



Journal of Indian Fisheries Association

<https://epubs.icar.org.in/index.php/IJFA/issue/view/3917>



Training needs and its determinants of KVK-Subject Matter Specialists in West Bengal and Bihar

Deboshmita Dey¹, Ananthan P.S.^{1*}, Shivaji Argade¹, Munilkumar Sukham², Mukesh Kumar²
Kalyan Sundar Das³

¹ Fisheries Economics, Extension and Statistics Division, ICAR- Central Institute of Fisheries Education, Mumbai, India

² Aquaculture Division, ICAR- Central Institute of Fisheries Education, Mumbai, India

³ ICAR-Agricultural Technology Application Research Institute, Patna, Bihar, India

³ ICAR-Agricultural Technology Application Research Institute, Kolkata, India

Abstract

Subject Matter Specialists (SMS) in Krish Vigyan Kendras (KVK) are the district level extension functionaries, primarily refining and demonstrating location-specific technologies, and training and communicating with the farming community and grassroots extension workers. The changing agrarian scenario underscores the need for capacity development of KVK-SMS based on their identified training needs. This study assessed the training needs of 116 KVK-SMS in the states of West Bengal and Bihar, using a structured and pre-tested online survey tool in early 2022. Respondent SMS primarily consisted men (78%) who were largely young (42 %). Half of them (56%) were PhD holders while the rest had Masters with a specialisation in Fisheries (14%), Horticulture (14%), Agriculture Extension (13%), Agronomy (12%) and Animal Science (9%), and had an average service of 6-7 years. The study revealed perceived inadequacy in budget and infrastructure facilities for performing the mandated activities especially in recently established KVKs. Two-third of SMS (68%) were only partially satisfied with their present working conditions. Half of them used social media to regularly connect with farmers. Of 14 thematic areas, three most sought after training areas of SMS were entrepreneurship development (WSM score 49%), success story documentation (WSM score 46), and BMPs in aquaculture (WSM score 45%). Spearman's rank correlation showed no relationship between SMS training needs and their profile characteristics like age, experience, specialisation, host institution, state, etc. Majority preferred short courses (5-7 days) conducted in physical mode. Respective ICAR-ATARI may work with ICAR institutions, Agricultural Universities, and Extension Training Institutes to organise the demand-based capacity development programs for KVK-SMS in West Bengal and Bihar.

Keywords:

Training Need Assessment,
Krishi Vigyan Kendras, West Bengal, Bihar
Subject Matter Specialists

*Corresponding author:

ananthan@cife.edu.in

Received: 28 November 2022

Accepted: 30 March 20223



Introduction

The Indian Council of Agricultural Research (ICAR) has established Krishi Vigyan Kendras (KVKs) all over the country as an institutional innovation for application of agricultural science and technology on the farmer's field with the help of a multi-disciplinary team i.e. Subject Matter Specialists (SMS). KVKs being the main outreach arm of the Indian Council of Agricultural Research (ICAR) and its constituent institutes, act as the training centres for transfer of the technology with an aim to reduce the time lag between the generation of technology at the research institution and its location-specific application to farmer fields for increasing production, productivity and net farm income (Singh *et al.*, 2012). On other hand, with emerging agricultural challenges and opportunities, KVKs are working as a "Knowledge and Resource Centre" with e-linkage connectivity, flagship technology, quality technology products, technology parks, technology weeks, resource conservation transfer, diagnostic facilitation, agro-advisory,

and decision support and expert system (Patil and Kokate, 2011).

Subject Matter Specialists are the grass root level extension functionaries who are not only engaged in crucial tasks of technology dissemination, but also attempt to make farmers creative, self-confident and economically self-reliant through gainful-employment (Sulaiman and Hall, 2003). In this context, SMSs of the KVKs must be competent to perform such multidimensional tasks and improve their work effectiveness, which would make Indian frontline extension system more visible, vibrant, demand driven and client oriented (Patil and Kokate, 2011). Nongtdu et al. (2012) suggested that necessary steps should be taken to identify the unfelt needs of the extension personnel to strengthen their knowledge, skills and attitudes required for performing their job efficiently. This calls for training needs assessment of extension personnel before conducting a training programme.

Trainings organized by KVKs are helping to ameliorate the poor socio-economic conditions of the farmers, farm women and rural youths in rural India by raising the level of farm productivity, income and employment with the application of agricultural innovation generated at the research station (Dubey et al., 2008). The situation in agriculture sectors is fast changing. Thus, training assessment has to be carried out to design relevant and need-based training programmes that can accommodate changes over time (Barbazett, 2006).

