Research Article

Indian Journal of Extension Education
Vol. 58, No. 2 (April–June), 2022, (110-114)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Analysis of Factors Affecting Social Media Utilization of Extension Agents

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ARTICLE INFO

Keywords: Social media, Extent of usage index, Socio personal, Job-related characteristics

http://doi.org/10.48165/IJEE.2022.58221

ABSTRACT

Digitalization of communication networks through social media platforms is the most important tool to increase the reach and impact of agricultural advisory services. A profound need to study the extent of usage of social media by extension agents and factors influencing its usage was felt and to analyze the extent of usage, a composite index was developed during 2021 by using seven sub-indices that had a Cronbach alpha value of 0.903. To study the extent of usage 160 extension agents through a proportionate random sampling method were selected from Andhra Pradesh where the majority of the extension agents had a medium extent of usage which accounts for 44.37 per cent. Based on the correlational analysis it is found that innovative proneness ($p<0.05$), scientific orientation, job perception, technology management orientation, information management orientation, orientation towards extension service profession have a significant and positive correlation with the extent of usage of social media at 0.01 level of significance. Based on stepwise regression analysis it revealed that five variables were a good fit with an R-square of 35.7 per cent. The findings may help in framing a social media-led extension strategy by extension organizations and government bodies to reach the grassroots of the rural communities.

INTRODUCTION

For the farming community to form an informed decision it is an important factor to possess the appropriate information at the precise time and precise place through the correct channel. Extension agents play a serious role as a friend, philosopher, and guide to farmers in providing information. Hence, to form this spread of knowledge within an appropriate time to a majority of farmers, the advisor must adopt new models of communication such as social media. Having more than 483 million users in 2018, India had the world's second-largest internet population (Statista, 2021). Although mobile and

internet are considered as modern tools of dissemination had not found proper place in terms of usefulness and contact among the farmers (Ravikumar et al., 2015) but social media allows us to make sound opinions and build good social relationships. Access to the ICT tools is increasing but those tools are mostly used to get benefit of general communication and entertainment purpose and less for marketing and other productive purpose (Panda et al., 2019). According to Singh et al., (2021) due to ease of receiving, retrieving, and sharing, a majority of farmers (72.5%) were using social media for receiving and sharing agricultural information. Social media is a potential medium that helps extension professionals to get information about recent developments, build relationships, share information, and connect with a varied audience. According to Patel et al., (2020) platforms such as WhatsApp not only save time but are very economical for use and problem-solving. Since extension agents are the key role players in the dissemination of information, it is critical to include their viewpoints on the use of social media in transmitting the information. Some of the major

Received 17-01-2022; Accepted 16-02-2022

advantages of using social media as a research issue are decreased knowledge sharing costs, increased access to useful agricultural information, increased access to valuable advice, increased farmer extension ratio Iwuchukwu et al., (2019). Understanding the importance of social media, studies were conducted by James et al., (2020) on social media used by KVK scientists finding out that the overall extent of utilization of social media was low to medium in three fourth (79.15%). Lakshmi and Babu (2018) conducted a study and found that most of the extension officials (97%) use Gmail followed by WhatsApp (59%), Facebook (55%), and YouTube (47%) for information sharing. WhatsApp was able to create extension mechanism for purposeful farmer to farmer learning exchange which in turn was a step towards innovative farmer led extension delivery mechanism (Nain et al., 2019). Examining the usage trend and establishing strategies and rules to make social media an essential component of the dissemination of agricultural information are key steps in determining the extent of the reach of agricultural advisory services. Keeping in view the above facts and their importance, the present study was conducted to analyze the extent of usage of social media among extension agents and factors affecting its usage.

