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A study on managerial efficiency of senior scientist and heads of KVKS in Karnataka (India)

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Abstract

The Krishi Vigyan Kendra (KVK) system, initiated by ICAR, plays a crucial role in promoting sustainable agriculture through training, technology dissemination, and capacity building. This study assessed the managerial efficiency of Senior Scientists and Heads (SS&H) of all 33 KVKs in Karnataka during 2021–22, using an ex-post-facto research design and purposive sampling. Managerial efficiency was operationalized across key dimensions, including planning, organizing, directing, communication, controlling, human relations, leadership, supervision, coordination, and decision-making. Results revealed that 45.46% of respondents exhibited high efficiency, 42.42% medium, and 12.12% low efficiency. Strong performance was observed in planning, supervision, and accountability, while gaps were noted in technology transfer, field outreach, and coordination with external departments. Decision-making processes showed emphasis on fact-finding but lower timeliness. The findings highlight both strengths and areas for capacity enhancement among SS&H. Strengthening managerial practices through targeted training can improve the leadership effectiveness of KVKs, thereby accelerating agricultural extension and rural development.

Keywords: Krishi Vigyan Kendra, managerial efficiency, senior scientist and heads, agricultural extension, decision-making, karnataka

Introduction

The Krishi Vigyan Kendra (KVK) concept introduced by the Indian Council of Agricultural Research (ICAR) plays a vital role in promoting agricultural growth. They serve as knowledge and resource centres, offering farmers valuable training, skills development and sustainable farming practices. By promoting innovative technologies and connecting researches with farmers, KVKs empower farmers, enhance productivity and contribute to rural development. Before independence foreign rulers made minimal and disorganized efforts to develop rural India. However, post-independence policymakers prioritized agricultural and rural development and Sectors by introducing various projects, programs and institutional frameworks. ICAR played a major role in driving the Green Revolution ensuring technological advancements reaching farmers, significantly boosting agricultural productivity.

The first KVK, on a pilot basis, was established in 1974 at Puducherry (Pondicherry) under the administrative control of the Tamil Nadu Agricultural University, Coimbatore. At present there are 721 KVKs, out of which 498 are under State Agricultural Universities (SAU) and Central Agricultural University (CAU), 66 under ICAR Institutes, 104 under NGOs, 38 under State Governments, and the remaining under other educational institutions.

The managerial efficiency of Senior Scientist and Heads extends beyond scientific research. Their roles include, Strategic planning, Resource management, Team leadership and coordination, Stakeholder engagement, Performance monitoring and evaluation.

Methodology

Locale of the study

The study was conducted in Karnataka state, during the year-2021-22 the senior scientist and heads of all the 33 KVKs of Karnataka state were considered as respondents of the study area for the preset study. The state is known for its proactive agricultural extension strategies and institutional support, which enhance the autonomy and operational scope of SS&H in planning, resource mobilization, and stakeholder engagement (ICAR-ATARI, Bengaluru, 2020). Karnataka has also demonstrated high scientific

productivity, with KVKs actively engaged in frontline demonstrations, on-farm trials, and technology dissemination suited to the region's ten Agro-climatic zones (Gowda. 2017).

Research design

Research design is the most important and crucial aspect in research. The *Ex-post-facto* research design were used in the present study. Thus, *Ex- post-facto* design was felt appropriate because the phenomenon has already occurred. It is a systematic empirical inquiry in which the researcher does not have direct control over independent variables because their manifestations have already occurred or because they are not inherently manipulated.

Sampling design

The sample selection for the study was done by following purposive and random sampling method as it is an intentional selection of informants based on their ability to elucidate a specific theme, concept or phenomenon. A purposive sample design is where a researcher selects a sample based on their knowledge about the purpose of the study and population distributed in the study area. All the thirty-three senior scientist and Heads of the KVKs working across the Karnataka were considered sample to assess the managerial efficiency of the senior scientist and heads.

