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Impact of mobile advisory and face-to-face communication in capability building among Indian farmers

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This paper analyzed the impact of mobile advisory and face-to-face communication in capability building of farmers in Kancheepuram district, Tamil Nadu, India. These farmers accessed agricultural training and information services through Krishi Vigyan Kendra (KVK). KVKs had been established in different parts of the country to enhance agricultural productivity and to promote rural wellbeing. Giger's Alternative Evaluation Framework that operationalized Sen's Capabilities Approach was adapted on evaluating the indicators of economic wellbeing and quality of life of the farmers. Farmers' perception of effective communication tool for information transfer and the actual usage of communication mediums that had catered to the capability building were analyzed. Although the results showed that face-to-face communication was mostly used by KVK and Short Message Service (SMS) was limited, the combined impact of both media catered for capability building enhancing their productivity for economic wellbeing and quality of life.

Key words: Capabilities approach, face-to-face communication, mobile advisory, farmers' development, Krishi Vigyan Kendra.

INTRODUCTION

The Government of India has taken various initiatives for capability building of farmers to increase the agriculture productivity that primarily contributes to the gross domestic product (GDP) of the country. One such initiative is Krishi Vigyan Kendra (KVK) which strives for assessment of location-specific technology modules in agriculture and allied enterprises, through technology assessment, refinement and demonstrations.

The KVK in Kancheepuram district in Tamil Nadu is a pioneer among the 645 KVKs in India. It was set up in 1985 as a vocational training centre for the farmers at the grassroots in Kancheepuram district and it aims to be the

leading agricultural / animal husbandry technology service provider for the uplift of the farming community [Krishi Vigyan Kendra Kattupakkam (KVKK), 2018].

Agricultural information is a key component in improving small-scale agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods, food security and national economies (Masuki, 2010). Communication is a key component for effective transfer of knowledge for sustainable development (Fraser and Villet, 1994). Mobilizing community members for community development purpose is important but members of

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communities can only be mobilized when communication is effective (Adedokun and Adeyemo, 2010).

Mobile phone-enabled information delivery mechanism has the potential to increase knowledge delivery among farmers and address the knowledge gap between large and small farmers (Mittal, 2016). On the other hand, face-to-face communication is the interpersonal or multi-channel communication process in which communicators can directly respond to the counterpart and get the feedback in terms of queries and alternating conversation which leads to immediate comprehension opportunities with a high flexibility (Berko et al., 2007; Tubbs, 2013; Arndt, 2011).

This paper studies the impact of mobile advisory and face-to-face communication on capability building of farmers who access information from KVK in Kancheepuram for better productivity to achieve economic wellbeing and quality of life preferred by them.

Face-to-face communication and mobile advisory

Most of the agricultural information needs personal communication that is face-to-face communication (Odongo, 2013) as it may be demonstrative and the farmer may need to see and understand. Face-to-face communication is very effective because the primary channels are sound and sight (Hybels and Weaver, 2009). Interpersonal attitudes are identical during face-to-face communication (Bender and Tracz, 2007), that the communicator can understand whether the information delivered is understood (Argyle, 2007). Humans interpret, store and retrieve information according to the associations and meanings the objects, phenomena and events of their experience have for them (Ruben and Stewart, 2006).

The mobile phone is now being considered as an emerging ICT tool (Bajpai and Singh, 2012) that has not only revolutionized the manner in which business is transacted but also enabled a large constituency of agricultural producers to access markets and market information using phone-in and SMS (Munyua, 2007). Mobile communication helps in these ways: 1) increased access to timely and/or relevant information, and 2) expanded possibilities for connectedness between people (Smith et al., 2011). A review of 12 pilot initiatives of mobile case studies written by Kazi and Srivastava (2013) highlighted two essential points. One, mobiles have emerged as an effective mechanism to derive details of project impacts, information dissemination, training of frontline workers and interpersonal communication practices, and project monitoring/tracking. Two, mobile projects call for inclusive agenda among stakeholders in a multi-stakeholder partnership mode.

