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# Purpose and Pattern of Usage of Social Media by the Scientists of Krishi Vigyan Kendras in South India

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ABSTRACT

The present research study was conducted in seven states and Union territories in South India *viz.,* Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu and Telangana during 2019-2020 with an objective of analysing the purpose of utilization of social media by the scientists of Krishi Vigyan Kendras (KVK). A total of 161 scientists from 117 KVKs were interviewed for the purpose. The results revealed that majority (90.68%) of the KVK scientists used WhatsApp for seeking and dissemination of information, followed by Facebook (76.40%). Similar trend was observed with respect to usage of social media for transfer of technology, in the order of WhatsApp (91.93%), followed by Facebook (52.17%) and YouTube (45.34%). Evidently, WhatsApp stood first among the various purposes for which social media was used by KVK scientists. The other two social media platforms used effectively by the majority of the scientists for all the purposes mentioned in the study were Facebook and YouTube. The possible reason for this finding is that the social media like WhatsApp and Facebook are more popular among Scientists and farmers as these platforms are more user-friendly, easy to understand with simple interface and multiple file sharing options. Based on the data collected, the inferences drawn on usage pattern of various social media platforms and the purposes are discussed.

*Keywords* : Social media, Usage of social media, KVK scientists, Agricultural development

OVER the past few years, there has been a remarkable growth in use of social media by the professionals and researchers for the benefit of the agriculture sector. By capturing millions of users from all over the world, social media has become one of the most popular means of interacting and information-sharing. Social media can be broadly defined as web-based tools of electronic communication that allow users to interact, create, share, retrieve and exchange information and ideas in any form (text, pictures, video, etc.) that can be discussed upon, archived and used by anyone in virtual communities and networks (Suchiradipta and Saravanan, 2016). Extension functionaries nowadays have a highly favourable attitude regarding the usage of internet and ICT tools including social media (Dishant and Lakshminarayan, 2017). The annual growth rate of social media users worldwide is around 13 per cent whereas in India it is 31 per cent. It is interesting to note that, there is an increasing trend in use of social media by the stakeholders in agriculture sector. Currently, farmers are able to access the required information through social media platforms such as Facebook, Twitter and other tools. Farmers are sharing pictures of their farms on Facebook; selling products on Twitter and are in regular touch with experts on WhatsApp. The scientists of Krishi Vigyan Kendras (KVKs) play a pro-active role in transferring latest technologies with beneficial impacts to the farmers at grassroots level. They continuously improve their knowledge and skills by updating themselves regarding latest information and technologies. Social media speeds up connections between scientists in the virtual space and it can be used effectively by the KVK scientists for agricultural development (Jayashree, 2018). Information-sharing via modern methods like social media will improve the role-performance of stakeholders of agro-advisory services. (Amitava

and Shivalinge Gowda, 2021). In this backdrop, the present study has been carried out with the following specific objectives:

1. To analyse the purpose of utilization of social media by KVK Scientists.
2. To know the relationship between personal, socio-economic, psychological and communication characteristics of KVK scientists and their extent of utilization of social media.

## Material and Methods

The present study was carried out in seven states and Union territories *viz.,* Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu and Telangana during 2019-2020. In all, a total of 161 scientists working across in 117 Krishi Vigyan Kendras were purposively selected as the sample of the study. Ex-post-facto research design was adopted for conducting the study. Purpose of utilization of social media is operationalized as the activity / activities for which social media was being used by the KVK scientists. The respondents were provided with a questionnaire on the activities they performed using various selected social media and were asked to indicate their response in the order of priority. The activities selected and included in the questionnaire were seeking and dissemination of agricultural information, transfer of technology, acquiring skills pertaining to agricultural practices, sharing success stories, communication with other organizations, seeking suggestions, publicising / rapport building and entertainment. A preliminary survey was conducted using Google forms to know the usage of social media by KVK scientists under the jurisdiction of University of Agricultural Sciences, Bengaluru, as well as from scientists working in other KVKs of Karnataka, Central Silk Board, ISEC (Institute for Social and Economic Change, Bengaluru), IGFRI (Indian Grassland and Fodder Research Institute, Jhansi) and CICR (Central Institute for Cotton Research, Nagpur). The various purposes of using social media, namely: Facebook, WhatsApp, YouTube, Instagram, Twitter, Telegram, LinkedIn, Skype, Messenger, Quora and Research Gate, were selected based on the outcome of the preliminary survey.