Selection of the respondents for the study

In order to study the managerial efficiency of the Senior Scientist and Heads of all Krishi Vigyan Kendra's (KVKs) which were operating in Karnataka, all the 33 KVKs functioning under the administrative control of State Agricultural Universities (SAUs), ICAR institutes and Non-governmental organizations (NGOs) in Karnataka were considered as respondents.

Selection of Variables used in the study

After framing/finalization of the objectives of the study, researcher made on exhaustive review of relevant and supportive research studies conducted earlier were made which helped to fine tune the variables to be studied in the present study. Further my field experience in KVK computed with consultation of extension experts in the field of agricultural extension services from SAUs, ICAR institutions and development departments were made to include all possible dependent and independent variables for the study.

A group of independent variables relevant to the objectives of the study was identified from the literature, survey and discussion with the experts. A total of 15 variables for Senior Scientist and Heads of the KVKs.

Operationalization and measurement of variables in the study

The variables used in the present study were operationalized based on their relative merit in quantifying the measurement, which in turns enables the researcher in better understanding of the characteristics of the selected variables.

Managerial efficiency of Senior Scientist and Heads of Selected KVKs

In the present study, managerial efficiency of senior scientist and heads of KVKs is operationally defined as "degree of performing the functions of management activities (Planning, Organizing, Directing, Communicating, Controlling, Human Relation, Leading, Supervising Co-ordinating and Decision making) effectively in the process of extension of KVK activities as per the guidelines".

For measuring the managerial efficiency of the respondents of the KVKs, a scale was developed, after considering the set of guidelines designed through systematic procedure for developing a standardized scale, after review of literature and discussion with experts, extension professionals, other stakeholders in the transfer of technology.

Managerial efficiency of Senior Scientist snd Heads of the KVKs

Managerial efficiency reflects the capability of leaders to effectively plan, organize, and control resources to achieve organizational objectives. For senior scientists and heads of Krishi Vigyan Kendras (KVKs), this includes decision-making, resource management and stakeholder engagement. High efficiency is essential for driving innovation and improving agricultural practices.

Overall managerial efficiency of Senior Scientist and Heads of the KVKs

It can be seen from Table 1 and Fig. 1 that from the observations, the overall managerial efficiency of Senior scientist and heads of Krishi Vigyan Kendra's, it was observed that more than two-fifth (45.46 %) of the respondents belong to high level of managerial efficiency followed by medium (42.42%) and low (12.12 %) level of managerial efficiency.

Table 1: Overall Managerial efficiency of Senior Scientist and Heads of selected KVK's in Karnataka, (n=33)

Sl. No.	Category	Response	
		f	%
1	Low Managerial efficiency (<106.82)	04	12.12
2	Medium Managerial efficiency (106.83 to 112.69)	14	42.42
3	High Managerial efficiency (>112.70)	15	45.46
Mean= 109.76 SD= 6.92			

These findings underline the potential for enhancing managerial practices and decision-making processes within KVKs, particularly by focusing on areas where efficiencies can be improved. Future training and development programs could target the lower efficiency segment to elevate their skills and practices, ultimately contributing to more effective leadership in agricultural extension services. These results correspond with the findings of Suandi *et al*. (2014) [1] and Sharma (2018) [2].

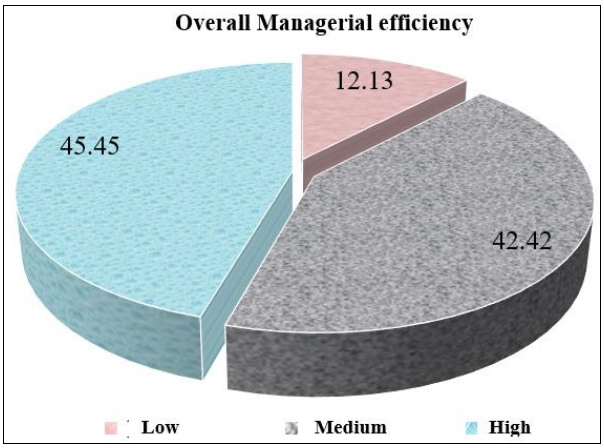

Fig 1: Distribution of the senior scientist and head of KVKs according to their overall efficiency

Statement wise managerial efficiency of Senior Scientist and Heads of the KVKs

The managerial practices of senior scientists and heads of Krishi Vigyan Kendras (KVKs) can be categorized into several dimensions, each highlighting different aspects of their roles and responsibilities which is depicted in Table 2.

