Performance of Village Resource Centres (VRCs) in Karnataka : An Analysis

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ABSTRACT

Indian Space Research Organisation has taken the initiative of establishing Village Resource Centres(VRCs) throughout the country. Through this two way audio video interactive mode, farmers from remote areas can interact directly with the experts. The present study was conducted to analyse the performance of VRCs on farming activities in Karnataka state where maximum number of VRCs exists. The results indicated a higher performance. Case studies conducted also revealed that the programmes on farming activities given through the Expert Centre at University of Agricultural Sciences, Bangalore were of great help to farmers of Karnataka state. From the advantages mentioned by the farmers, it is clear that interactive video conferencing through VRC can undoubtedly reach the farmers effectively and efficiently without any distortion of message. Technology transfer to farmers through this modern method of communication can empower the rural farmers in developing countries, enhance ecological and livelihood security and accelerate human development and quality of life.

***Key Words**: Village Resource Centre; Expert Centre; Communication; Video conference;*

Although several transfer of technology programmmes have been launched from time to time, the technologies have not reached the end users in the full form. In most of the cases the messages have partially reached the end users due to distortion of messages at different levels, inordinate delay in communication through various departmental hierarchy as well as general slow process among many bureaucratic systems resulting in non-realization of the benefits of technology among stake holders. Another issue of concern in the recent years has been drying up of public extension system particularly at the grass root level and unwillingness of many personnel to work in the rural areas. Taking timely information to farmers is very important in this era of globalization. Communication through interactive video conferencing through satellite has become handy to address the aforesaid issues in view of messages reaching directly from the Expert Centres to the grass root extension personnel, local leaders and farmers through Village Resource Centers' (VRC), which is an unique two way audio video network.

ISRO has embarked upon the Village Resource Centres programme to disseminate the portfolio of services (like tele education, tele health care, land and water resource management, interactive advisory services, tele fishery, e- governance services, weather services and others depending on the local needs) emanating from the space systems as well as information technology tools directly down the line to the rural communities. The rapid development of spatial technologies in recent years has made available new tools and capabilities to Extension services and clientele for management of spatial data *(Milla,2005).* The Space based services, emanating from Satellite Communication (SATCOM) and remote sensing satellite hold considerable value in transforming the village society *(Bhatia, 2008). Chauhan (2008)* reported that among the various means of information communication available, satellite based information communication was found very efficient, accurate, quick and somewhat cheaper in the field of disseminating the information from research system to farmers. Direct interaction with farmers through Video conferencing will go a long way in empowering the farming community and also enable them for handling the technology absorption and adoption issues.

With the intention of direct interaction with people in rural areas, around five hundred Village Resource Centres are established all over India in association with Universities, NGOs, trusts, state and central agencies in the first two phases by Indian Space Research Organization. Through these VRCs, farmers can interact with experts directly. The VRC is a totally interactive VSAT (Very Small Aperture Terminal) based network, where teaching, learning and interaction is done through personal computers networking. The system consists of two elements:

Expert Centre (EC) or Teacher end : The Expert Centres are being established in different states to provide information support to the student ends generally situated or located in remote areas. The lecture by the experts can take the support of power point slides, video files, data files etc. The teaching end has one Personal Computer and one handicam camera attached to the PC. The teacher uses the wireless microphone to talk and interact with the remote centres.

In the ECs, opportunity is provided for two way audio video conferencing. One individual or group of individuals at student end can directly interact with the expert(s) in the Expert Centre. Generally, the ECs are located in places where large number of experts is easily accessible, and these are placed in Universities, hospitals, institutions, Government and Non-government organizations.

VRCs or Student End: The Village Resource Centre (VRC) or student end is the receiving ends where the end users can receive the information from experts as well as interact with them. The student end consists of single PC, one handicam and one microphone. They receive all the data and programmes on PC. The handicam which is attached to the PC is used for return video. The microphone is used for interaction.