METHODOLOGY

To analyze the extent of usage of social media by extension agents an ex post facto study was conducted in Andhra Pradesh. From the pool of extension agents working in the three districts under the state department of agriculture, KVK, ATMA, Private sector firms, and NGOs, proportionate random sampling was used to select 160 extension agents, 60 from Guntur, 60 from Chittoor, and 40 from Srikakulam. Well-structured questionnaires were designed for data collection. The data was collected through a structured questionnaire through the survey method. The extent of usage of social media was operationalized as the art of putting the resources that are tangible or intangible to the proper use. It was measured by developing a composite index. Based on an intensive review of literature and suggestions from experts seven following sub-indicators were decided for the construction of the index

SI1: Experience in social media usage, SI2: Regularity of usage, SI3: Amount of time spent, SI4: The usefulness of social media, SI5: Priority of social media, SI6: Categories of the content, SI7: Purpose of accessing the social media

The Cronbach's Alpha calculated for the instrument was found to be 0.903 which states that the index was good to use. A sub-index was calculated by adding the score across all the items present in that particular sub-index where the total value indicated the score of that sub-index. Scores of all the seven components/sub-indices were normalized through the min-max method.

$$U_{ij} = \frac{Y_{ij} - \text{Min } Y_j}{\text{Max}Y_j - \text{Min}Y_j}$$

Where, U_{ij} = Unit score of the i^{th} respondent on j^{th} component, Y_{ij} = Value of the i^{th} respondent on j^{th} component, $MaxY_j$ =Maximum score on j^{th} component, $MinY_j$ = Minimum score on j^{th} component.

As equal weightage was considered for all the sub-indicators the summation of average index scores of those selected sub-indicators was chosen for the composite index of the extent of usage.

$$\text{The extent of usage index} = \frac{\sum Si}{n} = \frac{SI1 + SI2 + SI3 + SI4 + SI5 + SI6 + SI7}{7}$$

The respondents were grouped into low, medium, and high extent of usage based on the mean and standard deviation. The socio-personal and job-related variables taken for the study were 16 in number which was enumerated through different scales. To find the relationship of independent variables with the extent of usage of social media, different statistical analyses such as the chi-square and fisher's exact tests for categorical variables and correlational analysis for continuous variables were done. To study the most parsimonious variables that show the combined effect of independent variables in explaining the variation on the dependent variable (Extent of usage), the stepwise multiple regression analysis was carried out. The model excludes the variables which do not significantly contribute to the dependent variable.

$Y = b0 + b1\ X1 + b2\ X2 + b3\ X3$ .....bn x n

Where, b0 = Constant, Y = Dependent variable, X1 …X n = Independent variable, b1 …bn = Regression coefficient for respective variables.

RESULTS AND DISCUSSION

It can be inferred from Table 1 that a majority of the extension agents had a medium extent of usage of social media in agriculture extension service delivery which accounts for 44.37 per cent that was approximately half of the sample and with 30 per cent having a low extent of usage and 25.63 per cent having a high extent of utilization. These results are consistent in good agreement with other studies which have shown that the overall extent of utilization of social media among three fourth (79.15%) of the KVK scientists was under the low to medium category James et al., (2020).

Table 1. The extent of usage of social media by extension agents

Categories	Per cent
Low (<0.5)	30.00
Medium (0.5-0.68)	44.37
High (>0.68)	25.63
Total	100.00

Sub indices of the extent of usage of social media

Experience in social media usage (SI1), presented in Table 2 indicated that all the respondents had experience in using social media where the highest number of respondents are having experience from five years in using social media followed by less than one year experience which was followed by more than five years of experience in using social media. It can be inferred that most of them were using social media for the past five years where they can be considered as having full-fledged knowledge and digital literacy in using social media. It can be inferred that developing their skills along with their experience would prove fruitful in due course of time. Regularity of usage (SI2), indicated that the majority of the respondents belong to the category of very frequent use of social media that is, who use it daily, followed by those respondents who use it frequently on weekly basis, least number of respondents under the category of not utilized social media at all. Based on the findings it can be inferred that most of the respondents spend every

