SOCIETY OF EXTENSION EDUCATION

RESEARCH ARTICLE

Major Constraints Faced by KVK Scientists During Use of ICT Tools in Rajasthan

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ABSTRACT

ICT's are emerging as an important tool for the progress of society. The new technology has significantly improved lifestyle and efficiency levels in all sectors of the economy. This enables the utility of ICT to overcome physical distances and time gaps in communication. Rapid improvements in IT have increased their cost and space requirements, speed and storage capacity in a short span of time with traditional communication materials. A study was undertaken on 210 Krishi Vigyan Kendra Scientists of Rajasthan. The result of the study depict that the general constraints faced by KVK scientists during use of ICT tools, the statement 'High cost of repairing ICT tools' is Ranked – I with (mean score =2.80) and lowest constraints goes to the statements 'Lack of skills to access the website' Ranked –X with (mean score =1.16) followed by the personal constraints faced by KVK scientists is 'Lack of ICT oriented training' Ranked-I with (mean score =1.86) and lowest constraints goes to the statements 'Lack of knowledge about ICT tools' Ranked –VII with (mean score =1.10) followed by the technical constraints faced by KVK scientists is "Internet connection is poor/slow" is Ranked –I with (mean score =2.38) and lowest constraints goes to the statement "Lack of competence in handling ICT tools" with (mean score=1.44) Ranked-XI among the overall statements.

Key words : Information Communication Technology (ICT); Constraints.

The ICT is the keystone of agricultural development; it indorses the productivity, competence and stability of the agricultural sector. The new information system be able to add more population and more villagers in evolving countries. In order to provide nutrition and salary to a large section, communication is a core issue in developing societies.

The communication policies, techniques and strategies need to be revolutionized so that instead of making it privileged by rich people it can be made a fundamental right of poor people. The communication science comes as a profession, particularly in natural and agricultural communication. To increase production in rural areas, it seeks to transform knowledge and skills about advanced agricultural technology with the aim of changing the existing agricultural practices of farmers. The rapid development of information technology has given a new look to communication systems. Now connecting two computers across the country has become an easy task. The result is, villages in many parts of the country have been connected through a wired network to eliminate the distance between rural and urban people. KVK's under ICAR, SAU, and NGO is one of the premier institutes dedicated to the upliftment of rural agricultural research. As an institutional innovation, KVK has been set up by ICAR across the country for application of agro-science and technology, with the help of a multi-disciplinary team i.e. senior scientists and subject matter specialists in agriculture sector. Those who provide skills and knowledge training to farmers in areas like Horticulture, Animal Husbandry and Fisheries, Home Science, Agricultural Extension, Agricultural Science, Plant Protection Entomology / Pathology and Agricultural Engineer. The responsibility of KVK's scientists is to transfer recent technologies / information required for their work, including crop production, input supply, pest and disease control, crop harvesting etc so that farmers can get agricultural information quickly and effectively.

METHODOLOGY

The Ex-post facto research design was adopted for present study. The ex-post facto research design is defined as systematic and empirical enquiry in which, the scientists have direct control of influencing independent variable because their manifestations have already occurred or because they are inherently not manipulable. The study was conducted in Rajasthan state of India. Which comprises of 33 districts, there are 44 Krishi Vigyan Kendra in the state and all were selected for the study. The population of study included all Senior Scientists and Head and Subject Matter Specialists of Krishi Vigyan Kendra of all State Agricultural Universities (SAU'S), Non-Government Organization (NGO'S) and Indian Council of Agricultural Research (ICAR) of the state. The total sample comprised of 210 Krishi Vigyan Kendra Scientists. The scientists at KVK's were using the ICT tools and in turn passed on the technical know-how to the ultimate users. i.e. farmers.

Percentage and frequency distribution method was used to analyze the data regarding background information of respondents and their adoption of ICT tools and utilization behaviour of ICT tools and their perception, to interpret the constraints faced by the KVK scientists of Rajasthan.

Mean score was calculated to evaluate the adoption of ICTs, perception, utilization behaviour, and constraints faced by the KVK scientists of Rajasthan.

$$\text{Mean score} = \frac{\text{Total score}}{\text{No. of members}}$$

Mean per cent score were calculated to find out overall knowledge and relative understand ability of the utilization behaviour of the KVK scientists.

$$\text{MPS} = \frac{\text{Total score obtained by respondents}}{\text{Max. obtainable score}} \times 100$$

Rank was calculated to find out the utilization behaviour, perception, constraints of the respondent.