VRC provides space enabled information related to land records, natural resources, drinking water wells, ground water recharge, soil types, alternate cropping pattern, waste lands, etc. VRCs also provide variety of services in its tele-education and tele medicine programmes, online decision support, weather forecasting, water management, interactive farmers advisory services (video conferencing) and so on.

Mode of Teaching: The expert end has two major components - lecture and interactive sessions. During lecture session, the subject experts deliver live lectures using audio-visual aids and during interactive sessions the students consult the experts for any problems or clarifications. This is computer based technology where two way audio-video is used for connecting the expert end with the student ends. VRC facilitate interaction with the source by the receivers overcoming the general problem of distortion of messages, at the quickest possible time.

METHODOLOGY

Survey was undertaken in Karnataka state of India where maximum number (51) of Village Resource Centres are established and were being used intensively to disseminate technologies to the farmers in remote areas/rural areas and to interact with them directly. Ten VRCs were selected randomly for the study. Twenty farmers from each VRC who attended the programme regularly were considered which constituted a total sample size of 200. The performance of VRCs on farming activities were measured using the scale developed. Individual case studies were also conducted to know the impact of Village Resource Centres at micro level. The programmes on Agriculture was arranged by the Expert Centre at University of Agricultural sciences, Bangalore. The programmes for VRCs were finalized based on the crop season and the demand from the farmers' side. The various VRCs connected to the centre benefitted from multifarious topics related to agriculture.

RESULTS AND DISCUSSION

Performance of VRCs on farming activities and its components: The performance of VRCs on farming activities was measured using the scale developed, which consisted of components like facilitator, receiver, resource person, subject matter, teaching aids and physical facilities. The score given by farmers were summed up and the average was calculated to find out the mean performance of VRCs on farming activities. The mean score was found to be 260.8 (Table 1). The response in percentage was 86.9, which indicate a higher performance of VRC.

Distribution of respondents based on their opinion on performance of VRCs relating to farming activities : Table 1 reveals that almost equal number of respondents scored the performance of VRCs relating

Table 1: Distribution of respondents based on their opinion about Performance of VRCs on farming activities (N=200)

Performance of VRCs	Category	Respondents	
		No.	%
Low	Below 257.93	57	28.5
Medium	257.93-263.75	74	37.0
High	Above 263.75	69	34.5
Total		200.0	100.0
Mean =260.8		SD=5.81	

to farming activities as medium (37.0%) and high (34.5%) and a little more than one fourth of the respondents (27.5%) scored the performance of VRCs relating to farming activities as low. It can be inferred from the above results that nearly three forth of the respondents perceive that the performance of VRCs on farming activities are medium to high. This may be because most of the programmes given through VRCs were useful for the farmers and the role played by each component for the effective functioning of VRCs was quite satisfactory for the receivers. The minimum total score given by the respondents was 245 and maximum score was 278. Since the mean performance score is 260.8 (Response score in Percentage = 86.9) and the range between the minimum and maximum score is narrow, it can be concluded that on an average the performance of VRC on farming activities were satisfactory to farmers. Item wise analysis of the components of performance of VRCs towards the total performance of VRCs on farming activities.

The scale to measure the performance of village resource centres consisted of components like facilitator, receiver, resource person, subject matter, teaching aids and physical facilities. An analysis of the items under each components was done and the results are discussed in this section.

Item wise analysis of the component 'Facilitator' towards the total performance of VRCs on farming activities : It is evident from Table 2 that among the items which rated the role of facilitator towards the total performance of VRCs on farming activities, highest mean score is obtained for the items like; Resource person was introduced by the facilitator before the start of the programme (100 %) and due acknowledgement to the resource person was extended by the facilitator (100 %). Resource person must be known to the receivers. The knowledge about the back ground of the resource person, his or her qualification and experience on the subject matter play a tremendous role in developing a sort of trust worthiness among the receivers. Then only the farmers perceive the message given by Resource Person as credible. Due acknowledgement to the resource person was also extended by the facilitator. This helped to create some kind of satisfaction in resource person which also act as a motivation for him to attend the similar sessions which are related to his specialization. Another item which scored higher is that the facilitator was present well ahead of the time. Facilitator needs to check all the arrangements well before the start of the programme