Table 2. Distribution of data of sub-indices

Experience	Per cent
SI1: Experience in social media usage:	
Less than one year	32.50
One to five years	46.87
More than five years	20.63
Total	100.00
SI2: Regularity of usage:	
Utilization	Per cent
Not used	2.50
Very rarely (Used at least once in 6 months)	18.13
Rarely (Used at least once in a month)	21.87
Frequently (Used at least once in a week)	26.25
Very frequently (Used at least once a day)	31.25
Total	100.00
SI3: Amount of time spent:	
Amount of time spent	Per cent
Less than One Hour	18.75
One hour	30.62
Two hours	21.88
Three Hours	13.13
Four Hours	4.37
Five hours	3.12
Greater than Five hours	8.13
Total	100.00
SI4: The usefulness of social media:	
Usefulness	Per cent
Very useful	40.00
Useful	56.88
Not Useful	3.12
Total	100.00
SI5- Priority of social media for utilization:	
Criteria	weighted Score / Rank
Saves time	411 / III
Easy to operate	423 / I
Connectedness	400 / IV
Need based	394 / V
Convenient	413 / II
SI6- Categories of content shared through social media:	
Category	weighted score / Rank
Text	378 / III
Audio	376 / IV
Images	420 / I
Video	402 / II

day some of their time on social media which indicated that it has become a part of their life. This can be considered as a platform where the time which they spend on social media can be made productive by empowering them with skills such as quality content creation and integration of multimedia technology in designing their content. The results obtained are broadly consistent with the major trends found by James et al., (2020) which stated that WhatsApp (91.93%) and Facebook (61.49%) were frequently used by KVK scientists regularly.

The amount of time spent (SI3) indicated that the majority of the respondents fall under less than one hour, one hour, two hours, and three hours category of their amount of time spent. It can be inferred that optimum time was being spent on social media by the majority of the respondents along with their work responsibilities daily. This can be made as quality time by enhancing different skills in them through which extension agents can use social media as a tool to make their work more efficient and effective. Much of their daily work where they need information sharing to farmers can be done easily with the use of social media-like technologies. The usefulness of social media (SI4) indicated that most of the respondents, more than half of the sample have stated that social media was useful for their development in job performance, and very few respondents have stated that social media was not useful for their development of job performance. It can be inferred that the importance of social media on individuals' job performance and efficiency was being acknowledged by many of the respondents.

Priority of social media for utilization (SI5) indicated that among all the priority ways, easy to operate was given the highest priority, next highest priority was given to convenience which social media provides, and need-based was the least priority among all others. It was evident from the results that most of the respondents felt that social media was very easy to operate and was very convenient. Providing social media applications that provide more advanced features on ease to operate, convenience, and time-saving will have a higher rate of adoption. Categories of content shared through social media (SI6) indicated that among all the categories of content, Images were given the highest priority followed by video, text, audio respectively. It was evident from the results that images are easily understood and a more attractive way of message dissemination. Videos are the next highest used medium of information dissemination as they will enhance the understanding and interest in learning of the farmers. The results thus obtained are compatible with Tamizhkumaran & Saravanan Raj (2020) which stated that YouTube has great potential in Extension and advisory services. Videos that have valuable information, pictures draw the attention of clients.

An important implication of these findings in Table 3 was that among all the given information, information about agricultural schemes was most prominent followed with Integrated pest management, Integrated disease management, and Integrated nutrient management which indicated that information needs of farmers and information shared by extension agents was mostly concerned about crop health and nutrition management.

These results are consistent and in good agreement with other studies, Iwuchukwu et al., (2019) which have shown that when

Table 3. Purpose of accessing the social media

Information	Weighted score	Weighted mean score
Information about agricultural schemes	413	2.58
Integrated pest management	410	2.56
Integrated disease management	406	2.53
Integrated nutrient management	405	2.53
Information about inputs & government subsidies	405	2.53
Weather forecast	401	2.50
Training and demonstrations	395	2.46
Market demand and supply	394	2.46
Availability of new agricultural machinery	393	2.45
Post-harvest management	391	2.44

Facebook alone was considered, the majority (70.1%) assumed it as a suitable medium for communicating the best soil for agricultural practices and (69.1%) assumed it to be useful for the creation of awareness and participation in agricultural projects. When considering WhatsApp (56.7%.), found it suitable to communicate market situation, agricultural product price, and (53.6%) considered it suitable for communicating the best soil for various agricultural practices. Joshi & Dhaliwal (2019) stated that information seeking was given rank one by the respondents, networking with fellow farmers was ranked two, and sharing the information further with others was ranked third. Similarly, for the solution of the farm-related problem, selling or buying of an agricultural commodity, to know the market rates and for branding of the agricultural commodity were ranked fourth, fifth, sixth, and seventh respectively.