In this scenario, the present study is an attempt to identify and prioritize the training needs of KVK SMSs in the states of West Bengal and Bihar, so that necessary measures would be suggested to develop suitable capacity building modules and conduct capacity enhancement programmes for KVK SMS.

Methodology

An ex post facto research and survey design was adopted for this study which covered all the 23 KVKs in West Bengal and 44 KVKs in Bihar, two of India's important fish-producing and consuming states. The study was carried out in collaboration with the respective Zonal ATARIs- ATARI Kolkata (Zone V) and ATARI Patna (Zone IV). There was no sampling involved as the entire universe i.e. all the 277 KVK SMS in position were the target respondents. Data was collected from KVK SMS through a semi-structured interview schedule converted into Google form. Of the 277 SMSs, total 116 KVK personnel (58 responses from each state representing 21 KVKs in West Bengal and 41 KVKs in Bihar) responded to the Google form survey. Some missing and additional required information was also collected through phone calls to SMS and KVK Coordinators.

To assess the training needs of KVK personnel a list of 14 thematic areas were identified through literature review, discussion with state extension functionaries,

KVK staff as well as authors expertise and were incorporated in the survey. The responses were collected in 3 – point continuum scale namely most preferred (MP), preferred (P) and least preferred (LP) by assigning scores 3, 2 and 1, respectively against the identified specific items based on their perceived needs. The results were calculated by Weighted Sum Method for each of the thematic area identified.

$$\text{WSM Score} = \frac{(\text{No. of MP} \times 3) + (\text{No. of P} \times 2) + (\text{No. of LP} \times 1)}{\text{Total No. of MP} + \text{P} + \text{LP}}$$

Further, the relationship between the socio-psychological characteristics, independent variables, and the perceived training need, the dependent variable, of the respondents were determined. The personal and socio-psychological characteristics consisted of eight independent variables namely gender, age, education, service length, availability of budget, present working condition, mass media exposure, and fisheries infrastructure availability in the KVKs. The relationship between the two were determined using the Spearman rank co-efficient of correlation.

$$r = 1 - \frac{\sigma \sum d^2}{n(n^2 - 1)}$$

Where

r = coefficient of correlation

d = differences of ranks between paired samples

n = no. of pairs of observations

The Spearman's rank correlation coefficient is denoted by r - value which lies between -1 and +1. An r value of +1 indicates perfect positive association, an r value of zero indicates no association, and r value of -1 indicates perfect negative association of the ranks. The closer the r value is to zero the weaker the association between ranks.

Results and discussion

Profile of KVK-SMS

Age: The majority (42 per cent) of the respondents belonged to the Young age (Up to 32 years). Middle age (33- 44 years) had 36 per cent and 22 per cent of the respondents is from Old age (45 years and above). The mean and standard deviation were calculated as 37.18 and 7.98 respectively. In West Bengal 41 per cent of the respondents belonged to the Young age (Up to 32 years). Middle age (33- 44 years) had 36 per cent and 22 per cent is from Old age (45 years and above) and corresponding values for the KVK SMSs of Bihar were 43 per cent, 36 per cent and 21 per cent respectively. The higher percentage of younger extension personnel in due to recruitment of many Subject Matter Specialists in recent years.

Gender: The majority of SMS (77.5 %) were men which was 81% in West Bengal and 74% in Bihar. KVK-SMS