RESULTS AND DISCUSSION

The study reveals about the constraints faced by KVK scientists during use of ICT tools. The constraints were further divided into general, personal, technical, economic, social constraints due to excess use of ICT tools and physiological constraints due to excess use of ICT tools.

"High cost of repairing ICT tools" was found to be the major constraint among the general category with mean score 2.80 of constraints followed by "Problem of virus which can damage the data" ranking II with mean score 2.64 and "Fear that ICT tools may at times mislead the user" ranked III as the general constraints with mean score 1.92.

"Lack of ICT oriented training" ranked I with mean score 1.86 or the most severe personal constraint faced by KVK scientists followed by "Belief that internet is not safe in knowledge provider" and "Lack of time to access internet" which ranked II and III with mean score 1.52,1.46 as the personal constraints. "Internet connection is poor/slow" was reported to be the most severe technical constraints ranking I with mean score 2.38 followed by "Problem of virus" rank II, "Uncertainty of connectivity" rank III and "Frequent electricity power cut" rank IV with mean score 2.32, 2.30,2.25. The economical constraint stating the "High cost of ICT tools" ranks I with mean score 2.77 followed by "Lack of internet access in rural area" ranked II with mean score 2.52.

"Most of the important work is done through SMS, mobiles, reducing the precious time spent with Panchayat members" ranked I with mean score 2.88 ,as the social constraints followed by "ICT tools excessive usage has affected socializing with friends" which rank II and the "Time spent in reading books, newspaper, articles, journals has reduced" rank III with mean score 2.62,2.24 The physiological constraints "Pain in body (Back ache, Head ache, pain in eye/hand/arm/ muscles/ joints/neck" due to continuous usage rank I with mean score 2.86 followed by "Aggressiveness" ranked last with mean score 1.37.

It can be concluded that the high cost of ICT tools, lack of proper training, poor internet connectivity, reducing precious time for meeting with friends and other people and result in body pain and blur vision, Aggressiveness were found to be the major constraints faced by the KVK scientists. The study of *Adebayo and Adesope (2007)* reported that found that female scientists were significant stakeholders in the agricultural sector. Most respondents did not have computers in their offices and for those who indicated that they had personal computers in their offices reported that they were not connected to the internet. *Arokoyo (2005)* in a study on that the major constraints affecting the use of ICTs were erratic and unstable power supply, problem of connectivity, low level readiness of research and extension organizations

to embrace the use of ICTs, high costs of telephone services, limited access to computers, lack of communication policy, high level of rural poverty and illiteracy, limited access to world wide data bases on CD-Rom or DVD due to foreign exchange constraints. *Agwu and Ogbonnah (2014)* in a study reported that lack of training opportunities, insufficient availability of ICT facilities and lack of technical know-how were perceived by the respondents to be serious constraints to the use of ICTs for official functions. The study of *Frempong et.al. (2006)* reported that 'ICT's high cost were the major constraints. The study of *Kumar et.al. (2008)* in their study revealed that Agricultural Development Officers of Punjab as constraints of 'Inadequate internet facility', 'Insufficient data,' 'Slow function of internet' and 'electricity failure'. *Ghasura et. al. (2012)* in a study on revealed that problem faced by dairy entrepreneurs in using ICT was for the reason that they did not know the benefits of ICT, they did not have skills in using ICTs and lack of time for ICT and poor broadband connectivity in rural area were important constraints faced by dairy entrepreneurs in the use of ICT. *Kale et. al. (2017)* in a study on revealed that the organizational level constraints faced by KVK scientists, lack of training facilities to learn ICT (75.86 %) was the major constraint faced by the scientists followed by lack of fund for ICT (66.67%), poor ICT based infrastructure facilities at the KVK (56.32%) and lack of technical support from organization (55.17%), respectively. ICT skills were required to operate the ICT tools; hence, the agricultural scientists need to be trained to harness the maximum benefits of ICT for extension work. The personal constraints faced by scientists, lack of expertise to use ICT was ranked first (62.07%) followed by time management problems in learning to use ICT (47.13%), lack of learner motivation towards using ICTs (28.74%), use of ICT cause health problems like; eye pain, body pain etc. (27.59%) and lack of confidence to use, respectively (16.09%). The technical constraints faced by scientists, slow functioning of internet/server break down (81.61%) was the most frequently faced constraint followed by lack of useful software (67.82%), Irregular supply of electricity (63.22%), no network coverage for mobile (59.77%), and high threat of virus (55.17%). *Purnima and Bhagyalakshmi (2022)* The study thus concludes that different categories of individuals are aspiring for Agricultural Education through online mediums as it is an emerging technology and is becoming widely used

