**Social Media as a Catalyst for Agricultural Extension: Analyzing Farmers’ Information Utilization Patterns from KVKs in North Karnataka**

**ABSTRACT**

Social media has emerged as one of the most significant communication tools in the modern world, facilitating the rapid exchange of information across various sectors. Agriculture has not remained untouched by this transformation. Agricultural extension services, in particular, have witnessed significant changes in the methods of information dissemination due to the growing use of social media platforms. The present study was conducted to analyze the content and extent of information disseminated by selected Krishi Vigyan Kendras (KVKs) in North Karnataka through social media. A total of six KVKs from North Karnataka were purposively selected for the study. From these, 12 villages were chosen, with two villages representing each KVK. A random sampling method was employed to select 10 respondents from each village, resulting in a total sample size of 120 farmers. Data collection was carried out using a structured interview schedule and the collected data were analyzed using appropriate statistical tools like descriptive statistics. The findings revealed that nearly half (49.16%) of the respondents reported a medium level of social media usage frequency. Notably, more than three-fourths (76.66%) of the respondents used WhatsApp on a daily basis. Regarding the perceived usefulness of information shared via social media, approximately half (49.16%) of the respondents indicated a medium level of utilization. Furthermore, it was observed that, three-fifths (60.00%) of the farmers typically discussed the information obtained from social media with progressive farmers in their community. Based on the study findings, it is recommended that agricultural extension centers continue to actively engage in social media platforms to enhance awareness among farmers. There remains significant potential to improve the reach and effective use of social media, as some farmers are still unaware of such platforms. Strategic efforts are needed to promote the use of social media as a valuable source of agricultural information, thereby empowering the farming community.

**Key words**: Social media, KVK, WhatsApp, Information

1. **Introduction**

 Social media is one of the most important communication tools in the modern world. It has been used worldwide for exchanging information. Agriculture has not set back in that. Agriculture extension has been experiencing see changes in the methods of dissemination of information. In the present world, digital media has emerged as a universe at our fingertips, driving a paradigm shift towards digitalization across various sectors over the past few decades (Kaplan and Haenlein, 2010). The agricultural sector in India has also been progressively integrating digital technologies, with social media platforms playing an increasingly important role in transforming traditional agricultural extension services (Aker, 2011).

 Social media has been widely adopted by agricultural organizations as an effective communication tool, enabling them to reach farmers across both nearby and distant locations. These platforms occupy a central role in providing client-specific, time-specific, location-specific, and crop-specific information, thereby enhancing awareness and influencing the attitudes and behaviors of farmers. Particularly in rural areas where literacy remains a challenge, social media acts as a powerful medium for disseminating critical agricultural knowledge and practices, empowering farmers to update their skills and decision-making capacity.

In recent years, popular social media tools and applications such as WhatsApp, Facebook, Instagram, and YouTube have gained special utility in delivering agricultural content, each serving unique purposes in knowledge sharing and extension support (Jain *et al.,* 2018). However, the ground reality of agricultural extension in India remains challenging, with only one extension worker available for every 2,900 farmers (GOI, 2017). This structural gap underscores the need for innovative extension strategies capable of reaching a broader farming audience.

Given the rapid increase in social media usage in rural communities, it is essential to study the utilization pattern of information delivered through social media by Krishi Vigyan Kendras (KVKs). This understanding helps optimize digital extension efforts, ensuring that the tools effectively enhance farmers' access to vital agricultural information and services (Bhat, *et. al.,* 2024).