Table 2. Item wise analysis of the component 'facilitator' towards the total Performance of VRCs on farming activities (N=200)

Statements	Scores		Response (%)	
	Mean	SD	Mean	SD
Facilitator was present well ahead of the time.	4.92	0.27	98.4	5.4
Facilitator ensured the start of programme on time	4.87	0.34	97.4	6.7
An overview of the program was given by facilitator	4.42	0.53	88.4	10.6
Resource person was introduced by the facilitator before the start of the programme	5.00	0.00	100.0	0.0
Introduction motivated me to actively participate in the programme	3.47	1.06	69.4	21.3
Difficulties that we came across for our active participation during the programme were attended by facilitator.	4.68	0.66	93.6	13.2
Supplemented relevant points at an opportune time.	4.36	0.83	87.2	16.5
Impact points on the topic were summarized	4.74	0.59	94.8	11.9
Due acknowledgement to the resource person(s) was extended	5.00	0.00	100	0.0
Facilitated closure of the programme on time.	4.58	0.87	91.6	17.3
Facilitator takes stock of relevant points for future consideration.	4.05	0.52	81.0	10.4

Table 3: Item wise analysis of the component 'Receiver' towards the total Performance of VRCs on activities (N=200)

Statements	Scores		Response	
	Mean	SD	Mean	SD
The information given through VRC was very useful for the farming activities under taken by me	4.90	0.29	98.8	5.8
The information received through VRCs are timely	4.64	0.48	92.8	9.5
The information presented helped me to take right decisions	4.61	0.70	92.2	14.1
The information given through VRCs were persuasive	3.61	0.77	72.2	15.5
The answers provided for questions were satisfactory.	4.74	0.44	94.8	8.7
On the spot solution was provided to specimen or sample shown.	4.91	0.28	98.2	5.5
Time allotted for question and answer session was sufficient	3.91	0.99	78.2	19.8
The timing of the programme was convenient for me to attend the programme	4.48	1.11	89.6	22.3
The Programmes through VRCs helped me to gain more knowledge about my farming and allied activities	5.00	0.00	100.0	0.0
The VRC programme on specific farming activities helped me to adopt the same with confidence	3.76	0.75	75.2	15.0
The Programmes through VRCs helped to improve profit margin from my farming activities	3.76	0.75	75.2	15.0
The number of programmes on farming activities conducted by VRCs is satisfactory.	4.75	0.43	95.0	8.6
I am completely satisfied with the Programmes related to farming which I received through VRCs.	4.63	0.49	92.6	8.6

for its smooth conduct. The facilitator also ensured the start of the programme on time. The exact timings of the programmes were informed well in advance to resource person as well as receivers. In this way the facilitator could start the programme well in time. The impact points were summarised by the facilitator. At the end of the lecture session the facilitator took special care to give a brief note on the points discussed. This also helped the late comers to know about the programme in nut shell. The facilitator also took special care for solving the difficulties arised from the user end. The item that is scored comparatively less towards the role of facilitator in the total performance of VRCs on farming activities is that the introduction motivated the users to actively participate in the programme. The reason for this may be many farmers join the programme later and they may not be present from the very beginning of the programme and as a result many a times they miss the introduction part given by the facilitator and thus they failed to get the crux of the programme.

A glance on Table 3 reveal that the most important factor that all the end users agreed upon is; Programmes through VRCs helped to gain more knowledge on farming and allied activities (100 %) followed by the information given through VRC was very useful for the farming activities undertaken by users (98.8%), on the spot solution was provided to specimen or sample shown (98.2%), the number of programmes on farming activities conducted by VRCs is satisfactory (95.0%). All the programmes identified and given through VRCs for farmers gave some or other information to farmers which are of interest to them upon which they interact. This helped to increase the knowledge base of farmers on a wide range of crop cultivation as well as management aspects. The farmers gave special attention to the programme which is related to the crops raised by them and hence they find it very useful for them. They also got all the doubts clarified through interaction with the experts. Since the farmers know the topic of discussion in advance, they brought the disease or pest live specimens from their field for which the experts gave satisfactory online solution to farmers. The items that are scored comparatively lower by the receivers are the information given through VRCs were persuasive (Mean response score (72.2%) followed by the items like VRCs programmes on specific farming activities helped me to adopt the same with confidence (75.2%), the programmes through VRCs helped me to improve profit margin from my farming activities (75.2%). VRC