in universities and institutions around the globe making education more personalized and accessible. The constraint Analysis highlighted. *Natruju et. al. (2011)* conducted a study on "E- Readiness and participation level of AKSHYA and KISSAN Kerala beneficiaries" the result of the investigation revealed that electricity problem ranked first while low affordability occupied second position in the problem hierarchy. The study further indicated the technology fear, problem of foreign language, lack of infrastructure facility and technical problem were the other major constraints faced by the beneficiaries in the study area. *Nitin Goyal and S.K. Goyal (2022)* Onion forms an important part of diet of every household but its production and marketing involves a lot of the labour during pea time may be the most common reason for high labour cost. Frequent fluctuation in prices was the most common constraint during marketing of onion in Ambala district followed by non-availability of storage facility and lack of awareness of BBY/govt. procurement. To overcome the constraint of price fluctuation, government must come up with a price stabilization scheme and also an aye should be ept on import and export quantity of onion which is main reason for price fluctuation Poor quality and inadequate underground water were the major problem. *Syiem and Raj (2015)* in a study showed that major problems in the use of ICTs by the farmers, were lack of confidence in operating ICTs, erratic power supply, low network connectivity and lack of awareness of the benefits of ICTs. *Sharma (2018)* in a study on revealed that the economic level constraints faced by KVK scientists, 'less financial support from the government' was ranked first with 89.10 per cent whereas, 'high cost of ICT tools' on second rank with 84.65 per cent. The third rank was occupied by; 'insufficiency of financial resources in institute/college' with 71.28 per cent and 'insufficient rewards and recognition for scientists who produce ICT', got fourth rank with 66.33 per cent. The technical constraints faced by scientists, slow and poor server connectivity with 95.54 per cent was on first rank, whereas, deficiency in support services with 81.68 per cent was on second rank. The third rank was occupied by electricity failure with 78.21 per cent. Poor ICT infrastructure got fourth rank with 69.30 per cent, followed, unavailability of inverter with 68.81 per cent, ICT production and usage as a key factor in promotion/ selection in agricultural extension posts 67.82 per cent, less availability of ICT tools with 58.91per cent which were ranked fifth, sixth and seventh, respectively. The

Table 1. To find out the major constraints faced by KVK Scientists during use of ICT tools (N=210)

