agro-advisories on cotton cultivation are selected randomly for the study thus constituting a total of 240 respondents. Experimental research design and simple random sampling is adopted for research purpose. A semi structured interview schedule is prepared to collect data keeping in view the objective of the study and the data is analysed by using appropriate statistical tools.

Pearson's Correlation Coefficient (r): This test was used to study the relationship between the scores of selected profile characteristics and the attitude of farmers. It measures the degree of relationship between the two sets of variables.

Multiple Linear Regression (MLR): Multiple linear regression analysis was used to study the effect of independent variables on dependent variables. The following multiple linear regression equation was fitted to the data having 11 parameters.

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_{11} X_{11}$$

Where

Y = Dependent variable

X1 to X11 = Independent variables

a = Intercept or constant

bi = Regression coefficients.

The regression co-efficient was tested for its significance by using following formula

$$t_{(n-k-1)} \text{ d.f.} = \frac{b_i}{SE(b_i)}$$

Where,

n = number of observations

k = number of independent variables

SE = standard error

bi = regression coefficient

t = test criterion for significance

RESULTS AND DISCUSSIONS

At a look from Table 1 inferred that majority of the respondents i.e. 52.10 per cent are having favourable attitude towards mobile phone based agro-advisories followed by 20.40 per cent, 13.30 per cent, 8.30 per cent and 5.80 per cent with highly favourable, neutral, unfavourable and highly unfavourable attitude, respectively towards mobile phone based agro-advisories. This findings as same as within the findings of Fadairo *et al.* (2015).

Table 1: Distribution of respondents based on their attitude towards mobile phone based agro-advisories on cotton cultivation n=240.

Sr. No.	Category	Class Interval	F	%
1.	Highly Unfavourable	32-40	14	5.80
2.	Unfavourable	40-48	20	8.30
3.	Neutral	48-56	32	13.30
4.	Favourable	56-64	125	52.10
5.	Highly Favourable	64-72	49	20.40
Total			240	100.00

Relationship between profile characteristics and attitude of farmers towards mobile phone based agro-advisories (MBAs) on cotton crop. The relevant null and empirical hypotheses are used to test the relationship between the attitude of farmers towards mobile phone based agro-advisories and their profile characteristics.

Null Hypothesis: The attitude of farmers towards mobile phone based agro-advisories and their profile characteristics are independent and not significantly related.

Empirical Hypothesis: The attitude of farmers towards mobile phone based agro-advisories and their profile characteristics are dependent and significantly related.

Table 2: Relationship between profile characteristics and attitude of farmers towards MBAs on cotton crop.

Sr. No.	Profile characteristics	Correlation coefficient (r)
1.	Age	-0.641**
2.	Education	0.458**
3.	Farm size	0.188**
4.	Experience in mobile usage	0.243**
5.	Extension participation	0.641**
6.	Achievement motivation	0.603**
7.	Innovativeness	0.564**
8.	e-Readiness	0.527**
9.	Possession of electronic gadgets	0.456**
10.	Degree of IT savvyness	0.576**
11.	Information cost	0.554**

** Significant at 0.01 level of probability; * Significant at 0.05 level of probability.

It can be understood from Table 2 that there is a positive and significant relationship at one per cent level of significance between attitude of respondents towards mobile phone based agro-advisories and the independent variables viz, education, experience in mobile usage, extension participation, achievement motivation, innovativeness, e-readiness, possession of electronic gadgets, degree of IT savvyness and information cost. There is a positive and significant relationship between the attitude of respondents towards mobile based agro-advisories with farm size at five per cent level of significance. Age is having negative and significant relationship with mobile phone based agro-advisories.

The above findings can be explained as, higher the education, experience in mobile usage, extension participation, achievement motivation, innovativeness, e-readiness, possession of electronic gadgets, degree of IT savvyness and information cost, the higher will be the attitude of the respondents towards MBAs. As the age increased, the favourable attitude towards MBAs is decreased but the relationship is significant.

It is revealed from the Table 2 that there was a significant negative relationship between age and attitude MBAs in cotton. The probable reason might be due to the fact that the young and middle aged group farmers are willing to get MBAs on cotton crop. This findings as same as within the findings of Sravan (2012); Samatha (2011) and Ganeshkumar *et al.* (2008). It used to be evident from the Table 3 that there was positive and significant relationship with the attitude of the respondents towards MBAs. The probable reasons for above trend might be the fact that the educated farmers know more about technology related to mobile phones which lead to positive attitude of the farmers towards MBAs. This findings as same as within the findings of Chauhan, (2010) and Kabir (2015).

From the Table 3 there was a positive and significant relationship between farm size and attitude of farmers

towards MBAs. This is often due to the very fact that size of landholding provides the financial base for farmers to practice MBAs disseminated through ICT tools for reaching high profit. This findings as same as within the findings of Shankaraiah and Swamy (2012); Meagy *et al.*, (2013).