Table 4: Item wise analysis of the component 'Resource Person' towards the total Performance of VRCs on farming activities (N=200)

Statements	Scores		Response	
	Mean	SD	Mean	SD
Expert was present on time	5.00	0.00	100.0	0.0
Expert has ensured the required teaching materials well in advance.	5.00	0.00	100.0	0.0
The Expert was quite confident in presenting the subject matter.	4.87	0.41	97.4	8.3
Experts had clear cut and purposeful teaching objectives	4.05	0.53	81.0	10.6
The communication of the Resource Persons were clear	4.20	0.40	84.0	8.0
The resource person was enthusiastic and interested about the learner and subject matter	4.05	053	81.0	10.6
Resource person had creative thinking in attracting and holding the interest of farmers	3.9	0.58	78.0	11.7
Expert had used suitable teaching aids	4.89	0.30	97.8	6.1
Resource Person was skillful in using teaching aid	3.93	0.24	78.6	4.9
He was able to relate the subject matter with suitable example by matching local requirement.	4.00	0.00	80.0	0.0
Expert interacted with learners with informally	4.01	0.54	80.2	10.9
He encourages the participation of the people	3.81	0.69	76.2	13.9
Resource Person could manage the time effectively	3.97	0.60	79.4	12.0
Presentation was in pace with audience composition	3.17	0.85	63.4	17.1
Expert covered complete information in relation to the topic earmarked.	4.22	0.46	84.4	9.2

programmes were not so persuasive or could not convince the audience to the full extent. This may be because information about many new farming practices were given through VRCs and it is quite natural that the farmers take time to accept any new practice in their fields. Few farmers did not agree or they failed to take a decision regarding the adoption of farming activities. This may be due to the reasons like; All the recommended practices may not be specific to their location or they may be in the initial stages of innovation decision process which consists of stages like knowledge, persuasion, decision, implementation and confirmation. A few farmers rated the item VRC programme helped to increase the profit margin from farming activities as low or undecided which resulted in comparatively low total score for the item. As discussed before generally it takes some time from first hearing of an innovation to final adoption. The time range varies from individual to individual depending upon the socio personal and economic status. Unless and until a farmer uses particular information that he received from VRC in his field, increase in yield or profit margin cannot be quantified.

Item wise analysis of the component 'Resource Persons' towards the total performance of VRCs on farming activities : The highest scored item for the role of resource person towards the total performance of VRCs on farming activities were; Expert was present on time (100.0%) and Expert has ensured the required teaching materials well in advance(100.0%). The other items which are having highest mean score were experts used suitable teaching aids (97.8%), the expert was quiet confident in presenting the subject matter (97.4%) and expert covered complete information in relation to the topic earmarked (Table 4). The expert is informed one month in advance by the facilitator regarding the topic, date and time of the programme. The required teaching materials in power point slides format was given by the experts one week in advance. This was mandatory to check the content and the format of the presentation material. The experts for each programme were selected by a core committee of Expert Centre. They select the experts who are competent in subject matter. The experts were also informed in detail about the topic to be covered. The minimum scored items for the role of resource person towards the performance of VRCs on farming activities were presentation was in pace with audience composition (63.4%) followed by the resource person encourages the participation of the end users (76.2%). There was comparatively low agreement on the statement, presentation was in pace with audience's composition. Sometimes experts deliver lecture in a speed with which the audience cannot follow properly. This problem arises also due to delay in voice

Table 5: Item wise analysis of the component 'Subject matter' towards the total Performance of VRCs on farming activities (N=200)