The current consensus in the subfields of information and communication technology for development (ICT4D)

and mobile for development (M4D) seems to be promising and the mobile phone technology brings more opportunity to facilitate development (Donner, 2008; Heeks, 2008; Duncombe, 2011). A mobile phone has become a handy tool for farmers, but there are challenges such as the connectivity (air-time/call credit expense) and access to charging phones (The Technical Centre for Agricultural and Rural Cooperation [CTA], 2015).

Capabilities approach

Amartya Sen's Capabilities Approach is a normative framework for evaluating human development (Robeyns, 2005) that views human development as the "process of expanding the real freedoms that people enjoy" (Sen, 1999, p. 1)

The core characteristic of the Capability Approach is on what individuals are able to do (capabilities) (Robeyns, 2003). The novel conceptual framework of Sen includes key concepts functionings, capabilities, agency, and freedom (Jacobson, 2014). The concept of "*functioning*", which has distinctly Aristotelian roots, reflects the various things a person may value doing or being (Sen, 1999). *Capabilities* refer to real opportunities to achieve the functionings (Robeyns, 2003; Jacobson, 2014). *Agency* is a concept that builds on the idea of capabilities. In combination, the ideas of functionings, capabilities, and agency comprise the conceptual basis for Sen's approach to development as *freedom* (Jacobson, 2014).

Capabilities approach is appropriate for micro-level studies with individuals as it focuses on the analysis of peoples' ability to choose what to do or be and results in more interesting findings (Comim, 2001) on human development. The approach emphasizes that different people and societies typically differ in their capacity to convert income and commodities into valuable achievements (Clark, 2005).

KVK, Kancheepuram

The KVK in Kancheepuram has predominantly chosen face-to-face communication medium such as demand-driven training programmes for farmers on crop production, protection, disease management, crop improvement, sustainable agriculture, organic farming, soil type, irrigation, and soil-testing. On-farm demonstrations and farm trials are conducted to transfer knowledge on new technique and technology to the farmers in a selected village. Secondly, it also delivers daily agricultural updates on technical equipment, new techniques, new diseases, weather updates, and information on tips for disease identification and remedy through mobile advisory medium that is through Short Message Service (SMS). The farmers receive the information in two languages, mostly in Tamil and some

in English. KVK in Kancheepuram has established a market named 'Vaanavil' for the small-scale and marginal farmers to sell their products directly to the public once a week.

The purpose of communication and the content to be communicated are vital. Depending on this purpose and the nature of the content, various media can be used to disseminate information. SMS communication is used to provide very short information. Face-to-face communication allows for practical explanations and clarifying doubts in person so that the information communicated is well received. Thus, face-to-face communication is more effective than SMS, but SMS could reach across short messages to a large number of farmers in a short time. Communication costs are higher in face-to-face, however, not every information can be provided by SMS. The cost of communication does not matter with respect to KVKs as they are government-owned and the initiatives are supported as a social welfare measure.

CONCEPTUAL FRAMEWORK

Amartya Sen's Capabilities Approach is used as a theoretical framework. To operationalize the theory of Sen, Gigler's Alternative Evaluation Framework (Gigler, 2004) was adapted for a case and location-specific study. Many have argued that Sen goes too far in terms of insisting that certain capabilities simply are valuable (Sen, 1992). This paper focuses more on the impact of the communication mediums on capability building for better productivity and the researchers have limited the indicators.

The functionality was defined as development (Alampay, 2006); it was further operationally defined as economic wellbeing and quality of life (Sen, 1999; Miletzki and Broten, 2017; Anand and Sen, 2000; Joseph, 2015) to analyze the impact level of individual users. The indicators of economic wellbeing chosen were income, productivity, land for farming, and housing (Behera, 2016; Mukherjee, 2017). Indicators for quality of life were education, health, and access to natural resources such as land and water, power (respect in society, identification, participation in community, preferred opportunities) with no gender discrimination (Table 6) (Nussbaum, 2000; Nussbaum and Sen, 2003; Anand et al., 2007; Organization for Economic Cooperation and Development, 2018). The indicators were chosen from Human Development Index (HDI) and Millennium Development Goals (MDG) which is a precursor to Sustainable Development Goals (SDG).

