

Effectiveness of social media agricultural information on farmer's knowledge

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ABSTRACT

The agriculture research and extension institutes are a major source of agricultural information and they are making full use of all information dissemination methods to bridge the information gap among farmers. Social media platforms are dominating agricultural information dissemination platforms in field level. The present study was conducted to assess the effect of agricultural information disseminated through social media on farmer's knowledge level. The Ex-post facto research design was adopted for the study with a sample of 120 respondents, covering all three erstwhile districts form the Southern Telangana Zone of Telangana state. majority of the respondents had low (75.20%) level of knowledge on agricultural technologies followed by medium (26.67%) and high (0.83%) before intervention to social media. after intervention to social media the respondents had low (51.70%) level of knowledge on agriculture technologies followed medium (42.50%) and high (5.80%). It was found that significant difference existed between the extent of knowledge of respondents before and after use of social media (Z value 8.76). The variables digital literacy, social media usage, information processing, mode of access and preference, and social media participation found to be positive and significant relation with knowledge levels on agriculture technologies at one per cent level of significance. Further variables farm size, social media network and readiness to accept information found to positive and significant at five per cent level of significance.

Introduction

The present age is termed as Information Age, where information is treated as a vital and powerful tool of socio-economic development, no less important than land, labour and capital towards the empowerment of people towards attaining sustainable development. Sustainable development depends on attitude towards information, adjustment for sharing information, and proper consumption of information by the people (Sinha, 2018). ICAR institutes, SAU's, Ministry of Agriculture and Cooperation; GOI, State Departments of Agriculture, Ministry of Rural

Development, State Development Departments and Voluntary Organisations are the institutes carrying first line extension work in India. The extension worker to farmer ratio is low in India, which may be one of the main reasons for the delay in reaching the latest farm information to farmers. The gap between information haves and information have-nots is increasing day by day. Not all the information can be delivered to each farmer, because there is a requirement of need-based information. So, the information delivered by extension agents should be need based and it is not

possible with traditional extension system, as farmers are spread in large areas and are located in distant locations. Traditionally, agricultural information dissemination was dominated by mass media channels *i.e.*, newspapers, radio, television and farm magazines to reach a large number of farmers. The way of communication is changing day by day and the advancement in Information Communication Technologies (ICTs) revolutionised the system of communication. ICTs has potential to facilitate the creation, management, storage, retrieval and dissemination of any relevant data, knowledge and information that may have already been processed and adapted (Batchelor, 2002; Champan and Slaymaker 2002; Heeks, 2002; Rao, 2007). Recent innovations in information technology can deliver agricultural information with high speed to a largenumber of people and with more accuracy (Goyal, 2011). In recent years, however, technology awareness and digital literacy are increasing among farming community in all demographics and various forms of social media are being used more and more by farmers searching for news, education, and other information in day-to-day life for agricultural development.

Social media is one of the latest ICT technologies that revolutionized the way of communication in 21st century. Its usage is inevitable in current decade and the field of agriculture is not an exception. The usage of social media made communication faster, cheaper and imparts timely information to receivers. WhatsApp, Facebook, and YouTube are more familiar at field level among all social media platforms, extension personnel should develop content accordingly in such a way that reach farmers more effectively through these social media platforms (Sandeep *et al.* 2020). The social media platforms like WhatsApp were familiar in field level to connect farmers with other farmers and local extension personnel, the networking platforms like Facebook are familiar in connecting farmers networks and YouTube channels are disseminating large amount the farm information in video format to benefit farm community. Social networking was found effective in creating knowledge (Nain *et al.*, 2019). Farmers perceived that the information available or received through social media platforms as effective and useful to them in adopting best agricultural practices (Sandeep *et al.* 2022). With this brief background

the research study is taken with objective to study the effectiveness of agricultural information disseminated through social media platforms in terms of extent of knowledge on agricultural technologies disseminated through selective social media platforms.

Material and Methods

Ex-post-facto research design was adopted for the investigation and the Southern Telangana Zone (STZ) was selected purposively based on the teledensity and pre-research visit. All three districts of the Southern Telangana Zone were selected purposively for the study. All three viz., Mahaboobnagar, Nalgonda and Rangareddy (Erstwhile districts) were selected for the study. Two mandals form each district were selected randomly and two villages from each mandal selected by using simple random sampling procedure. From each village, ten farmers were selected purposively based on status of having active accounts in selected social media platforms (YouTube, Facebook and WhatsApp) for last three years. Thus, total sample constitutes the sample size of one hundred and twenty (120) farmers. Knowledge is generally understood as an intimate acquittance of an individual with facts. Knowledge is a body of understood information possessed by an individual or by culture. Knowledge is one that plays an important role in the covert and overt behavior of an individual. (English and English). In the present study, extent of knowledge was operationalised as the degree of production technologies of agriculture (crop production, crop protection, agriculture marketing, climate resilient agriculture, post-harvest management and government policies) known to respondents using social media as a source for agriculture information source. The extent of knowledge level data was collected with help of personnel interview. The respondents were categorized into three categories as low, medium and high by their respective percentage of the score. Based on the scores obtained on 35 items of five different categories of agricultural production, technologies knowledge percentages (Obtained score / Total score X 100) were calculated and ranks were given accordingly. The primary data was collected from the farmers using social media as source of agricultural information and appropriate statistical methods like

data classification, frequency, and correlation used for data analysis.