Statements	Scores		Response	
	Mean	SD	Mean	SD
Information was given in simple language	4.51	0.63	90.2	12.6
Message was easy to understand.	4.38	0.48	87.6	9.7
Technical words were translated to local language	4.01	0.54	80.2	10.9
Subject matter was logically organised	4.42	0.49	88.4	9.8
All relevant photos. live specimens were matching with subject matter.	4.00	0.00	80.0	0.0
Subject matter was pertinent to learners needs	4.90	0.29	98.0	5.8
General information provided was attracting audience attention	3.89	0.30	77.8	6.1

transmission which generally happens in satellite transmission. Another item under the component Resource Person which was scored comparatively less is that the resource person encourages the participation of the end users. In the first half of the programme the resource person give the lecture and followed by this the start of interaction session. The programme given by Expert Centre at UAS GKVK Campus is received by 51 VRCs. Therefore the resource person hardly finds time to respond convincingly to all the farmers' queries. This may be the reason for few farmers to disagree with this statement.

Item wise analysis of the component 'Subject Matter' towards performance of VRCs on farming activities: Table 5 clearly show that the item that the receivers or end users agreed upon with more emphasis were, subject matter was pertinent to learners' needs (98%) followed by Information was given in simple language (90.2%), subject matter was logically organised (88.4%). Subject matter for the presentation was finalised in the core committee meeting of the Expert Centre. The tentative topics for the programme were selected based on the farmers' needs as well as the season requirement. Special care was taken to deliver the contents in simple language which is understandable by the farmers of different Agroclimatic zones. Logical arrangement or organisation of the Subject matter content was taken care off which helped the users of VRC to have better understanding of the content. The item that contributed minimum score towards total performance of VRCs on farming activities from subject matter component was general information provided attracted audience attention (77.8%). This may be because the general information provided to the farmers was known to them before and they were least interested in it.

Item wise analysis of the component : 'Teaching aids' towards performance of VRCs on farming activities. Table 6 indicates that teaching aids used were appropriate to the topic scored highest (94.2%) by the respondents followed by the item photos shown in the programmes were visible and clear (85.2%). For some of the presentations, experts brought materials for demonstration also pertaining to the topic. This had created greater interest in the viewers. The photos shown in the power point slides were also of medium to high resolution which helped the receivers to view it

Table 6: Item wise analysis of the component 'Teaching Aids' towards the total Performance of VRCs on farming activities (N=200)

Statements	Scores		Response	
	Mean	SD	Mean	SD
Teaching aids used were appropriate to the topic	4.71	0.45	94.2	9.0
The Photos and Objects shown in the Programme were visible and clear.	4.26	0.62	85.2	12.8
The photos were presented with proper size	4.23	0.60	84.6	12.1
No overcrowded appearance in the visual that discourage the viewer	3.60	0.77	72.0	15.4
Live specimens were shown during presentation	4.07	0.38	81.4	7.6
Teaching aids used created more interest in me to participate in the programme.	3.86	0.34	77.2	6.9
More than one teaching aid was used	4.01	0.31	80.2	6.3

Table 7: Item wise analysis of the component 'Physical facilities' towards the total Performance of VRCs on farming activities (N=200)

Statements	Scores		Response	
	Mean	SD	Mean	SD
Seating arrangement was comfortable.	4.22	0.60	84.4	12.0
Visibility was ensured to all.	4.19	0.59	83.8	11.8
Equipment in the VRC are in good working condition	4.77	0.41	95.4	8.3
Equipments are user friendly	5.00	0.00	100.0	0.0
Good ventilation and lighting were provided.	4.22	0.60	84.4	12.0
Cleanliness was well attended	4.62	0.56	92.4	11.3
We could attend the programme with full concentration as there is no physical barrier/disturbances/noises	4.04	0.69	80.8	13.8

clearly. Comparatively low score under the component teaching aids were given to the item no overcrowded appearance in the visual that discourage the viewer (72.0%). A few experts did not plan the visuals properly and this gave an overcrowded appearance. This had discouraged some farmers.