1. **Methodology**

 The present study was conducted during the year 2021-2022 in North Karnataka. The present investigation was carried out in North-Eastern and North-Western region of Karnataka. An “*ex-post-facto* research design” was used for the present study. A total of six KVKs were selected. The purposive sampling method was followed for selection of KVKs for the study based on maximum number of messages delivered through social media. it was observed that the highest number of messages were delivered by ICAR-KVK-Bidar followed by ICAR-KVK-Raichur and ICAR-KVK Kalaburagi-I in North Eastern Karnataka and ICAR- KVK-Dharwad, followed by KHP-KVK-Gadag, and KLE-KVK-Belagavi (Bailahongala) in North Western Karnataka. A village-wise list of social media users was prepared for the selected KVKs. In the present study, two villages under the jurisdiction of each KVK were drawn as study villages purposively based on the highest number of registered social media users from the respective villages. A total of 12 villages under 6 KVKs were selected for the present study. A total of ten registered social media users were drawn from each selected village for the present study by following the simple random sampling procedure comprising the total respondents of 120.

**Fig. 1**: **Map showing the selected KVKs of North Karnataka for the study**

1. **Results and discussion**

This section presents the analysis of data collected from farmers regarding the use of social media for accessing agricultural information from Krishi Vigyan Kendras (KVKs) in North Karnataka. The results are discussed in relation to the frequency of usage, perceived usefulness, and communication patterns, with insights drawn from relevant literature.

**3.1 Analysis of utilization pattern of social media by the respondents**

This section analyzes how farmers in North Karnataka utilize different social media platforms, the frequency of their usage, and their purpose in accessing agricultural content shared by Krishi Vigyan Kendras (KVKs).

**3.1.1 Distribution of respondents according to the awareness and use of social media**

 The data pertaining to the Table 1 depicts that all the respondents were aware of Kisan Rath and m-Kisan portal while 95.83 per cent of them were aware of WhatsApp followed by YouTube (90.83 %), Facebook (86.66 %), Instagram (60.00 %), Twitter (10.83 %) and LinkedIn (05.83 %), respectively.

 The Table 1 also indicates that, 87.50 per cent of the respondents use WhatsApp and Kisan Rath followed by m-Kisan portal (85.00 %), You Tube (81.66 %), Kisan suvidha (69.16 %), Facebook (60.83 %), Instagram (39.16 %), Twitter (04.16 %) and nobody use LinkedIn.

**Table 1: Distribution of respondents according to the awareness and use of social media** **(n=120)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Social media** | **Awareness** | **Use** |
| **Frequency** | **%** | **Frequency** | **%** |
| 1. | WhatsApp | 115 | 95.83 | 105 | 87.50 |
| 2. | Facebook | 104 | 86.66 | 73 | 60.83 |
| 3. | Instagram | 72 | 60.00 | 47 | 39.16 |
| 4. | YouTube | 109 | 90.83 | 98 | 81.66 |
| 5. | Twitter | 13 | 10.83 | 05 | 04.16 |
| 6. | LinkedIn | 07 | 05.83 | 00 | 00.00 |
| 7. | Kisan rath | 120 | 100.00 | 105 | 87.50 |
| 8. | m-kisan portal | 120 | 100.00 | 102 | 85.00 |
| 9. | Kisan Suvidha | 97 | 80.83 | 83 | 69.16 |

 From the above results, it can be observed that majority of the respondents were aware of WhatsApp, Kisan Rath and YouTube, out of which majority of them use WhatsApp and Kisan Rath application. This may be due to the reason that these applications are very easy to use and the farmers can share the queries related agriculture and receive the information immediately and can also connect friends and relatives fast. Kisan Rath helped them to find market for their produce. Most of the farmers were educated from high school to graduation and also had medium to large income level. Thus, they may afford android mobile phones for browsing through these apps. The reason might also be the applications like LinkedIn have been used for business purpose and very least number of respondents had business as their main occupation. WhatsApp is the first ever android mobile application endeavored by rural people in India and they mostly used it for messaging. The above findings are on par with the findings of Thakur (2017) and Deepshika (2021).

**3.1.2 Distribution of respondents according to the frequency of use of social media for agricultural information**

The data concerned to the Table 2 depicts the overall frequency of use of social media and it can be inferred that nearly half (49.16 %) of the respondents belonged to medium level of frequency usage of social media followed by high (31.66 %) and low (19.16 %), respectively.