## Results and Discussion

### Personal, Socio-Economic, Psychological and Communication Characteristics of KVK Scientists

Form the data collected, it is found that large proportion of KVK scientists were of middle age (70.19%), acquired Ph.D. and Master's degree (45.96%) in Agricultural Sciences, having more job experience (47.20%) and semi-urban background (41.61%), as depicted in Table 1 A. The percentage of KVK scientists responded as having high level

Table 1A

Personal characteristics of KVK scientists

(n=161)

| Characteristics | Category | KVK Scientists | |
|---|---|---|---|
| | | Number | Per cent |
| Age | | | |
| | Young | 29 | 18.01 |
| | Middle | 113 | 70.19 |
| | Old | 19 | 11.80 |
| Education | | | |
| | M.Tech. (Agri. Eng.) | 5 | 3.11 |
| | MHSc. | 7 | 4.35 |
| | MVSc. | 12 | 7.45 |
| | M.Sc.(Agri) | 63 | 39.13 |
| | Ph.D. (Agri.) | 74 | 45.96 |
| Rural urban background | | | |
| | Rural | 41 | 25.47 |
| | Semi-urban | 67 | 41.61 |
| | Urban | 53 | 32.92 |
| Job experience | | | |
| | Less | 45 | 27.95 |
| | Moderate | 76 | 47.20 |
| | More | 40 | 24.85 |
| Social media experience | | | |
| | Less | 65 | 40.37 |
| | Moderate | 54 | 33.54 |
| | More | 42 | 26.09 |

of job satisfaction (37.27%), high job performance level (39.75%), low achievement motivation level (42.24%), medium level of innovative proneness (54.04%), scientific orientation (63.98%), perceived work load (37.89%) and job involvement (40.99%), high level of e-readiness (44.72%), organisational climate (46.58%) and finally, low level of competition orientation (44.10%) as depicted in Table 1 B. Comparatively, a higher proportion of scientists were in the medium level in obtaining awards / recognition (44.72%), had low level of abroad exposure (63.98%), had conducted less number of field activities (59.63%), with low utilization pattern of mass media utilization (47.83%), with less number of trainings received (43.48%), moderate number of publications (52.17%) and medium participation in seminars/ conferences (40.37%) as furnished in Table 1 C.

TABLE 1B

Psychological Characteristics of KVK Scientists

(n=161)

| Characteristics | Category | KVK Scientists | |
|---|---|---|---|
| | | Number | Per cent |
| Job satisfaction | Low | 47 | 29.19 |
| | Medium | 54 | 33.54 |
| | High | 60 | 37.27 |
| Job performance | Low | 40 | 24.85 |
| | Medium | 57 | 35.40 |
| | High | 64 | 39.75 |
| Achievement motivation | Low | 68 | 42.24 |
| | Medium | 42 | 26.09 |
| | High | 51 | 31.67 |
| Innovative proneness | Low | 44 | 27.33 |
| | Medium | 87 | 54.04 |
| | High | 30 | 18.63 |
| Scientific orientation | Low | 28 | 17.39 |
| | Medium | 103 | 63.98 |
| | High | 30 | 18.63 |
| Perceived work load | Low | 39 | 24.22 |
| | Medium | 61 | 37.89 |
| | High | 61 | 37.89 |
| Job involvement | Low | 35 | 21.74 |
| | Medium | 66 | 40.99 |
| | High | 60 | 37.27 |
| e-readiness | Low | 41 | 25.47 |
| | Medium | 48 | 29.81 |
| | High | 72 | 44.72 |
| Organizational climate | Low | 48 | 29.82 |
| | Medium | 38 | 23.60 |
| | High | 75 | 46.58 |
| Competition Orientation | Low | 71 | 44.10 |
| | Medium | 50 | 31.06 |
| | High | 40 | 24.84 |