Results and Discussion

Distribution of respondents based on their extent of knowledge on agriculture technologies:

From the table 1 and figure 1 it can be observed that the majority of the respondent's level of extent of knowledge before intervention to social media was found to be low (72.50%) followed by medium (26.67%) and high (0.83). Whereas the majority (51.70%) of the respondents had low level of extent of knowledge followed by medium (42.50%) and high (5.80%) after intervention to social media.

Difference between extent of knowledge of respondents before and after intervention to social media:

It was evident from the table 2 that calculated 'Z' value (8.76) was greater than the table 'Z' value at 0.01 level of probability. Hence it could be concluded that there exists a difference between extent of knowledge on agriculture technologies before and after intervention to social media platforms. It can be depicted that farmers using social media gained knowledge on agriculture technologies by using social media. Approximately similar trend were observed by Kumar and Padmaiah (2012), Kumar (2014) and Madan (2017).

Table 1: Distribution of respondents according to their extent of knowledge

SN	Extent of knowledge	Before intervention (n = 120)		After intervention (n = 120)	
		F	%	F	%
1.	Low (Up to 33.33%)	87	72.50	62	51.70
2.	Medium (33.33 - 66.66%)	32	26.67	51	42.50
3.	High (Above 66.66%)	1	0.83	7	5.80
Total		120	100.00	120	100.00

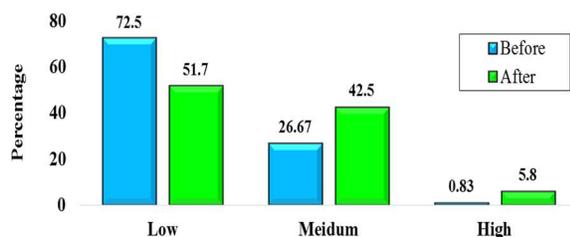


Figure 1: Distribution of respondents according to their extent of knowledge

Table 2: Difference between extent of knowledge of respondents before and after intervention to social media (n = 120)

S N	Category	Size sample	Mean	S.D.	'Z' Value
1.	After intervention	120	60.39	9.05	8.76**
2.	Before intervention	120	49.96	9.40	

**Significant at 0.01 level of probability.

Distribution of respondents according to their extent of knowledge in each category before intervention to social media: To ascertain the extent of knowledge possessed by respondents' extent of knowledge is divided into five

categories. In each category the respondents were grouped into low, medium and high levels of extent of knowledge groups based on the percentages in each group by using class interval technique. The analyzed data contained in table 3 and figure 2 revealed that, (50.84%) of the respondents had medium level knowledge on production technologies and practices followed by low level (48.33%) and high (0.83%). Knowledge percentage attained was 35.21, hence this category was accorded first position in order. The results further indicates that (65.00%) of the respondents had low level knowledge on post-harvest, schemes and modern concepts followed by medium

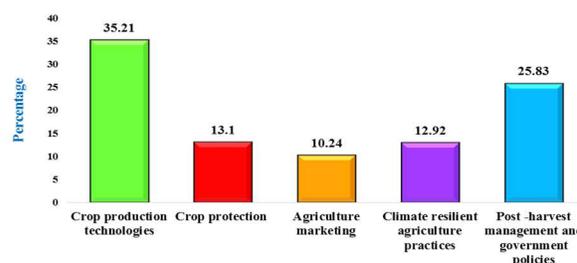


Figure 2 : Knowledge percentages on agricultural technologies of respondents before intervention to social media

Table 3: Distribution of respondents according to their extent of knowledge before intervention to social media (n = 120)

SN	Categories	Groups	C.I.	F	%	Knowledge percentage	Rank
1.	Crop Production technologies (Items-10)	Low	< 33.33%	58	48.33	35.21	I
		Medium	33.33-66.66%	61	50.84		
		High	>66.66%	1	00.83		
2.	Crop protection (Items-7)	Low	<33.33%	96	80.00	13.10	III
		Medium	33.33-66.66%	24	20.00		
		High	> 66.66%	00	00.00		
3.	Agriculture marketing (Items-7)	Low	<33.33%	101	84.20	10.24	V
		Medium	33.33-66.66%	19	15.80		
		High	>66.66%	00	00.00		
4.	Climate resilient agriculture practices (Items-4)	Low	<33.33%	103	85.84	12.92	IV
		Medium	33.33-66.66%	16	13.33		
		High	>66.66%	1	00.83		
5.	Post-harvest management and government policies (Items-7)	Low	<33.33%	78	65.00	25.83	II
		Medium	33.33-66.66%	41	34.17		
		High	>66.66%	1	00.83		