**Table 2: Distribution of respondents on the basis of overall frequency of use of social media**

 **(n=120)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Categories** | **Score** | **Frequency** | **Percentage** |
| 1. | Low | 4-8 | 23 | 19.16 |
| 2. | Medium | 9-12 | 59 | 49.16 |
| 3. | High | > 12 | 38 | 31.66 |
|  |  |  **Mean=10.48 SD=4.82** |

The data concerned to the Table 3 delineates that more than three-fourth (76.66 %) of the respondents were using WhatsApp daily followed by Kisan Rath (68.33 %), m-Kisan portal (63.33 %), Kisan Suvidha (57.50 %), You Tube (46.66 %), Facebook (26.66 %), Instagram (03.33 %), respectively. None of the respondents were using Instagram daily.

 Accordingly, just above one-fourth (26.66 %) of the respondents use You Tube weekly followed by Facebook (15.83 %), WhatsApp (11.66 %), Instagram (10.83 %) and Kisan Rath (09.16 %), respectively. You Tube was used by 16.66 per cent of the farmers fortnightly followed by Facebook (11.66 %), Instagram and m-Kisan portal (07.50 %), WhatsApp (06.66 %) and Kisan Rath (06.66 %). Kisan suvidha (03.33 %) Twitter (02.50 %), respectively.

 From the above results, it is evident that majority of the respondents had medium to high level of frequency usage of social media for agricultural purpose. This might be due to the fact that during Covid-19 pandemic situation, the farmers could not be able to visit the KVKs and other organizations to get advisory services. Hence, the farmers might have used social media as a channel to reach the specialists and extension personnel. Majority of the respondents had medium to high level of education, this may also be one of the reasons for high frequency usage of social media as they were able to read the information delivered by KVKs through social media and may use it according to the situation. WhatsApp was regularly used by majority of the respondents as it was handy communication tool and can deliver information faster. The results are in line with the findings of Deepshika (2021), Thakur (2017) and Kaur *et al.* (2021).

**Table 3: Distribution of respondents according to frequency of use of social media for agricultural information**

**(n=120)**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Social media** | **Frequency of use** |
| **Daily** | **Weekly** | **Fortnightly** | **Monthly** |
| **Frequency** | **%** | **Frequency** | **%** | **Frequency** | **%** | **Frequency** | **%** |
| 1. | WhatsApp | 92 | 76.66 | 14 | 11.66 | 08 | 06.66 | 06 | 05.00 |
| 2. | Facebook | 32 | 26.66 | 19 | 15.83 | 14 | 11.66 | 08 | 06.66 |
| 3. | Instagram | 04 | 03.33 | 13 | 10.83 | 09 | 07.50 | 21 | 17.50 |
| 4. | YouTube | 56 | 46.66 | 32 | 26.66 | 20 | 16.66 | 12 | 10.00 |
| 5. | Twitter | 00 | 00.00 | 00 | 00.00 | 03 | 02.50 | 02 | 01.66 |
| 6. | Kisan rath | 82 | 68.33 | 11 | 09.16 | 08 | 06.66 | 04 | 03.33 |
| 7. | m-kisan portal | 76 | 63.33 | 14 | 11.66 | 09 | 07.50 | 03 | 02.50 |
| 8. | Kisan suvidha | 69 | 57.50 | 8 | 06.66 | 04 | 03.33 | 2 | 01.66 |

**3.1.3 Distribution of respondents based on preferred timings for use of social media**

 The data presented in the table 4 reveals that more than half (56.66 %) of the respondents preferred timings of 07:00 a.m.-11:00 a.m. followed by 11:00 a.m.-03:00 p.m. (20.00 %), 03:00 p.m. to 07:00 p.m. (15.83 %) and 07:00 p.m. to 11:00 p.m. (07.50 %), respectively to use social media for agricultural purpose.