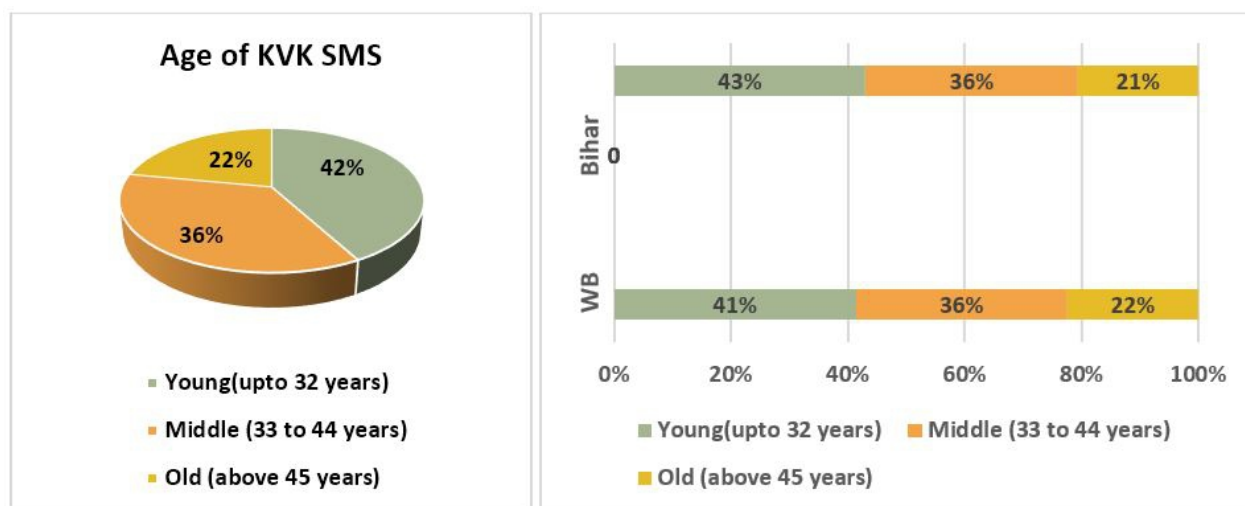


Fig.1 Age of KVK SMS in WB and Bihar

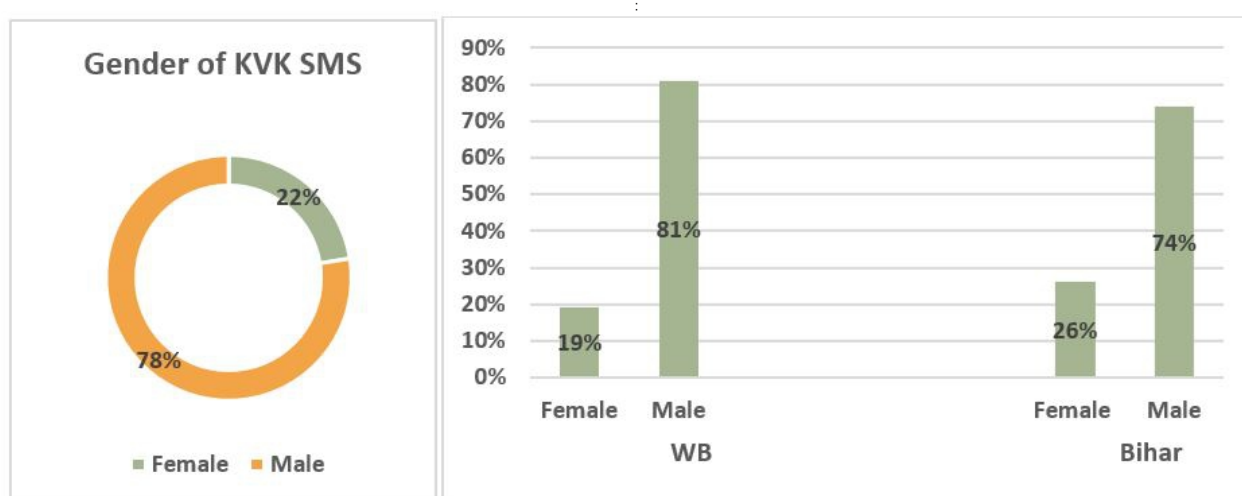


Fig.2 Gender of KVK SMS in WB and Bihar

being the field oriented job with frequent travel and field work, there is a latent preference for male candidates for the job as women are perceived to be relatively immobile. Also, there might be fewer women candidates applying for the SMS positions. The finding is in conformity with Thanh and Singh (2007) who reported that most of the Indian extension personnel at district (100%) and block levels (97%) were males.

Educational qualification: Almost half (56 per cent) of the respondents who responded to the online survey were PhD holders while the rest (44 per cent) of the respondents possessed Masters in different agriculture and allied disciplines in West Bengal and Bihar. In West Bengal, the majority (57 per cent) of SMS were PhD holders while the rest had Masters in different agriculture and allied disciplines. The corresponding values for the KVK-SMS of Bihar were 55% and 45% respectively.

Specialisation: Majority of SMS who responded to the online survey had specialisation in Fisheries (14%), Horticulture (14%), Agriculture Extension (13%), Agronomy (12%) and Animal Science (9%) (Fig. 4.). In both West Bengal, the specialisation of SMS were almost comparable except for a higher proportion of

plant pathologists in Bihar KVKs and fisheries SMS in West Bengal.

Service Length: One third (31%) of respondents had a service length between one and five years, while 22% had an experience of less than a year, 20% were working for 6 to 10 years while the rest 28% had more than 10 years of experience. Respondent SMS experience varied widely with the average value of 7.02 years for those in West Bengal and 6.29 years in Bihar. Bihar had a relatively large number of SMS with less experience (45% less than a year) as the recruitment happened recently in many of the newly created KVKs. This was in conformity with many SMS being in the younger age group (<35 years). Early in the career would be the right time to get trained on areas appropriate to what their job demands.