METHODOLOGY

Sampling procedure

This was a pilot study and the researchers had chosen 10 per cent

of the total farmers who accessed information from KVK in Kancheepuram and the sample size was 100 farmers from the district of Kancheepuram. Stratified random sampling method was followed to choose the participants. The researchers took up mixed methods to collect the data. Schedule and focus group discussions were carried out; the schedule was a structured questionnaire to obtain demographical details, details on communication access, details on communication access through KVK and details on KVK's impact on knowledge and productivity. Focus group discussions were organized in three locations, Pattamudaiyar Kuppam, Potheri and Thazhambedu villages with seven farmers in a group with some questions to keep the discussion on track. A simple descriptive narrative was followed to interpret and analyze the data collected. IBM SPSS Statistics - version 24 was used to analyze the data with Pearson's chi-square tests to get the results of the associations of some of the variables.

RESULTS

Face-to-face communication and mobile advisory

All the participants were well informed about the services of KVK in Kancheepuram and all of them were associated with the centre either by using the market facility provided by KVK or had participated in the training programmes, trials and demonstrations, and also sell their products through 'Vaanavil market' established by KVK. Almost all the farmers, that was 96%, had taken part in the training programmes of KVK, 82% of the farmers had attended workshops and only 4% access KVK services for purchase of seeds for animal fodder for the goats. In this, 20% of the farmers were resource persons. One of the farmers reported that he is a resource person for the Government's television channel (Podhigai) on farming. Only 30% of the farmers said that they access information through SMS, 4% of the farmers had tried reaching 'Kisan helpline'. One of the participants was once a farmer convener in a KVK management meeting.

Among the farmers who attended training programmes in KVK, 52% opted for face-to-face training programmes or workshops once in three months, 18% preferred getting trained every month, 16% wanted training programmes whenever they requested on a particular topic or area, 8% said that they did not need any more training programmes as they were already trained in all the areas while 6% said that they preferred to have training programmes once in 6 months.

The researchers have chosen to study the mobile advisory and face-to-face interaction mediums as they are the media used by KVK to transfer agricultural information.

Table 1 shows the results of the cross tabulation and chi-square test of significance performed between socio-economic factors and perception of the participants on effective communication for agricultural knowledge transfer. The perception of most of the young farmers aged between 20 and 39 was that when same information was transferred through both media together

Table 1. Perception on effective communication channel

Socio-economic category	Values	Perception of the participants on effective communication channel for agricultural knowledge transfer			
		Both (%)	Face-to-face interaction (%)	Mobile advisory	Significance
Age category	20-39	80.0	13.3	6.7	0.024*
	40-59	50.0	50.0	-	
	60 and above	27.3	72.7	-	
	Total	54.0	44.0	2.0	
Gender	Male	51.4	48.6	-	0.155
	Female	61.5	30.8	7.7	
	Total	54.0	44.0	2.0	
Education	Graduation and Diploma	60.9	34.8	2.0	0.002*
	Higher secondary	33.3	66.7	-	
	High school	100.0	-	-	
	Middle school	20.0	80.0	-	
	Primary school	-	100.0	-	
	Total	54.0	44.0	2.0	
Household income	Marginal income (≤ 150000)	58.3	41.7	-	0.00*
	Low income (≤ 300000)	93.3	6.7	-	
	Medium income (≤ 450000)	85.7	-	14.3	
	High income (≤ 600000)	-	100.0	-	
	Total	54.0	44.0	2.0	
Landholding for farming	No land (Roof gardening)	80.0	-	20.0	0.001*
	Marginal farmers	73.9	26.1	-	
	Small farmers	27.3	72.7	-	
	Large farmers	27.3	72.7	-	
	Total	54.0	44.0	2.0	

it would be effective. Three-fourths of the farmers aged 60 and above, and half the number of the farmers aged 40-59 perceived that face-to-face communication was more effective while the other half of the farmers in the same age category perceived that both media together would be effective. The chi-square test showed that there was a significant relationship between age and perception of effective communication tool ($p=0.024$ which is lesser than 0.05).