From Table 3 shows that a positive and significant relationship between experience in mobile usage and attitude of farmers towards MBAs. This reason is that farmers having the less to medium possession of electronic gadgets. This findings as same as within the findings of Chauhan, (2010). Whereas the extension participation, achievement motivation, innovativeness, e-readiness, possession of electronic gadgets, degree of IT savvyness and information cost are found to have positive and significant relationship with the attitude of the respondents towards MBAs. Extension participation also provides a lot of opportunities to acquire information leading to positive attitude towards MBAs. In general the farmers with tendency of achievement motivation go for cultivation of commercial crop which leads to favourable attitude towards MBAs. The other factors that lead to positive attitude towards MBAs include Innovativeness, e-Readiness, possession of electronic gadgets and degree of IT savvyness, low information cost, location specific information, timely, quality information about agricultural technology.

Multiple Linear Regression analysis of profile characteristics with attitude of the farmers towards mobile phone based agro-advisories (MBAs) on cotton crop. An attempt through multiple linear regression is made to find out the amount of contribution made by the profile characteristics in explaining the variation in the attitude of the farmers towards MBAs. The results of step down regression analysis carried out between 11 selected variables and attitude of the respondents towards mobile phone based agro-advisories on cotton crop are shown in Table 3.

Table 3: Multiple Linear Regression analysis of profile characteristics with attitude of the farmers towards MBAs on cotton crop

V. No.	Independent variable	Regression Coefficient (b)	Standard Error (SEb)	't' Value
X1.	Age	-0.014	0.120	0.118 ^{NS}
X2.	Education	0.246	0.689	0.357 ^{NS}
X3.	Farm size	-0.425	0.227	1.872 ^{NS}
X4.	Experience in mobile usage	0.365	0.215	1.702 ^{NS}
X5.	Extension participation	0.175	0.161	1.087 ^{NS}
X6.	Achievement motivation	0.255	0.133	1.919 [*]
X7.	Innovativeness	0.085	0.133	0.636 ^{NS}
X8.	e-Readiness	1.055	0.506	2.083 ^{**}
X9.	Possession of electronic gadgets	0.658	0.608	1.081 ^{NS}
X10.	Degree of IT savvyness	0.153	0.161	0.951 ^{NS}
X11.	Information cost	0.461	0.088	5.215 ^{**}

$R^2 = 0.755$; F value = 64.028

^{**}Significant at 0.01 level of probability; ^{*}Significant at 0.05 level of probability; NS – Non Significant.

It can be seen from Table 3 that the eleven independent variables with attitude of the farmers towards MBAs taken on Multiple Linear Regression Analysis gave the R^2 (Co-efficient of multiple determination) value of 0.755. Hence, it can be inferred that independent variables put together contribute 75.50 per cent of the total variation in the attitude of the farmers towards MBAs, leaving the rest to extraneous factors. The independent variables viz, farm size, experience in mobile usage, extension participation, achievement motivation, e-Readiness, possession of electronic gadgets and information cost of the respondents had contributed significantly at 0.01 level of probability and the education, innovativeness, and degree of IT savvyness had contributed significantly at 0.05 per cent level of probability towards the variation in the attitude of the farmers towards MBAs.

It can be observed from Table 4 that the Step-down Multiple Linear Regression Analysis gave the R^2 (Co-efficient of multiple determination) value of 0.747. Hence, it can be inferred that independent variables viz; experience in mobile usage, achievement motivation, e-readiness and information cost put together contributed 74.70 per cent of the total variation in the attitude towards MBAs, leaving the rest to extraneous factors. The calculated 't' value for each of the partial 'b' value was presented and among them three partial 'b' values are significant at 0.01 level which related to achievement motivation, e-readiness and information cost and one partial 'b' value significant at 0.05 level which related to experience in mobile usage. According to 't' test criterion, these six variables had contributed the most for variation (75.90%) in the attitude of the respondents towards mobile phone based agro-advisories on cotton crop.

Table 4: Step-down Multiple Linear Regression analysis of profile characteristics with attitude of the respondents towards MBAs on cotton crop at 8th step.

V. No.	Independent variable	Regression Coefficient (b)	Standard Error (SEb)	't' Value
X4.	Experience in mobile usage	0.419	0.203	2.063 [*]
X6.	Achievement Motivation	0.319	0.122	2.607 ^{**}
X8.	e-Readiness	1.475	0.436	3.381 ^{**}
X11.	Information Cost	0.513	0.074	6.934 ^{**}

$R^2 = 0.747$; F value=173.25

^{*}Significant at 0.05 level of probability ; ^{**}Significant at 0.01 level of probability.