Category	Most severe		Severe		Least severe		MS	Rank
	No.	%	No.	%	No.	%		
General constraints								
Insufficient computer facility	30	14.29	77	36.67	103	49.05	1.65	VI
Not sure about the reliability of content	26	12.38	67	31.90	117	55.71	1.56	VII
Lack of awareness of the various options of smart phones	47	22.38	63	30.00	100	47.62	1.75	IV
High cost of repairing ICT tools	173	82.38	32	15.24	5	2.38	2.80	I
Lack of skills to access the website	5	2.38	24	11.43	181	86.19	1.16	X
Problem of virus which can damage the data	146	69.52	53	25.24	11	5.24	2.64	II
Fear that ICT tools may at times mislead the user	53	25.24	87	41.43	70	33.33	1.92	III
Difficulty in sorting out information	31	14.76	53	25.24	126	60.00	1.55	VIII
Lack of awareness about the ICT in agriculture and other fields	21	10.00	15	7.14	174	82.86	1.27	IX
Lack of information on latest inputs available in the market	16	7.62	112	53.33	82	39.05	1.69	V
Personal constraints								
Do not have own computer	15	7.14	51	24.29	144	68.57	1.39	IV
Lack of knowledge about ICT tools	3	1.43	14	6.67	193	91.90	1.10	VII
Lack of confidence due to less usage of ICT tools	3	1.43	21	10.00	186	88.57	1.13	VI
Lack of Interest in ICT usage	3	1.43	22	10.48	185	88.10	1.13	VI
Lack of skill in using internet	3	1.43	9	4.29	198	94.29	1.07	V
Lack of ICT oriented training	52	24.76	76	36.19	82	39.05	1.86	I
Lack of time to access internet	13	6.19	71	33.81	126	60.00	1.46	III
Belief that internet is not safe in knowledge provider	14	6.67	82	39.05	114	54.29	1.52	II
Technical constraints								
Less availability of ICT tools	38	18.10	76	36.19	96	45.71	1.72	IX
Lack of competence in handling ICT tools	5	2.38	44	20.95	161	76.67	1.26	X
Uncertainty of connectivity	79	37.62	114	54.29	17	8.10	2.30	III
Internet connection is poor/slow	101	48.10	88	41.90	21	10.00	2.38	I
Frequent electricity power cut	82	39.05	98	46.67	30	14.29	2.25	IV
Erratic and fluctuating power supply	71	33.81	55	26.19	84	40.00	1.94	VI
Problem of virus	100	47.62	78	37.14	32	15.24	2.32	II
Problem of software	59	28.10	99	47.14	52	24.76	2.03	V
Unavailability of Inverter	67	31.90	28	13.33	115	54.76	1.77	VIII
Less availability of ICT gadgets in the department	53	25.24	65	30.95	92	43.81	1.81	VII
Economical constraints								
Less or no financial support from the government	63	30.00	120	57.14	27	12.86	2.17	III
High cost of ICT tools	167	79.52	38	18.10	5	2.38	2.77	I
Lack of internet access in rural area	115	54.76	90	42.86	5	2.38	2.52	II
Lack of institutional financial resources	62	29.52	89	42.38	59	28.10	2.01	IV
Social constraints								
Time spent in reading books, news paper etc.has reduced	59	28.10	142	67.62	9	4.29	2.24	III
Time spent with family has reduced due to excessive use of ICT tools	55	26.19	113	53.81	42	20.00	2.06	IV
ICT tools excessive usage has affected socializing with friends	136	64.76	68	32.38	6	2.86	2.62	II
Reducing the precious time spent with panchayat members	186	88.57	23	10.95	1	0.48	2.88	I
Physiological constraints								
Pain in body (Back ache, Head ache, pain in eye etc.)	180	85.71	30	14.29	0	0.00	2.86	I
Nerve pain	37	17.62	107	50.95	66	31.43	1.86	IV
Blur vision	85	40.48	115	54.76	10	4.76	2.36	III
Lack of Concentration due to continuous usage	175	83.33	28	13.33	7	3.33	2.80	II
Depression	6	2.86	24	11.43	180	85.71	1.17	VI
Aggressiveness	16	7.62	46	21.90	148	70.48	1.37	VII
Behavioral Change	20	9.52	84	40.00	106	50.48	1.59	V

Table 2. Overall constraints faced by KVK scientists

Constraints	No.	%	MPS	Average	SD	"r"
Low (<71)	25	11.90	22.16	81.72	11.16	0.051
Medium (71-93)	146	69.52	27.14			
High (>93)	39	18.57	33.87			

operational constraints faced by scientists, lack of ICT-oriented training with 95.04 per cent was on first rank, whereas, Lack of time to acquire skills needed to use and produce ICT with 91.58 per cent was on second rank. The third rank was occupied by lack of expertise and skills in ICT usage and production with 87.12 per cent. Lack of information about how to use the various ICT got fourth rank with 86.63 per cent, followed, Lack of interest in ICT usage and production with 74.75 per cent shortage of qualified personnel in institute/ college to provide advanced ICTs training to scientists with 73.26 per cent which were ranked fifth and sixth respectively.

CONCLUSION

Thus it can be summarized that the scientist faced problems like High cost of repairing ICT tools' was found to be the major constraint among the general category of constraints followed by 'Problem of virus which can damage the data' ranking II and 'Fear that ICT tools may at times mislead the user' ranked III as the general constraint 'Lack of ICT oriented training' ranked I or the most severe personal constraint faced by KVK scientists followed by 'Belief that internet is not safe in knowledge provider' and 'Lack of time to access internet' which ranked II and III as the personal constraints. 'Internet connection is poor/slow' was reported to be the most severe technical constraints ranking I followed by 'Problem of virus' rank II, 'Uncertainty of connectivity' rank III and 'Frequent electricity power cut' rank IV. The economical constraint stating the 'High cost of ICT tools' rank I followed by 'Lack of internet access in rural area' with rank II. The physiological constraints 'Pain in body (Back ache, Head ache, pain in eye/hand/ arm/ muscles/joints/neck' due to continuous usage rank I followed by 'Aggressiveness' ranked last.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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