**Table 4: Distribution of respondents based on preferred timings for use of social media**

**(n=120)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Preferred timings** | **Frequency** | **Percentage** |
| 1. | 07:00 a.m.– 11.00 a.m. | 68 | 56.66 |
| 2. | 11:00 a.m.– 03.00 p.m. | 24 | 20.00 |
| 3. | 03:00 p.m.– 07.00 p.m. | 19 | 15.83 |
| 4. | 07:00p.m. – 11.00 p.m. | 09 | 07.50 |

From the above-mentioned results, it can be inferred that the timings between 07:00 a.m.-11:00 a.m. was mostly preferred by the farmers. It was observed from the result that majority of the respondents were practicing agriculture as the main occupation. As they need to plan the activity of the day, they might be reading the information in the early morning and plan their work accordingly. Some of them preferred afternoon, this might be due to free time after their lunch, to go through the messages. The above findings are in line with the findings of Darshan (2015) and Karnika *et. al.,* (2024).

**3.1.4 Distribution of respondents according to the preferred format of use of social media**

From the Table 5, it is observed that majority (94.16 %) of the respondents preferred multimedia format followed by text (80.83 %), video (70.83 %) and audio (30.00 %), respectively.

**Table 5: Distribution of respondents based on preferred format of use of social media**

**(n=120)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Format** | **Frequency** | **Percentage** |
| 1. | Text | 42 | 35.00 |
| 2. | Audio | 36 | 30.00 |
| 3. | Video | 97 | 80.83 |
| 4. | Multimedia | 113 | 94.16 |

From the above-mentioned results, it can be concluded that majority of the respondents preferred multimedia. This may be due to the reason that the farmers can go through multimedia and store the information for their use in the future. The farmers were highly educated and were having high scientific orientation, so that the farmers may prefer multimedia over other formats for use of information as they gain scientific knowledge about agricultural practices and can get maximum knowledge by using multimedia. The multimedia is more interactive and most superior and effective in imparting knowledge to the farmers. The KVKs can use multimedia as it is most preferred by the respondents. It can enhance efficacy of the training programmes and can impact on the quality of extension work. The farmers also prefer to use information in text format, as most of them had education from high school to graduation level. The above findings are in conformity with the findings of Deepshika (2021).

**3.2** **Utilization pattern of information transferred through social media by KVKs**

This section examines how farmers utilize the agricultural information shared by Krishi Vigyan Kendras (KVKs) through social media platforms. It focuses on the extent of information use, the relevance perceived by the respondents, and the practical application of the knowledge in their farming practices.

**3.2.1** **Distribution of respondents according to their opinion regarding extent of use of information delivered by KVKs during Covid-19**

The data pertaining to the Table 6 delineates the overall extent of use of information delivered through social media and it was noticed that nearly half (49.16 %) of the respondents had perceived medium extent of use of information transferred through social media followed by low (33.33 %) and high (17.50 %) extent of use, respectively.

**Table 6: Distribution of respondents according to the overall extent of use of information delivered through social media**

 **(n=120)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Category** | **Frequency** | **Percentage** |
| 1. | Low (≤ 9.71) | 40 | 33.33 |
| 2. | Medium (9.72-15.47) | 59 | 49.16 |
| 3. | High (≥15.48) | 21 | 17.50 |
|  | **Total** | 120 | 100.00 |
|  |  | **Mean = 12.59** | **SD = 2.88** |

 From the Table 7, it can be concluded that more than half (56.60 %) of the respondents opined that information related to crop protection was regularly used followed by crop production (51.66 %), government schemes and programmes (45.83 %), agro-meteorological information (40.00 %), post-harvest technology and value addition (34.16 %), online training programmes of KVKs during Covid-19 (31.66 %), new technologies in agriculture (26.66 %), crop insurance (25.00 %), market information and price trends (22.50 %), integrated nutrient management (19.16 %) and dairy and poultry management (17.50 %), respectively.

 The above study also reveals that more than two-fifth (42.50 %) of the respondents opined that the information related to agro-meteorology was used occasionally followed by new technologies in agriculture (38.33 %), post-harvest technology and value addition (36.66 %) and market information and price trends (35.83 %), respectively.