TABLE 1C

Socio-economic and communication characteristics of KVK scientists

(n=161)

| Characteristics | Category | KVK Scientists | |
|---|---|---|---|
| | | Number | Per cent |
| Awards/ recognition received | Low | 63 | 39.13 |
| | Medium | 72 | 44.72 |
| | High | 26 | 16.15 |
| Abroad exposure | Low | 103 | 63.98 |
| | Medium | 30 | 18.63 |
| | High | 28 | 17.39 |
| Field activities conducted | Less | 96 | 59.63 |
| | Moderate | 29 | 18.01 |
| | More | 36 | 22.36 |
| Mass media utilization | Low | 77 | 47.83 |
| | Medium | 35 | 21.74 |
| | High | 49 | 30.43 |
| Trainings received | Less | 70 | 43.48 |
| | Moderate | 54 | 33.54 |
| | More | 37 | 22.98 |
| Number of publications | Less | 43 | 26.71 |
| | Moderate | 84 | 52.17 |
| | More | 34 | 21.12 |
| Participation in seminars/ conferences | Low | 64 | 39.75 |
| | Medium | 65 | 40.37 |
| | High | 32 | 19.88 |

**Purpose of Utilization of Social Media by KVK Scientists**

The results in Table 2 provide a broad picture on the purpose of utilization of social media by KVK scientists. Evidently, majority (90.68%) of the KVK scientists used WhatsApp for seeking and dissemination of information, followed by Facebook

TABLE 2

Purpose of utilization of social media by KVK scientists

(n=161)

| Social media | Purpose of Utilization* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Seeking and dissemination of agricultural information | Transfer of technology | Acquiring skills pertaining to agricultural practices | Sharing success stories | Communication with other organizations | Seeking suggestions | Publicising/ rapport building | Entertainment |
| Facebook | 123 (76.40) | 84 (52.17) | 98 (60.87) | 61 (37.89) | 73 (45.34) | 24 (14.91) | 65 (40.37) | 122 (75.78) |
| WhatsApp | 146 (90.68) | 148 (91.93) | 136 (84.47) | 135 (83.85) | 141 (87.58) | 129 (80.12) | 133 (82.61) | 145 (90.06) |
| YouTube | 85 (52.80) | 73 (45.34) | 136 (84.47) | 83 (51.55) | 49 (30.43) | 44 (27.33) | 57 (35.40) | 123 (76.40) |
| Instagram | 25 (15.53) | 12 (7.45) | 17 (10.56) | 14 (8.70) | 0 (NA) | 0 (NA) | 28 (17.39) | 37 (22.98) |
| Twitter | 24 (14.91) | 25 (15.53) | 13 (8.07) | 15 (9.32) | 18 (11.18) | 12 (7.45) | 11 (6.83) | 0 (NA) |
| Telegram | 13 (8.07) | 12 (7.45) | 16 (9.94) | 12 (7.45) | 25 (15.53) | 11 (6.83) | 18 (11.18) | 27 (16.77) |
| LinkedIn | 74 (45.96) | 38 (23.60) | 13 (8.07) | 15 (9.32) | 25 (15.53) | 14 (8.70) | 12 (7.45) | 0 (NA) |
| Skype | 24 (14.91) | 25 (15.53) | 12 (7.45) | 0 (NA) | 26 (16.15) | 15 (9.32) | 0 (NA) | 17 (10.56) |
| Messenger | 13 (8.07) | 11 (6.83) | 15 (9.32) | 10 (6.21) | 38 (23.60) | 32 (19.88) | 25 (15.53) | 36 (22.36) |
| Quora | 24 (14.91) | 0 (NA) | 12 (7.45) | 0 (NA) | 0 (NA) | 25 (15.53) | 0 (NA) | 0 (NA) |
| Research Gate | 75 (46.58) | 39 (24.22) | 49 (30.43) | 26 (16.15) | 23 (14.29) | 28 (17.39) | 50 (31.06) | 0 (NA) |

(*Multiple responses possible; Numbers in parentheses represents frequency of respondents; NA: Not applicable)

(76.40%), YouTube (52.80%), ResearchGate (46.58%), LinkedIn (45.96%), Instagram (15.53%), Twitter, Skype and Quora each with 14.91 per cent, followed by Telegram and Messenger each with 8.07 per cent, respectively. For the purpose of transfer of technology, the social media used by KVK scientists were WhatsApp (91.93%), followed by Facebook (52.17%), YouTube (45.34%), ResearchGate (24.22%), LinkedIn (23.60%), Twitter and Skype each with 15.53 per cent, followed by Instagram and Telegram with 7.45 per cent each, Messenger (6.83%). None of the agricultural scientists used Quora for transfer of technology.