There was no gender difference on the perception of effective communication channel and there was no significant relationship and the p-value was higher as shown in Table 1. The results show that education did have an impact on the perception of the effectiveness of the communication media; farmers who were educated more than middle school perceive that both face-to-face and mobile advisory mediums together would be effective while the farmers who were educated below middle school perceive that face-to-face communication was

more effective. Household income had a high significance in the perception and this showed that farmers whose income was high had said that face-to-face communication was more effective and farmers who had lower incomes said that both mediums were effective. The results also gave an interpretation that farmers who were aged more had higher incomes than the younger farmers and the farmers who were aged more were associated with KVK for a longer period and had accessed their services more than the younger ones. Landholdings also showed a high significance in association. Small and large farmers mostly perceived that face-to-face communication was effective. The marginal farmers or the farmers who did not possess land and practice roof gardening perceive that both mediums were effective.

Cross tabulation and chi-square test was performed between socio-economic factors and the mediums through which the farmers received agricultural information from

Table 2. Socio-economic characteristics and medium of communication.

Socio-economic category	Values	You accessed information from KVK more through			Significance
		Both (%)	Face-to-face interaction (%)	Mobile advisory	
Age Category	20-39	46.70	20.00	33.30	
	40-59	16.70	83.30	-	
	60 and above	-	100.00	-	
	Total	22.0	68.0	10.0	0*
Gender	Male	5.40	81.10	13.50	
	Female	69.20	30.80	-	
	Total	22.0	68.0	10.0	0*
Education	Graduation and Diploma	8.7	78.3	13.0	
	Higher secondary	33.3	66.7	-	
	High school	72.7	9.1	18.2	
	Middle school	-	100.0	-	
	Primary school	-	100.0	-	
Total	22.0	68.0	10.0	0*	
Household income	Marginal income (≤ 150000)	-	58.3	41.7	
	Low income (≤ 300000)	53.3	46.7	-	
	Medium income (≤ 450000)	42.9	57.1	-	
	High income (≤ 600000)	-	100.0	-	
	Total	22.0	68.0	10.0	0*
Landholding for farming	No land (Roof gardening)	20.0	80.0	-	
	Marginal farmers	39.1	39.1	21.7	
	Small farmers	9.1	90.9	-	
	Large farmers	-	100.0	-	
	Total	22.0	68.0	10.0	0.07*

*p<0.05.

KVK and the overall results showed that all the characteristics tested had a high significant relationship with p-value below 0.05. As Table 2 shows, most of the farmers received information mainly through face-to-face communication though both mediums were used decently. This data depict that even gender showed high significance; the female farmers accessed both the mediums while the male farmers received information mostly through face-to-face communication.

Knowledge transferred through mobile advisory

The data showed that 36% of farmers accessed agricultural information from KVK through SMS and 90% accessed information through face-to-face communication while 22% accessed both media. The percentage of farmers who did not have difficulty on accessing mobile phones for information was 62. As much as 38% said that they did have difficulty on accessing mobile phones, among them 22% said that they had difficulty in reading English and 14% said that they had difficulty in using smart phones and this was mostly said by the male farmers who were 60 and above.

Table 3 shows the need and the actually-received SMS. The data showed that the need for SMS on all topics was more. In this 14% had reported that they did not get SMS regularly and 12% said that they never got SMS or were not aware of the process to get informed through SMS.

Among the farmers who access information through SMS, 10% had specified the topics on which they got informed in updates on day-to-day information. Among them 80% had said that they got updates on technical equipment, new diseases and weather updates, and 20% had said that they accessed information on new diseases and new techniques. During focus group discussions, farmers said that getting information through mobile advisory on day-to-day updates and tips for diseases would be more useful and the schedule data showed that most of the respondents wanted information on new diseases and only a few of the farmers wanted information on research findings and weather updates.

Knowledge transferred by face-to-face communication

Face-to-face communication through training programmes and workshops were organized and consultations

Table 3. Type of SMS needed and accessed.

Information for SMS	Need (%)	Accessed or received (%)
Assistance during each stage of your plantation or animal or fish farming	46	24
Tips for disease identification and remedy	88	40
Update on day-to-day information (about crops and plantation, poultry, animal husbandry)	80	12
None	2	12

Table 4. Themes for trainings and consultation for knowledge transfer.