Adequacy of Budget: Three-fourth of KVK-SMS opined inadequate budget with many KVKs to perform their mandated activities especially performing extension services satisfactorily. Mann-Whitney U-test statistics (p value of 0.215 at 0.05 level of significance) showed that there was no significant difference between the opinions of SMS from the two states in terms of budget inadequacy for extension work. This concurred with

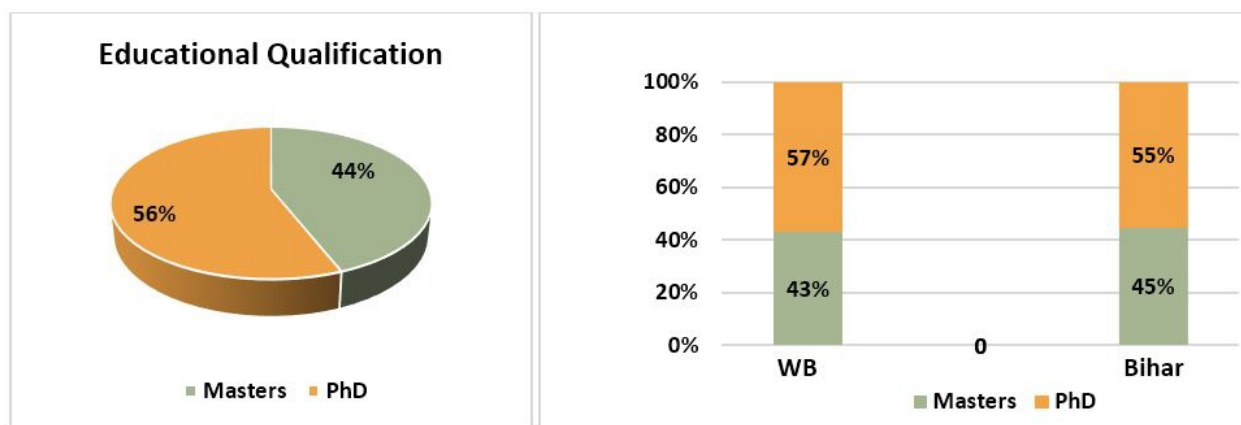


Fig.3 Educational Qualification of KVK-SMS in West Bengal and Bihar

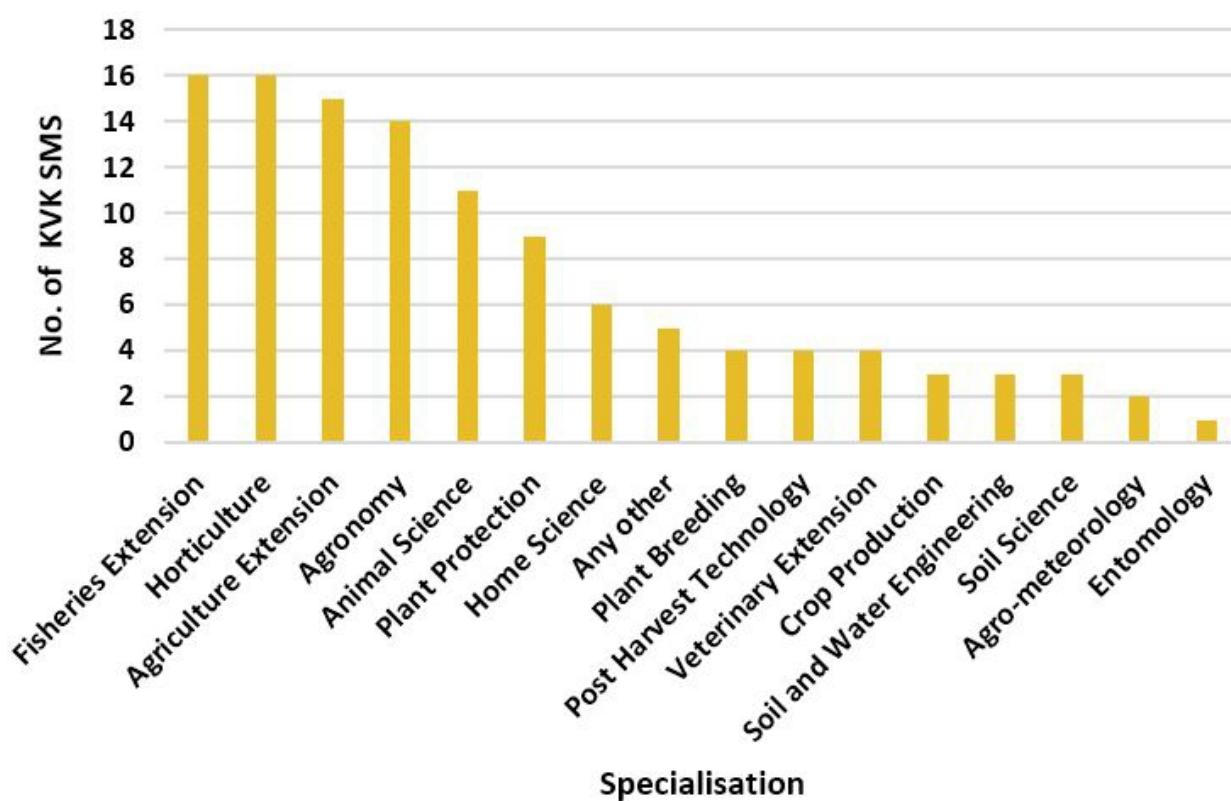


Fig.4 Specialisation of KVK SMS in WB and Bihar

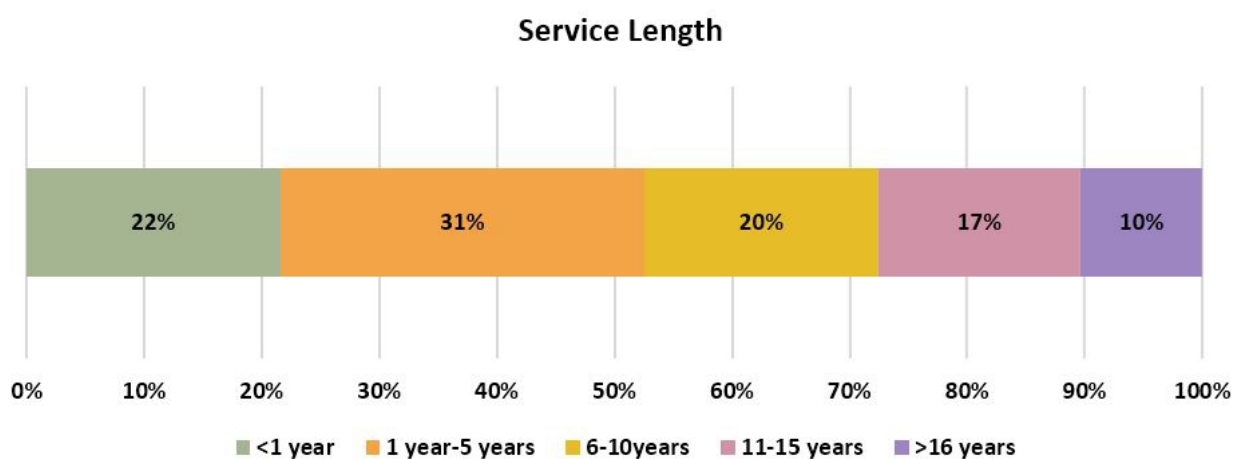


Fig.5 Service Length of KVK SMS

Adequacy of Budget

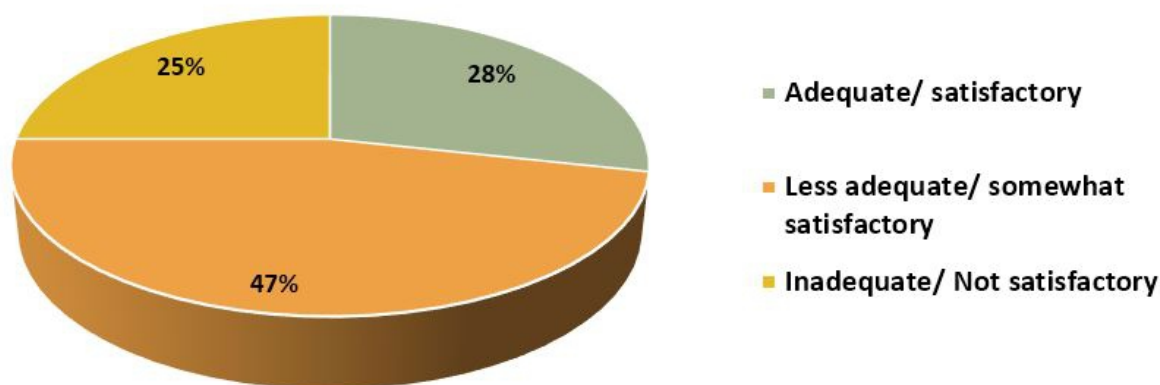


Fig.6 Perceived Adequacy of Budget for KVK SMS

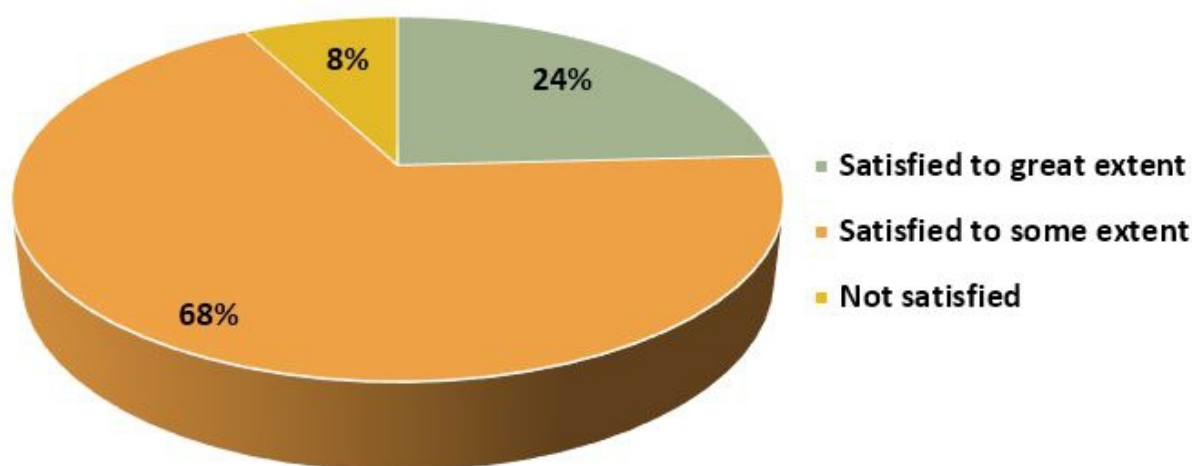


Fig.7 Level of satisfaction with present working condition