CONCLUSION

It can be study concluded that half of the respondents had favourable attitude towards mobile phone based agro-advisories, followed highly favourable, neutral, unfavourable and highly unfavourable attitude, respectively towards mobile phone based agro-advisories. This is an indication that farmers are interested to use mobile phone based agro-advisories in

cultivation cotton crop. Multiple Linear Regression analysis showed that all the independent variables independent variables with attitude of the farmers towards MBAs put together explained 75.50 per cent of the total variation in the attitude of the farmers towards MBAs, leaving the rest to extraneous factors. The independent variables viz; farm size, experience in mobile usage, extension participation, achievement motivation, e-Readiness, possession of electronic

gadgets and information cost of the respondents had contributed significantly at 0.01 level of probability and the education, innovativeness, and degree of IT savvyness had contributed significantly at 0.05 per cent level of probability towards the variation in the attitude of the farmers towards MBAs.

Acknowledgement. The research assistance provided under Department of Agricultural Extension, PJTSAU is highly acknowledged. I am extremely thankful to my honorable guide Dr. I. Sreenivasa Rao, Professor, EEI, Hyderabad who conceived, detailed and shaped the research problem and provided adequate guidance to the successful completion of research work. I would like to extend my whole hearted gratitude to Dr. G.D. Sathish Kumar, Principal Scientist, Indian Institute of Oilseed Research for his wise counsel, concrete suggestions, constant help and persistent encouragement during the prosecution of research work. The author special thanks to Dr.M. Sreenivasulu and Dr. G.E.CH. Vidyasagar for their worthy suggestions throughout the whole research work.

Conflict of Interest. There is no conflict of interest.

REFERENCES

- Chauhan, N. M. (2010). Farmers' perception about ICT application: A Case Study of Gujarat State. *Indian Research Journal Extension Education*, 10(3): 21-26.
- Fadairo, O. S., Olutegbe, N. S. and Tijani, A. M. (2015). Attitude of crop farmers towards e-wallet platform of the Growth Enhancement Support Scheme for input delivery in Oke-Ogun area of Oyo state. *Journal of Agricultural Informatics*, 6(2): 62-71.
- Ganesan, M., Kavitha, K., Prashanth, S. and Jayalaksmi, U. (2013). Use of mobile multimedia agricultural advisory systems by Indian farmers: Results of a survey. *Journal of Agricultural Extension and Rural Development*, 5(4): 89-99.
- Ganeshkumar, P., Prabhakara Sastry, T., Prasad, T. and Prasad, S. V. (2008). Attitude of farmers towards Rythu Mitra Television Programme. *Journal of Research, ANGRAU*, 36(2-3): 79-81.
- Kabir, K. H. (2015). Attitude and level of knowledge of farmers on ICT based farming. *European Academic Research*, 2(10): 13177-13196.
- Kanavi, R. S. (2014). An Analysis of Kisan Mobile Advisory Service (KMAS) of Krishi Vignyan Kendra. *M.Sc. (Ag.) Thesis*. University of Agricultural Sciences, Dharward.
- Likert, R. A. (1932). A technique for the measurement of attitude. *Arc.Psycho*.
- Meagy, Md. J., Rashid, Md. H., Barker, A. V., Islam, Md. M. and Islam, Md. N. (2013). Effectiveness of farmer information needs assessment as perceived by the farmers. *Journal of International Agricultural and Extension Education*, 20(2): 34-49.
- Meera, S. N., Jhamtani, A. and Rao D. U. M. (2004). Information and communication technology in agricultural development: a comparative analysis of three projects from India. *AgREN Agricultural Research and Extension Network*. Pg.135.
- Samah, B. A., Shaffril, H. A. M., Hassan, M. D. S., Hassan, M. A. and Ismail, N. (2009). Contribution of information and communication technology in increasing agro-based entrepreneurs productivity in Malaysia. *Journal of Agriculture & Social Sciences*, 5(3): 93-97.
- Samatha, J. (2011). Extent of use of information and communication technologies (ICTs) in selected crops by the farmers of Guntur district in Andhra Pradesh. *M.Sc. (Ag.) Thesis*. Acharya N. G. Ranga Agricultural University, Hyderabad.
- Shankaraiah, N. and Swamy, B. K. N. (2012). Attitude of farmers and scientists towards dissemination of technologies through Mobile Message Service (MMS). *Tropical Agricultural Research*, 24(1): 31-41.
- Sravan, K. T. (2012). A study on entrepreneurs of vermicompost technology in Guntur district of Andhra Pradesh. *M. Sc. (Ag.) Thesis*. Acharya N.G. Ranga Agricultural University, Hyderabad (India).

How to cite this article: Reddy, K. M. M.; Rao, I. S.; Srinivasulu, M.; Kumar, G. D. S. and Vidyasagar, G. E. C. H. (2021). Association between Profile Characteristics and Attitude of Farmers Towards Mobile Phone Based Agro-Advisories (MBAs) on Cotton Crop. *Biological Forum – An International Journal*, 13(4): 975-979.