With respect to planning, the results indicate a strong consensus on the importance of planning, with high agreement on statements related to the determination of objectives plan for forecast of pest and disease (81.82%) plan for utilizing the funds (84.85 %) and the preparation of annual action plans (78.79 %). This reflects a proactive approach in setting clear goals and strategies, essential for effective agricultural extension services. However, the lower agreement (42.42 %) regarding the planning for the transfer of technology suggests a need for enhanced focus on this area to ensure that innovations reach farmers effectively.

Table 2: Statements wise Managerial efficiency of Senior Scientist and Heads of KVK's (n=33)

Sl. No	Statements	Response Pattern									
		SA		A		UD		DA		SDA	
		f	%	f	%	f	%	F	%	f	%
I. Planning											
1	Determination of objectives	28	84.85	05	15.15	00	00.00	00	00.00	00	00.00
2	Plan for transfer of technology	14	42.42	19	57.58	00	00.00	00	00.00	00	00.00
3	Plan for utilization of funds/Budget	27	81.82	06	18.18	00	00.00	00	00.00	00	00.00
4	Preparation of annual action plan	26	78.79	07	21.21	00	00.00	00	00.00	00	00.00
5	Plan for forecasting of pest and diseases	28	84.85	05	15.15	00	00.00	00	00.00	00	00.00
II. Organizing											
6	Provide work opportunity to the staff	28	84.85	05	15.15	00	00.00	00	00.00	00	00.00
7	Regular staff meetings	14	42.42	19	57.58	00	00.00	00	00.00	00	00.00
8	Division of work	17	51.52	16	48.48	00	00.00	00	00.00	00	00.00
9	Organizing field days	05	15.15	28	84.85	00	00.00	00	00.00	00	00.00
III. Directing											
10	Give clear and complete instructions	28	84.85	05	15.15	00	00.00	00	00.00	00	00.00
11	Provide technical guidance	18	54.55	15	45.45	00	00.00	00	00.00	00	00.00
12	Appreciation of good work	28	84.85	05	15.15	00	00.00	00	00.00	00	00.00
IV. Communicating											
13	Instruction to subordinates in time	19	57.58	14	42.42	00	00.00	00	00.00	00	00.00
14	Selection of appropriate medium (written/oral) of communication	10	30.30	20	60.61	03	09.09	00	00.00	00	00.00
15	Establishment of feed-back mechanism	05	15.15	24	72.73	04	12.12	00	00.00	00	00.00
V. Controlling											
16	Taking work done reports regularly from subordinates	28	84.85	05	15.15	00	00.00	00	00.00	00	00.00
17	Regularity in sending reports to higher authorities	23	69.70	10	30.30	00	00.00	00	00.00	00	00.00
VI. Human Relation											
18	Co-operating with Staff	18	54.55	15	45.45	00	00.00	00	00.00	00	00.00
19	Impartial behaviour with colleagues	18	54.55	15	45.45	00	00.00	00	00.00	00	00.00
VII. Leading											
20	Promote team work	23	69.70	10	30.30	00	00.00	00	00.00	00	00.00
21	Developing high group morale	23	69.70	10	30.30	00	00.00	00	00.00	00	00.00
22	Inspiration to subordinate	14	42.42	19	57.58	00	00.00	00	00.00	00	00.00
23	Choosing right person for each job	19	57.58	14	42.42	00	00.00	00	00.00	00	00.00
24	Maintaining discipline	14	42.42	19	57.58	00	00.00	00	00.00	00	00.00
VIII. Supervising											
25	Give suggestions properly	18	54.55	15	45.45	00	00.00	00	00.00	00	00.00