 It was also observed that half (50.00 %) of the respondents opined that information related to dairy and poultry management was never used followed by integrated nutrient management (48.33 %), market information and price trends (44.16 %) and crop insurance (40.00 %), respectively.

**Table 7:** **Distribution of respondents according to their opinion regarding extent of use of information delivered by KVKs during Covid-19**

**(n=120)**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Area of information** | **Extent of use** |
| **Regularly** | **Occasional** | **Never** |
| **Frequency** | **%** | **Frequency** | **%** | **Frequency** | **%** |
| 1. | Crop production | 62 | 51.66 | 38 | 31.66 | 20 | 16.66 |
| 2. | Post-harvest technology and value addition | 41 | 34.16 | 44 | 36.66 | 35 | 29.16 |
| 3. | Dairy and poultry management | 21 | 17.50 | 39 | 32.50 | 60 | 50.00 |
| 4. | Crop protection | 68 | 56.60 | 43 | 35.83 | 09 | 7.50 |
| 5. | Integrated nutrient management | 23 | 19.16 | 39 | 32.50 | 58 | 48.33 |
| 6. | Government schemes and programmes | 55 | 45.83 | 43 | 35.83 | 22 | 18.33 |
| 7. | Agro meteorological information | 48 | 40.00 | 51 | 42.50 | 21 | 17.50 |
| 8. | Market information and price trends | 27 | 22.50 | 40 | 33.33 | 53 | 44.16 |
| 9. | Crop insurance | 30 | 25.00 | 42 | 35.00 | 48 | 40.00 |
| 10. | Online training Programmes of KVKs during covid-19 | 38 | 31.66 | 42 | 35.00 | 40 | 33.33 |
| 11. | New technologies in agriculture | 32 | 26.66 | 46 | 38.33 | 42 | 35.00 |

The study reveals that maximum number of farmers used the information related to market and price trends. This may be due to the reason that during Covid-19, the farmers needed the information regarding the platform to sell the farm produce because of restrictions on cash-based transactions, lack of transport of harvested produce to APMCs (Agricultural Produce Market Committee) through road transport, effect on perishable goods due to the absence of local markets. So, the farmers might have used the information delivered by the KVKs. The KVKs also helped the farmers to connect with consumers and FPOs (Farmers Producer Organisation) through social media network resources. The study also revealed that some of the farmers never used information related to dairy and poultry management. This may be due to the reason that the farmers might have thought that marketing and post-harvest technology related information is more important than common agricultural practices during the pandemic situation. So, they might have thought that the known practices were enough for the animal husbandry and crop production related activities during the situation. The above findings are in agreement with the findings of Patil and Patel (2018), Madhuri *et al*. (2021) and Patel and Kumar (2021).

**3.2.2. Distribution of respondents according to the validation of information, after receiving through social media**

The data presented in the Table 8 indicates that three-fifth (60.00 %) of the farmers discuss the information received from the social media mostly with the progressive farmers followed by friends and neighbours (56.66 %), family members or relatives (49.16 %), subject matter specialists (39.16 %), extension professionals (35.00 %) and local leaders (29.16 %), respectively. It was also observed that 34.16 per cent of the respondents never discuss the information with extension professionals after receiving the information through social media.

**Table 8: Distribution of respondents according to the** **validation of information, after receiving through social media**

**(n=120)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Particulars** | **Mostly** | **Sometimes** | **Never** |
| **Frequency** | **%** | **Frequency** | **%** | **Frequency** | **%** |
| 1. | Family members/elders/ relatives | 59 | 49.16 | 47 | 39.16 | 14 | 11.66 |
| 2. | Progressive farmers | 72 | 60.00 | 25 | 20.83 | 23 | 19.16 |
| 3. | Local leaders | 35 | 29.16 | 61 | 50.83 | 24 | 20.00 |
| 4. | Extension professionals | 47 | 35.00 | 32 | 26.66 | 41 | 34.16 |
| 5. | Subject matter specialist | 42 | 39.16 | 70 | 58.33 | 08 | 06.66 |
| 6. | Friends and neighbours | 68 | 56.66 | 42 | 35.00 | 10 | 08.33 |