(34.17%) and high (0.83%). The knowledge percentage attained was 25.83, hence this category was accorded second position. Regarding the protection technologies and practices, it was observed that (80.00%) of respondents have low level of extent of knowledge followed by medium (20.00%). Knowledge percentage obtained was 13.10 and hence this category was ranked third position in order. Regarding the extent of knowledge on climate resilient agriculture technologies and practices, it was observed that majority (85.84%) of respondents had low level of knowledge followed by medium (13.33%) and high (0.83%) The obtained knowledge percentage was 12.92, hence this category was accorded with fourth position. The study further indicated that (84.20%) of the respondents had low knowledge on agriculture market followed by medium (15.80%). The knowledge percentage obtained was 10.24, hence this category was accorded fifth position in order. It can therefore, be concluded that nearly three by fourth of the respondents had low level of the extent of knowledge and one by fourth had medium level before intervention to social media. The possible reason could be that majority of the respondents were young and had low farming experience.

Distribution of respondents according to their extent of knowledge in each category after intervention to social media:The analyzed data contained in table 4 and figure 3 indicates that 72.50 per cent of the respondents had medium level

knowledge on post-harvest, schemes and modern concepts followed by low (25.00%) and high (2.50%). The more or less similar medium level knowledge category with majority of respondents were reported by Azad *et al.* (2014). The knowledge percentage attained was 43.69, hence this category was accorded first position. The study further revealed that, 85.00 per cent of the respondents has medium level knowledge on production technologies and practices followed by low level (11.70%) and high (3.30%). Knowledge percentage attained was 42.50, hence this category was accorded second position in order. Regarding the protection technologies and practices, it was observed that 58.40 per cent of respondents have low level of extent of knowledge followed by medium (35.80%) and high (5.80%). A more or less similar kind of trend was observe by Oztas *et al.* (2018). Knowledge percentage obtained was (35.24%) and hence this category was ranked third position in order. Regarding the extent of knowledge on climate resilient agriculture technologies and practices, it was observed that majority (67.50%) of respondents had low level of knowledge followed by medium (29.20%) and high (3.30%). Similar tend of results were observed by Niranjana *et al.* (2018). The obtained knowledge percentage was 26.98, hence this category was accorded with fourth position. The study further indicated that 70.00 per cent of the respondents had low knowledge on agriculture market followed by medium (28.30%) and high (1.70%).

Table 4: Distribution of respondents according to their extent of knowledge after intervention to social media (n=120)

SN	Categories	Groups	C.I.	F	%	Knowledge percentage	Rank
1.	Crop Production technologies (Items-10)	Low	< 33.33%	14	11.70	42.50%	II
		Medium	33.33-66.66%	99	85.00		
		High	>66.66%	4	3.30		
2.	Crop protection (Items-7)	Low	Below 33.33%	70	58.40	35.24%	III
		Medium	33.33-66.66%	43	35.80		
		High	> 66.66%	7	5.80		
3.	Agriculture marketing (Items-7)	Low	<33.33%	84	70.00	26.31%	V
		Medium	33.33-66.66%	34	28.30		
		High	>66.66%	2	1.70		
4.	Climate resilient agriculture practices (Items-4)	Low	<33.33%	81	67.50	26.98%	IV
		Medium	33.33-66.66%	35	29.20		
		High	>66.66%	4	3.30		
5.	Post-harvest management and government policies (Items-7)	Low	<33.33%	30	25.00	43.69%	I
		Medium	33.33-66.66%	87	72.50		
		High	>66.66%	3	2.50		

The knowledge percentage obtained was 26.31, hence this category was accorded fifth position in order. It can be therefore, concluded that nearly half of the respondents had medium to high level knowledge and rest half had low extent of knowledge after intervention to social media.

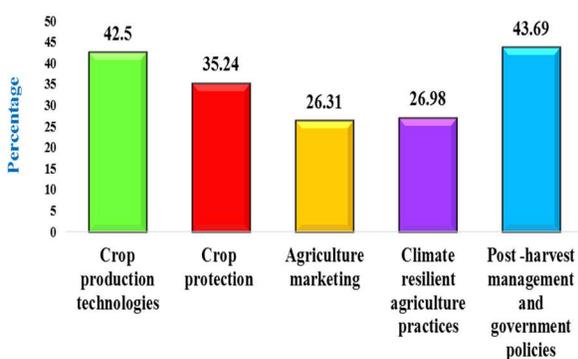


Figure 3 : Knowledge percentages on agricultural technologies of respondents after intervention to social media.