With respect to acquiring skills pertaining to agricultural practices, an equal proportion of KVK scientists (84.47%) used WhatsApp and YouTube, followed by Facebook (60.87%), ResearchGate (30.43%), Instagram (10.56%), Telegram (9.94%), Messenger (9.32%), Twitter and LinkedIn each with 8.07 per cent and Skype and Quora each with 7.45 per cent. For the purpose of sharing success stories, majority (83.85%) of the respondents used WhatsApp followed by YouTube (51.55%), Facebook (37.89%), ResearchGate (16.15%), Twitter and LinkedIn (each with 9.32%), Instagram (8.70%), Telegram (7.45%) and Messenger (6.21%). None of the respondents used Skype and Quora for the purpose of sharing success stories.

Regarding communication with other organizations, majority (87.58%) used WhatsApp, followed by Facebook (45.34%), YouTube (30.43%), Messenger (23.60%), Skype (16.15%), Telegram and LinkedIn (each with 15.53%), ResearchGate (14.29%) and Twitter (11.18%). None of the KVK scientists used Instagram and Quora for communicating with other organizations. For seeking suggestions, majority (80.12%) of the KVK scientists used WhatsApp, followed by YouTube (27.33%), Messenger (19.88%), ResearchGate (17.39%), Quora (15.53%), Facebook (14.91%), Skype (9.32%), LinkedIn (8.70%), Twitter (7.45%) and Telegram (6.83%). None of the respondents used Instagram for seeking suggestions.

For the purpose of publicising / rapport building, majority (82.61%) of the respondents used WhatsApp, followed by Facebook (40.37%), YouTube (35.40%), ResearchGate (31.06%), Instagram (17.39%), Messenger (15.53%), Telegram (11.18%), LinkedIn (7.45%) and Twitter (6.83%). None of the KVK scientists used Quora and Skype for publicising / rapport building. Entertainment is also a major reason why people use social media. In case of KVK scientists, majority (90.06%) of the respondents used WhatsApp for the purpose of entertainment, followed by YouTube (76.40%), Facebook (75.78%), Instagram (22.98%), Messenger (22.36%), Telegram (16.77%) and Skype (10.56%). None of the KVK scientists used Twitter, LinkedIn, Quora and ResearchGate for the purpose of entertainment.

Evidently, WhatsApp stood first among various social media platforms that have been used by the KVK scientists for different purposes envisaged. This was followed by Facebook and YouTube in the order of usage by majority of the scientists for all the purposes as mentioned in Table.

The possible reason for this finding is that the social media like WhatsApp and Facebook are more popular among scientists and farmers and these social media have user-friendly, understandable interface with option of multiple file sharing.

**Relationship between Personal, Socio-Economic, Psychological and Communication Characteristics of KVK Scientists and their Extent of Utilization of Social Media**

Correlation test was duly employed to find relationship between personal, socio-economic, psychological and communication characteristics of KVK scientists with their extent of utilization of social media. The results in Table 3 reveal that education, innovative proneness, e-readiness, trainings received and participation in seminars / conferences had positive, significant relationship with the extent of utilization of social media by KVK scientists at significance level of one per cent. Whereas, the variables job experience, job satisfaction,

TABLE 3

Relationship of personal, socio-economic, psychological and communication characteristics with social media utilization by KVK Scientists

(n=161)

| Independent Variables | Correlation coefficient | |
|---|---|---|
| Age | 0.091 | NS |
| Education | 0.261 | ** |
| Rural urban background | 0.076 | NS |
| Job experience | 0.200 | * |
| Job satisfaction | 0.199 | * |
| Job performance | 0.210 | * |
| Achievement motivation | 0.246 | * |
| Innovative proneness | 3.110 | ** |
| Scientific orientation | 0.253 | * |
| Perceived work load | 0.028 | NS |
| Job involvement | 0.222 | * |
| e-readiness | 0.299 | ** |
| Organizational climate | 0.241 | * |
| Competition Orientation | 0.195 | * |
| Awards/ recognition received | 0.211 | * |
| Abroad exposure/ countries visited | 0.250 | * |
| Field activities conducted | 0.246 | * |
| Mass media utilization | 0.252 | * |
| Trainings received | 0.300 | ** |
| Number of publications | 0.197 | * |
| Participation in seminars/ conferences | 0.279 | ** |