Item wise analysis of the component 'Physical Facilities' towards performance of VRCs on farming activities : A close look on Table 7 reveals that among the different items mentioned under physical facilities the highest scored one by the end user was equipment are user friendly (100%) and equipment were in good working condition (95.4%). The operators in VRCs were trained to use the system, camera and microphone. The microphone which is used by the farmers to interact with the experts is very simple and they find no difficulty in using it. Further any such difficulties are also attended by the trained VRC operators. The working condition of the equipment was also good. Any problems or complaints regarding the equipment were attended immediately by the BEL Support Centre at Bangalore. The item that scored comparatively less was; we could attend the programme with full concentration as there were no disturbances (80.8%). In some Village Resource Centres other than the VRC programmes, computer teaching classes, SHG meetings etc were also conducted and some times it coincides with VRC programme schedule, as a result farmers failed to concentrate on the programme.

SUCCESSFUL CASES

Case study-1

Amaresh aged 26, a farmer from Batchahalli, Tubagere hobli, Doddaballapura Taluk, Bangalore rural district is a regular participant of VRC interactive video conferencing programmes of Hadonahalli, Krishi Vigyan Kendra on farming. He was so much worried about his beans harvest and the price he got from the market, because in the rainy season most of his crop got covered with soil and he could not manage the pest and diseases properly.

When a programme on vegetables was given through VRC he attended it. He interacted with the experts for getting solution for his problem. He was advised to grow beans on metal wires/strings so that the crop will not spread on soil surface. He also took advice on crop management practices with reference to beans for getting good yield. He did accordingly in the next season and he could obtain an yield of 6 tonnes per acre beans which is of very good quality. he had said that his income had jumped by more than 66% by adopting the simple and affordable means.

Amaresh had said VRC is a boon to farmers like him. Through VRC he could not only interact with the scientists of Indian Institute of Horticulture Research (IIHR), but also could save a lot of time and money which, otherwise he would have spent for going to University or IIHR which is more than 50 KM away from his village.

Case study-2

Thimmareddy aged 42, a farmer from Pavagada never miss any programme related to the crops which he raise in his fields. He had given his full details to the VRC operator of his village including the crops that he is growing, with a request to inform him whenever the programme relevant to his crops is telecasted through VRC. Thus he used to attend all the programmes of his interest. He was very happy with it because his village

was in remote area and there were no extension agents to give him information about the latest cultivation practices. He was following traditional cultivation methods with local varities.

One day, according to VRC operator's invitation he had attended a programme on Cultivation of Sunflower. He obtained information from the experts through direct interaction with them about the varieties suitable to his area and the latest cultivation practices. He followed the expert's advice meticulously. To his surprise, he got a yield of 1265 kg/ ha instead of the previous season's yield of 860 Kg/ha. He strongly acknowledged that this increase in yield was due to the maintenance of optimum population of plants as well as nutrient management which he was not taking care of as he was not having enough knowledge about it.

He had expressed that VRC is a good source of information to farmers as they can have direct interaction with the experts from University and other reputed institutes. He also said that the farmers feel the source of information as credible as each programme is given by respective experts in the area.

Case studies revealed that the programmes on farming activities given through the Expert Centre at University of Agricultural Sciences, Bangalore were of great help to farmers of Karnataka state. From the advantages mentioned by the farmers it is clear that interactive video conferencing through VRC can undoubtedly reach the farmers effectively and efficiently. The results are in line with the findings of *Ghosh (2006)* who pointed out that the tele education on agriculture has the advantages like more awareness of innovative approaches, improved food production and seasonal planning and risk mitigation for the farmers.

CONCLUSION

VRCs can reach one to one as well as a mass to solve their farming related problems and deliver new technologies with more effectiveness. VRCs can definitely change the existing situation of farming by reaching more and more farmers with location specific technologies. The participants develop self confidence as they learn to approach and interact with the modern world. People living in rural areas are empowered with information to face current challenges. Even those in the remotest of villages can feel connected to the rest of the world and benefit from its progress through exposure to new technology. Technology transfer to farmers through this modern method of communication can empower the rural farmers in developing countries, enhance ecological and livelihood security and accelerate human development and quality of life.

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