 From the above results, it can be inferred that maximum number of the farmers discusses information with progressive farmers. This might be due to the fact that the progressive farmer becomes the first person to adopt a new practice or technology disseminated through social media. As most of the farmers believe in progressive farmers, they may discuss regarding the benefits and limitations in adopting the particular technology transferred through social media by KVKs. The study further reveals that the majority of respondents never discuss the information obtained through social media with extension professionals. This could be attributed to the fact that all respondents were registered farmers of Krishi Vigyan Kendra (KVK) and preferred to directly contact subject matter specialists for their agricultural queries rather than extension personnel. These findings are consistent with the observations of Kumari (2017).

**3.2.3 Distribution of respondents based on self-evaluation, after receiving messages through social media**

 The table 9 indicates that more than three-fifth (62.50 %) of the respondents made self-evaluation mostly about benefit of adopting the technology disseminated through social media, after receiving the information from KVKs followed by input availability (56.66 %), number of other farmers adopted the technology (46.66 %), social compatibility and cultural compatibility (39.16 %), expenditure involved in adopting technology (35.00 %) and technical problem in learning the technology (29.16 %), respectively. The table also indicated that 20.00 per cent of the respondents do not make self-evaluation regarding social and cultural compatibility.

**Table 9:** **Distribution of respondents based on self-evaluation, after receiving messages through social media**

**(n=120)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No.** | **Particulars** | **Mostly** | **Sometimes** | **Never** |
| **Frequency** | **%** | **Frequency** | **%** | **Frequency** | **%** |
| **1.** | Expenditure involved in adopting technology | 42 | 35.00 | 58 | 48.33 | 20 | 16.66 |
| **2.** | Input availability | 68 | 56.66 | 37 | 30.83 | 15 | 12.50 |
| **3.** | Social and cultural compatibity | 47 | 39.16 | 49 | 40.83 | 24 | 20.00 |
| **4.** | Technical problem in learning the technology | 35 | 29.16 | 67 | 55.83 | 18 | 15.00 |
| **5.** | Benefit of adopting | 75 | 62.50 | 32 | 26.66 | 13 | 10.83 |
| **6.** | How many other farmers have adopted the technology | 56 | 46.66 | 41 | 34.16 | 23 | 19.16 |

From the above study, it can be inferred that maximum number of the respondents made self-evaluation related to the benefit of technology. The respondents were having medium to high innovativeness and hence, they might be the first persons to try the technology disseminated through social media. So, they may evaluate the benefits of the technology before the adoption. They might also think about the input availability as the input is crucial for practicing new things and only few farmers self-evaluate regarding the technical problem in learning as most of the farmers are educated from high school to post-graduation level. The results are on par with the findings of Kumari (2017).

**Conclusion:**

The study reveals that a majority of the respondents primarily used WhatsApp and YouTube, along with agriculture-related applications such as Kisan Rath and Kisan Suvidha, to access agricultural information. However, the usage of other social media platforms like Instagram, Facebook, and LinkedIn remains limited and should be actively promoted by Krishi Vigyan Kendras (KVKs) to enhance awareness and adoption among the farming community. To further increase the extent of social media utilization for obtaining agricultural updates and relevant information, KVK scientists should focus on creating targeted awareness programs and provide hands-on training to farmers on the effective use of various social media platforms. Moreover, extension centers should adopt innovative strategies to disseminate information, ensuring continuous engagement through social media to maintain farmers’ interest and maximize the impact of such communication. The study recommends audience segmentation based on specific farmer needs and the formation of peer learning groups, which can facilitate knowledge sharing from literate to illiterate farmers, thereby improving the overall effectiveness of social media in agricultural extension services.

**COMPETING INTERESTS DISCLAIMER:**

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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