NS=Non-significant, * Significant at 5 per cent level, ** Significant at 1 per cent level

job performance, achievement motivation, scientific orientation, job involvement, organizational climate, competition orientation, awards / recognition received, abroad exposure / countries visited, field activities conducted, mass media utilization and number of publications had significant relationship with extent of utilization of social media by KVK scientists at the probability level of five per cent. Remaining three variables, namely age, rural urban background and perceived workload were found to have no significant relationship with extent of utilization of social media by KVK scientists.

**Direct, Indirect and the Largest Indirect Effect of Selected Personal, Socio-economic, Psychological and Communication Characteristics of KVK Scientists on their Extent of Utilization of Social Media**

The path co-efficient of personal, socio-economic, psychological and communication characteristics of KVK scientists with respect to their direct effects, total indirect effects and largest indirect effects

TABLE 4

Suggestions given by KVK Scientists for effective use of social media for agricultural development

(n=161)

| Suggestions | KVK Scientists | | |
|---|---|---|---|
| | Number | Per cent | Rank |
| Make social media more secure by protecting the users from hackers | 148 | 91.93 | V |
| Scientists should stay up to date regarding social media features and privacy settings | 154 | 95.65 | II |
| Provide better internet connectivity in rural areas | 161 | 100.00 | I |
| Conduct periodic and regular training programmes on use of social media | 139 | 86.34 | VI |
| Set up more number of social media pages and groups related to agriculture | 137 | 85.09 | VII |
| Recruit technically competent personnel for using social media | 123 | 76.40 | IX |
| Disseminate need based farm information *via* social media | 150 | 93.17 | IV |
| Attend conferences that encourage live Tweeting and use of social media | 128 | 79.50 | VIII |
| Set up authentication body to scrutinize the messages regarding agriculture shared *via* social media | 152 | 94.41 | III |
| Free mobile internet data for farmers | 28 | 17.39 | X |