Relationship between the profile characteristics of farmers and extent of knowledge

It is revealed from the Table 5. that calculated 'r' values between digital literacy, social media usage, information processing, mode of access and preference, social media participation and the extent of knowledge were greater than table 'r'

value at 0.01 level of significance. Whereas, the calculated 'r' value of the variables farm size, social media network and readiness to accept information was greater than 'r' value at 0.05 level of significance.

Therefore, it can be concluded that there is a positive and significant difference between extent of knowledge of farmers using social media and the independent variables like digital literacy, farm size, social media network, social media usage, information processing, mode of access and preference, readiness to accept information and social media participation. On other hand calculated 'r' values between age, farming experience and extent of knowledge of farmers using social media were less than the 'r' table value. Therefore, it can be concluded that there is non-significant relationship between age, farming experience and extent of knowledge of farmers using social media. The observed relationship of age with extent of knowledge might be due to the experience gained by the middle and old age people over the years and on other side it could not acquire significant knowledge due to their decreasing recalling ability as individual getting old. The probable reason for this kind of result for variable farming experience may be due to knowledge increase with experience and but not at significant level due to usage of social media is equal among all groups of farmers irrespective of their experience in farming.

Table 5: Relationship between the profile characteristics of farmers and extent of knowledge (n = 120)

SN	Profile characteristics	Correlation coefficient (r)
1	Age	0.027 NS
2	Digital literacy	0.408**
3	Farming experience	0.037 NS
4	Farm size	0.211*
5	Social media network	0.187*
6	Social media usage	0.300**
7	Information processing	0.367**
8	Mode of access and preference	0.345**
9	Readiness to accept information	0.210*
10	Social media participation	0.315**

**Significant at 0.01 level *Significant at 0.05 level
NS = non-significant

A more or less similar trend was observed by Singh (2017). Regarding the variable digital literacy, it enhances extent of knowledge of the farmers as this helps to acquire latest information on new technologies from different digital platforms. Positive and significant relation was found between the variable farm size and extent of knowledge of farmers using social media. Similar observation was reported by Singha and Devi (2013) and Rahman *et al.* (2016). This can be justified based on fact larger land holding will have more opportunities and potentialities to gain more information and learn about a greater number of technologies related to agriculture. The probable reason for positive and significant relation between social media network and extent of knowledge, may be based on reason that the farmer with high social media network connectivity have more chances of getting information from different sources, which in turn help in acquiring knowledge on different agriculture practices. The variable social media usage has showed positive and significant relation with extent of knowledge, the probable reason for this result is based on fact that more usage of social media acts as a driving force to acquire new formation from different sources from social media platforms. The results are in agreement with Adejo *et al.* (2013). Information processing showed positive and significant relationship with extent of knowledge. The probable reason for this result is based on fact that better information preservation and evaluation

result in better knowledge acquisition. Better access towards social media platforms and preference helps in getting access to agricultural information available on social media and which influence the knowledge level of individuals. The same phenomenon was reflected in the study and positive significant relation was found. The variable readiness to accept information was found significant and positive with extent of knowledge. It is quite obvious that an individual who is willing to accept information has better chances to explore and receive more information through different channels, which directly influences the knowledge acquisition. The participation of an individual will help him or her in better learning. Similar phenomenon was observed in this study, social media participation had positive and significant relationship with knowledge of respondents.

Conclusion

The research result proved that there is a significant difference (Z value 8.76**) in knowledge levels among farmers when compared before and after intervention to social media. Hence it can be recommended that extension system can consider social media platforms as potential tools in disseminating the agricultural information. It also suggested that there is a need of research in content analysis of videos, text, image and audio format of information and to suggest optimum guidelines in developing content in social media platforms. The results also showed a trend of low and medium level among farmers in overall agricultural production technologies. The knowledge levels among farmers on agricultural marketing (26.31 per cent), climate resilient agricultural practices (26.98 per cent) and crop protection (35.24 per cent) were found to be ranked low. From these results it is recommended that more focus should be given on disseminating MSP of different agricultural crops, availability of agriculture inputs and market news for better fetching of price for the produce. Provision of more local weather information in relation to pest and disease incidence, selective plant protection practices with accurate dosage of application, and information on the advantage of soil test-based application to farmers will help in better overall management so as to produce optimum yield from the field. It also recommended that social media platforms should also be used to collect feedback and to identify

the knowledge gaps among the farmers. With the results of above research, it is recommended that the social media tools can be used as the medium in disseminating the agricultural information to farming community.

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Conflict of interest

The authors declare that they have no conflict of interest.

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