the secondary data sourced from the annual reports of ATARIs, which showed, on an average, a meagre recurring/operational budget of about Rs.15 lakhs/year/KVK was made available during the years 2017-20. In a scenario where KVKs' roles and expectations are ever expanding, the budget inadequacy is an issue requiring immediate attention of the policy makers.

Overall job satisfaction with present working conditions: Majority of respondent SMS (68%) reported that they were only partially satisfied with their present working conditions while one-fourth were completely satisfied. In another study of KVK-SMS in Manipur (Augustine *et al.* 2020) the job satisfaction was very high with 91 % expressing satisfaction with their jobs. Halakatti and Sundaraswamy (1997) reported that 68% of the Agricultural Assistants working under Training and Visit System of Karnataka perceived the organizational

climate to be moderately favourable, something similar to this study's findings. Results of Mann-Whitney U-test statistics (p value of 0.056 at 0.05 level of significance) showed that there was no significant difference between the two states in terms of the level of satisfaction of KVK-SMS with their working condition.

Mass media exposure: Half of the KVK-SMS (54%) reported regular use of different mass media especially digital media (web portals, eBooks, eMagazines, etc.) and social media (Facebook, WhatsApp, YouTube, etc.) to connect with farmers or fishers while only 8% of the respondents were not active in social media yet and haven't been using to connect with farmers. The remaining 38% used social media occasionally, and rarely connected with farmers through them.

The approaches and practices of delivering extension services are consistently evolving and the usage of social media can be helpful to reach out to the farmers