*Multiple response

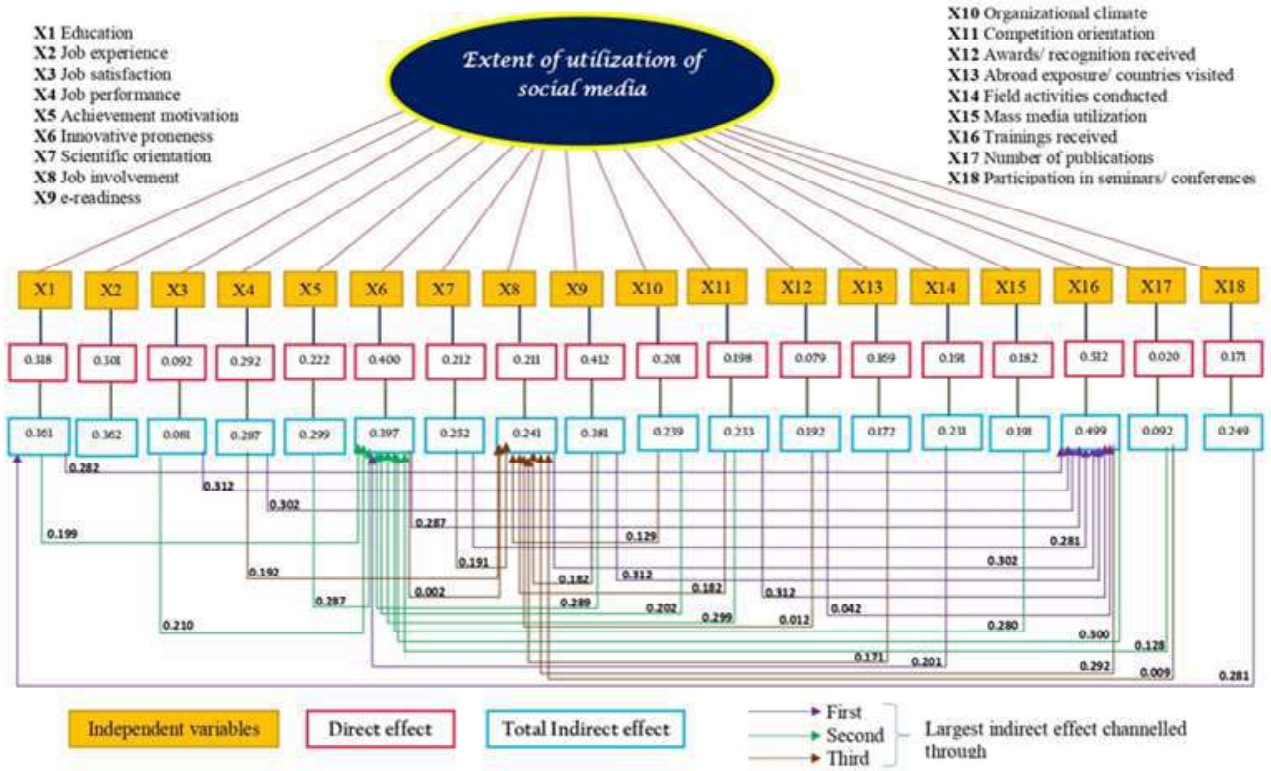


Fig. 1 : Path Analysis showing the effects of profile of KVK scientists on their extent of utilization of social media

channelled through other independent variables on extent of utilization of social media are presented in Fig. 1. For the purpose of path analysis, 18 variables which were found to be having positive and significant relationship with the extent of utilization of social media by KVK scientists, were considered. The direct effect, total indirect effect of each of the independent variables and the first, second and third largest indirect effects channeled through other factors are also presented in Fig. 1.

Ranking of variables based on the total direct effects on extent of utilization of social media by KVK scientists reveals that trainings received (X16) had highest direct effect (0.512) on extent of utilization of social media by KVK scientists, followed by e-readiness (X9) with direct effect of 0.412, innovative proneness (X6) with direct effect of 0.400, education (X1) with direct effect of 0.318, job experience (X2) with direct effect of 0.301, job performance (X4) with direct effect of 0.292, achievement motivation (X5) with direct effect of 0.222, scientific orientation (X7) with direct effect of 0.212, job involvement (X8) with direct effect of 0.211, organizational climate (X10) with direct effect of 0.201, competition orientation (X11) with direct effect of 0.198 and field activities conducted (X14) with direct effect of 0.191. The last six variables which had less direct effect on extent of utilization of social media by KVK scientists were, mass media utilization (X15) with direct effect of 0.182, participation in seminars/ conferences (X18) with direct effect of 0.171, abroad exposure / countries visited (X13) with direct effect of 0.169, job satisfaction (X3) with direct effect of 0.092, awards / recognition received (X12) with direct effect of 0.079 and number of publications (X17) with direct effect of 0.020.

**Suggestions for Effective Utilization of Social Media as Perceived by the KVK Scientists**

The suggestions for effectively utilizing the social media for agricultural development, as perceived by the KVK scientists are depicted in Table 4. All the

KVK scientists (100%) suggested for the provision of better internet connectivity in rural areas, which ranked first among the suggestions provided. Further, majority of KVK scientists suggested that the scientists should remain up to date regarding social media features and privacy settings (95.65%), which ranked second among suggestions. This was followed by the suggestion, to set up an authentication body to scrutinize the messages regarding agriculture, shared via social media, that ranked third (94.41%) and dissemination of need-based farm innovation via social media (93.17%) which ranked fourth among the suggestions.

The study established that various social media platforms are being utilised effectively by agricultural scientists for carrying out various activities like communicating with farmers and other organizations, getting updates on agricultural technologies as well as disseminating the same. This is an encouraging scenario and welcome development in the context of efficient utilization of advances in ICTs in Indian agriculture. Among the various platforms only WhatsApp and Facebook and to some extent, YouTube, were proved to be the most prevalently used social media platforms by the agricultural scientists.

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