Relationship between socio-personal, job-related variables with the extent of usage

The results in Table 4 indicate that among the categorical variables cross-tabulation was done and chi-square and Fisher's exact test were used to find out the association of the variables with the extent of usage. Based on the results derived from chi-square and Fisher's exact test it was evident that gender has a significant association with the extent of usage at 0.05 level of significance which indicated that males and females have a difference in their extent of usage, social participation also has a significant association with the extent of usage of social media at 0.001 level of significance and training received at 0.05 level of significance. The results of the correlational analysis state that age, achievement motivation, and perceived workload are the variables that were not significantly related to the extent of usage of social media. Innovative proneness has a significant and positive relationship with the extent of usage of social media at a 0.05 level of significance. Variables such as scientific orientation, job perception, job performance, technology management orientation, information management orientation, orientation towards extension service profession have a significant and positive correlation with the extent of usage of social media at 0.01 level of significance.

Based on regression analysis in Table 5 it was revealed that in a stepwise analysis of the independent variables with the extent of usage of social media, five variables namely job perception, technology management orientation, orientation towards extension service profession, social participation, and background were selected. The model with all these five variables was a good fit with

Table 4. Relationship between socio-personal, job-related variables with the extent of usage

Variables	Test	Values	Significance
Gender x Extent of usage	Chi-square test	7.065	0.029^{*}
Background x Extent of usage	Chi-square test	1.584	0.453^{NS}
Education x Extent of usage	Chi-square test	5.624	0.229^{NS}
Work Experience x Extent of usage	Fisher's Exact test	5.133	0.081^{NS}
Social participation x Extent of usage	Chi-square test	18.264	$<0.001^{**}$
Training x Extent of usage	Chi-square test	8.581	0.014^{*}
Pearson Correlation of continuous variables			
Age	Correlation	0.038^{NS}	
Achievement Motivation	Correlation	0.027^{NS}	
Innovative Proneness	Correlation	0.199^{*}	
Scientific Orientation	Correlation	0.273^{**}	
Perceived Work Load	Correlation	0.019^{NS}	
Job perception	Correlation	0.461^{**}	
Job Performance	Correlation	0.306^{**}	
Technology Management Orientation	Correlation	0.449^{**}	
Information Management Orientation	Correlation	0.341^{**}	
Orientation Towards Extension Service Profession	Correlation	0.392^{**}	

NS = Non significant; *Significant at 0.05 level of significance; **Significant at 0.01 level of significance

Table 5. Stepwise multiple regression

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	-.432	.118		-3.664	.000
Job perception (X_{12})	.013	.003	.266	3.687^{**}	.000
Technology Management Orientation (X_{14})	.008	.002	.268	3.814^{**}	.000
Orientation towards Extension Service Profession (X_{16})	.007	.002	.224	3.224^{**}	.002
Social participation=Participation ($d_{participation}$)	.041	.021	.131	1.993^{*}	.048
Background=Urban (d_{urban})	.049	.025	.128	1.978^{*}	.050

a. Dependent Variable: Extent of usage

R^2 =35.7%

$$Y_2 = -0.432 + 0.013X_{12} + 0.008X_{14} + 0.007X_{16} + 0.041d_{participation} + 0.049d_{urban}$$

NS = Non significant, *Significant at 0.05 level of significance; ** Significant at 0.01 level of significance

an R-square of 35.7 per cent. It can be inferred that individuals' background, their social participation will determine their extent of usage. Job-related factors such as job perception, orientation towards extension service profession along with their technology management orientation determine the extent to which extension agents are using social media in their day-to-day life.

CONCLUSION

As social media is a user-generated content media, different content generation workshops and training can be taken up for the content development and presentation of information in images and video format which helps in the control of incomprehensible information taken from unreliable sources. Own content creation by different extension organizations will prevent the misinterpretation by the farmers and be helpful for the development of location-specific and crop-specific information which is tailor-made. As it is evident from the correlation and regression analysis that a few characteristics such as technology management orientation and orientation towards the extension service profession should be developed by the extension organizations among its agents as it is showing a significant relationship with their extent of usage. Information transfer through social media is accomplished through individual efforts and there is an immense need for organized efforts from the public extension system in India.

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