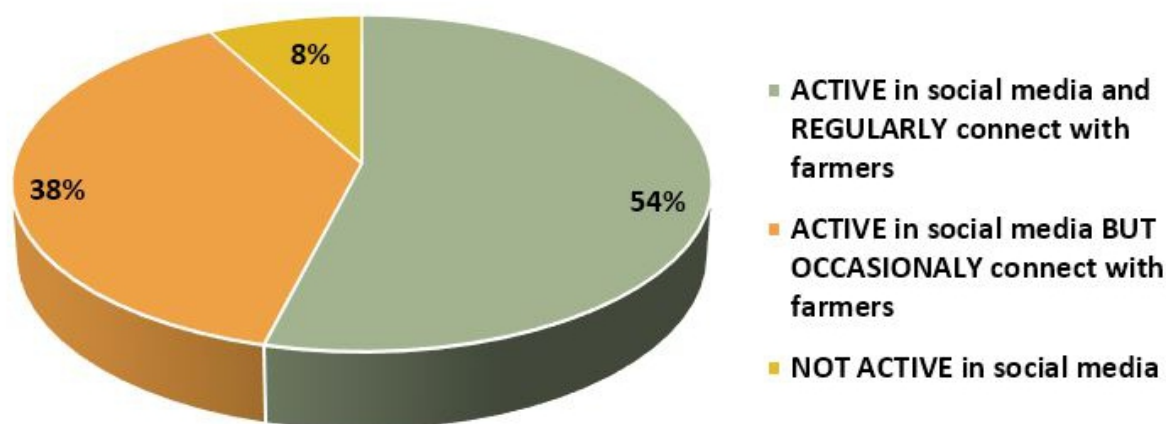


Fig. 8 Mass Media Connect of KVK SMS

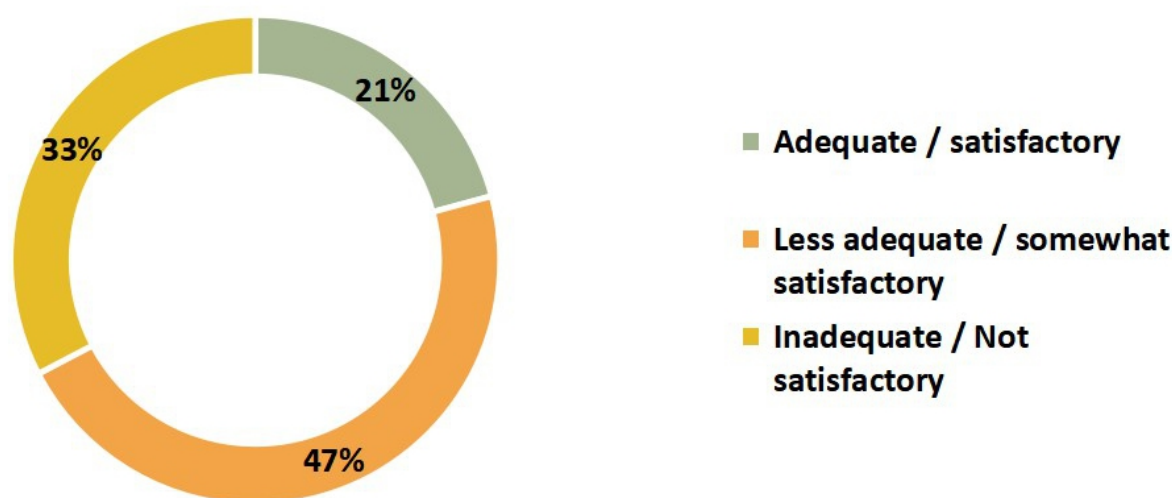


Fig. 9 Perceived adequacy of fisheries-related infrastructure

instantly and effectively. KVK-SMS should be encouraged to use social media to connect with farmers. Medium exposure to mass media revealed that almost all had access to radio, TV, journals, magazines etc. but due to time constraints and lack of interest, they didn't utilise the source to the fullest extent (Nongdu *et al.* 2012). A similar finding was indicated by the study of Mohan (2000) where a majority of Assistant Agricultural Officers in the northern Karnataka had a medium level of mass media exposure.

Adequacy of Infrastructure: Only 21% of the KVK-SMS respondents felt that necessary infrastructure (like pond, demonstration unit, processing unit, ornamental fish rearing unit, soil and water testing lab, hatchery, seed rearing unit, etc.) were available in their KVKs to conduct fisheries related training, on-farm-trails (OFT), frontline demonstrations (FLD) and extension activities. Mann-Whitney U-test statistics (p value of 0.641 at 0.05 level of significance) revealed no

significant difference between the two states in terms of perceived availability and adequacy of fisheries-related infrastructure.

Training needs of KVK-SMS

Of 14 thematic areas indicated in the survey which had an equal mix of general areas and fisheries-specific areas (Table 1), Entrepreneurship development (WSM score 48.67), Success story documentation (WSM score 45.5), Best Management Practices (WSM score 44.83) were the three most preferred areas where the KVK-SMS required training. Further, areas such as Fish nutrition and feed technology, Project management / Monitoring & evaluation, and Conducting PRA/RRA with farmers/fishers had a similar WSM score (41.67%). Areas such as Ornamental fish rearing / aquarium management (WSM score 38.17), Gender dimension and mainstreaming (WSM score 37.5) and Conservation of fisheries resources (WSM score 37) were relatively less preferred among the bouquet of listed training areas.