26	Focus on quality of work	19	57.58	14	42.42	00	00.00	00	00.00	00	00.00
27	Focus on timely work	14	42.42	19	57.58	00	00.00	00	00.00	00	00.00
XI. Co-Ordinating											
28	Co-ordination with line departments	10	30.30	23	69.70	00	00.00	00	00.00	00	00.00
29	Coordination with reporting institutions	23	69.70	10	30.30	00	00.00	00	00.00	00	00.00
30	Co-ordination with subordinates	19	57.58	14	42.42	00	00.00	00	00.00	00	00.00
31	Co-ordination with sister institutions	09	27.27	24	72.73	00	00.00	00	00.00	00	00.00
X. Decision Making											
32	Right decision at right time	10	30.30	23	69.70	00	00.00	00	00.00	00	00.00
33	Find the facts for decision	05	15.15	28	84.85	00	00.00	00	00.00	00	00.00
34	Implementation of the decision	06	18.18	27	81.82	00	00.00	00	00.00	00	00.00

In case of organizing dimension, the respondents demonstrated a commitment to providing work opportunities for staff (84.85 %) division 51.52 per cent of work and emphasized regular monthly staff meetings (42.42 %) and informal discussion oftenly with all concerned. The significant agreement on these statements underscores the importance of collaborative work environments. However, the relatively low endorsement for organizing field days (15.15 %) points to a potential gap in outreach activities, which could be critical for engaging with the farming community.

With reference to directing, showed very high levels of agreement in providing clear instructions and appreciating good work (84.85 %). This suggests that leaders in KVKs prioritize effective communication and recognition, fostering a positive work culture. The provision of technical guidance also garnered a fair level of agreement (54.55 %), indicating that while technical support is valued, there may be room for improvement in ensuring consistent guidance for all staff.

Whereas effective communication is crucial for organizational success and the results show a mixed response in this area. While 57.58 per cent agreed on timely instructions to subordinates, the selection of appropriate communication mediums received only 30.30 per cent agreement. This disparity indicates a need for enhancing communication strategies to ensure messages are conveyed effectively, particularly in the context of diverse audiences.

In case of controlling, revealed that regular monitoring of work through reports is well-acknowledged (84.85 %). This suggests that KVK leaders prioritize accountability However, the regularity in sending reports to office of the ATARI, Directorate of Extension and other funding agencies (69.70 %) reflects a strong awareness of accountability upward, which is essential for organizational transparency.

With reference to human relations, co-operation among staff (54.55 %) and impartial behaviour with colleagues (54.55 %) received moderate agreement. This indicates a generally positive interpersonal environment, although efforts to enhance collaboration and fairness may be beneficial for improving overall workplace dynamics.

Whereas, in leading, respondents demonstrated a strong inclination towards promoting teamwork and developing high group morale (69.70 %). These findings indicate that KVK leaders recognize the significance of fostering a cohesive team environment, essential for effective service delivery in agricultural extension.

In the supervision component, showed a focus on quality and timely work (57.58 %). While there is a commitment to ensuring work standards, there may be challenges in maintaining consistency in supervision across all tasks, which could impact overall efficiency.

With respect to coordination with reporting institutions received high agreement (69.70 %), suggesting effective collaboration with external entities. However, coordination with line departments (30.30 %) and sister institutions (27.27 %) showed lower agreement, indicating areas where integration could be improved for a more comprehensive approach to agricultural development.

In the decision-making dimension, a significant majority agreed that finding facts for decisions is crucial (84.85 %), but only 30.30 per cent felt that decisions are made at the right time. This gap highlights the importance of timely decision-making processes in enhancing operational effectiveness.

Overall, the findings reveal that senior scientists and heads of KVKs generally exhibit strong managerial efficiency across various dimensions. However, specific areas such as technology transfer, planning, communication strategies and coordination with other departments require further attention to enhance their effectiveness in agricultural extension services. Continuous training and development in these areas could significantly improve the operational capabilities of KVKs.

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