Table.1 Preferred Training areas of KVK SMS in West Bengal and Bihar (N=116)

Training Areas	WSM*	Rank
Entrepreneurship Development	48.67	1
Success story documentation	45.5	2
Best Management Practices	44.83	3
Fish Health Management	44.5	4
Extension Management / Human Resource Management	43.67	5
Recent Technologies in Aquaculture	43.5	6
Fish Nutrition and Feed Technology	41.67	7
Project Management / Monitoring & Evaluation	41.67	7
Conducting PRA/RRA with farmers/fishers	41.67	7
Fisheries Marketing / Value Addition	41.33	8
Fish Breeding and Seed Production/ Seed Rearing	40.83	9
Ornamental Fish Rearing / Aquarium Management	38.17	10
Gender dimension and main streaming	37.5	11
Conservation of Fisheries Resources	37	12

*WSM (Weighted Sum Method) score can range from a theoretical minimum of 19.33 to a theoretical maximum of 58, given N=116 and the responses were sought on a 3 point scale.

There were no significant differences between the two states in terms of training areas preferred by KVK-SMS. In the past, agriculture and allied sectors like fisheries were seen as a low-tech industry but the situation has changed dramatically over the last two decades with several entrepreneurial opportunities opening up. Farmers, researchers, and governments have recognized this and envisage an enabling entrepreneurial ecosystem. Rightly, the technology specialists in KVKs need training on this aspect to create more self-employment opportunities in the districts. SMS are also engaged in documenting success stories which serve as vehicles to showcase the end result of the training and capacity development programs undertaken, warranting training to hone their skills to better market their success stories and achievements. Given that the majority of the respondents (100 out of 116) were from non-fisheries backgrounds, the most preferred areas being generic in nature are understandable. Comparatively less preference for the gender mainstreaming program, ornamental fisheries, and conservation of fisheries resources might be either due to pre-existing knowledge or their perceived non-relevance to their work area.

Table. 2 Correlation of KVK-SMS profile characteristics with their training needs (n=116)

Sl No.	Variables	Training needs	
		r-value	p-value
1	Gender	-0.27	0.774
2	Age	-0.047	0.616
3	Education	-0.061	0.518
4	Service length	0.101	0.279
5	Availability of budget	0.119	0.203
6	Present working condition	-0.091	0.331
7	Mass media exposure	-0.091	0.331
8	Fisheries infrastructure availability	0.101	0.279

Results of Spearman's correlation test statistic revealed no statistically significant association between the training needs of SMS and their gender, age, education, service length, availability of budget, present working condition, mass media exposure and fisheries infrastructure availability in the KVKs of West Bengal and Bihar. One can reasonably infer that these variables need not be considered while prioritising the training areas and implementing capacity development programs for KVK-SMS. As the training needs of SMS change over time, training needs assessment should be done on a regular basis and the important areas in which the SMS require training should be considered while planning training for the betterment of the KVK-SMS and the KVK system per se.

These findings are contradictory to the findings of many studies. Kalita (1992), Sharma (1995), Rajanna *et al.* (2009) and Singh *et al.*, 2011 have all studied training needs of either KVKs or extension workers, and reported significant relationship between the training needs and the profile characteristics such as age, training exposure, experience, and job performance were significantly related. This only emphasises the context-specific nature of these studies and the importance of conducting training need assessment before designing capacity development programs as well as its pedagogy.

Conclusion

Competent human resources are valuable assets to the extension organisation and the success of such an organization is directly related to the skill of its human resource. KVKs regularly organise training programmes for extension personnel, farmers, farm women and rural youths to orient them in the frontier areas of technology development. Along with the development of the clientele, KVK extension professionals need to upgrade and update existing and new skills to reaffirm their essential role in agrarian development, poverty reduction and rural prosperity.

As the training needs of extension personnel change over time due to rapid changes in technology and information delivery systems, training needs assessment should be done on a regular basis and above mentioned themes may be considered while planning training for extension personnel so that the training programmes will be effectively producing results under real farm situations. In this context, the ICAR Research Institutes, National and Regional Level Extension Training Institutes and State Agricultural Universities should timely assess the training needs of Subject Matter Specialists and need-based training modules need to be designed for capacity building of SMSs, which will make the KVK system more visible, vibrant, demand-driven and client-oriented.

Acknowledgements

This research work was carried out as part of the Master's program of the first author, who remains thankful to ICAR-CIFE, Mumbai for the fellowship and the facilities made available. Authors would like to thank the constructive comments and inputs from the anonymous reviewers.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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