Area in which knowledge was transferred	Farmers who accessed information (%)
Crop production	96
Crop protection	76
Crop improvement	74
Disease management	72
Soil type	70
Irrigation	50
Organic farming	60
Sustainable agriculture	52
Indigenous farming	32
Organic goat farming	4

provided at KVK. Table 4 shows the area in which the farmers were informed through these face-to-face programmes. In this study, 94% of farmers said that KVK provided consultations. Among them, 20% said that regular consultations were given, 58% said that consultations were given on an irregular basis, while 16% said that KVK gave consultation but they accessed the service very rarely.

Capability building and productivity

Among the farmers who accessed information from KVK, 38% said that their productivity had increased as marketing was easy because of 'Vaanaivil market' established by KVK, 34% said because of on-farm demonstrations, 36% due to field trials, 46% because of using a new technology or new equipment, and 50% because of testing the soil and finding out its richness for appropriateness of plantations for improved productivity. Some of the farmers, that is 6%, said that attending maximum number of training programmes provided by KVK had given them a wide knowledge on smart usage of the land without deteriorating the fertility and that had resulted in better productivity. These farmers said that they had got enough training in all kinds of farming, that is, from animal farming to vegetables and home products like mushroom farming, pickle making and more, so they just needed updates on diseases and its management and day-to-day updates (through mobile communication).

Corn demonstration and trial were performed by KVK in some of the villages and many farmers had tried the method and 24% said that their productivity was very high during that season. Generically, 14% of farmers said that they had gained knowledge on production and protection and that had increased their productivity. Training on water management had facilitated many farmers and 12% of farmers revealed that they even do roof gardening after learning the water management techniques which resulted in improved productivity. In focus group discussions, all the farmers said that they had gained knowledge on water management and the quality of water for each crop or vegetable they cultivated. They had applied those techniques for roof gardening and apart from getting more productivity from the landholdings, they also used the built area space for roof gardening and got a moderate gain out of that.

Many of the farmers, that is 42%, had bought basic equipment that had eased usage and resulted in improved productivity. Some of the equipment bought was dal machine, drum seeder and weed cutter; 14% said that they had learnt to use some new equipment but had not bought the equipment. KVK had trained the farmers on techniques on producing organic fertilizer and 68% said that using organic techniques such as biodegradable waste as fertilizers had reduced the use of chemical fertilizers, resulting in more profit due to less cost of production. Some of the farmers, that is 16%, practiced organic vegetable farming, due to high demand in the nearby city Chennai. They gained more profit but

Table 5. Quality of life of farmers.

Questions to farmers to assess the quality of life	Sufficient or as expected or yes (%)
Do you have good water supply to your residence?	98
Do you have good water supply to your farm?	80
Do you have electricity at home?	98
Do you have a toilet at home?	98
Has your income increased as you expected?	60
Do you save money?	78
Is it easy to get loan for your farming?	62
Is KVK helping you to access information on loan?	86
Has your lifestyle improved?	70
Has your status in society gone up?	60
Have you taken up any leadership position in your community?	44
Do you engage with your community regularly?	92
Do you engage women in production at all levels?	82
Do you have any problem on accessing medical facilities for you and your family?	30
Do you think that you and your family are well nourished?	48
Are you or your family affected by any communicable diseases often (tuberculosis, malaria, HIV/AIDS, etc)?	32
Are you educating your children?	88
Do you have any problem on accessing equipment for your farming?	6
Do you have any problem on accessing seeds?	6
Do you have any problem on accessing fertilizers?	6
Do you have any problem on accessing pesticides?	4
Do you have problem on accessing animal fodder?	2
Do you have problem on accessing treatment or medicines for animals?	8

the farmers said that KVK did not provide in-depth training or advanced information on organic farming. Almost all the farmers reported that they had gained confidence after communication intervention of KVK through face-to-face communication medium and mobile advisory medium. Among these farmers, 84% of the farmers had said that they farmed with more innovation and new techniques after the intervention of KVK. When the farmers were asked whether their economic condition had improved after the access of information from KVK, 52% said that it had improved and 34 said that it might have improved. There was no increase in the land possession for farming and 70% of the farmers said that they possessed the same area of land for farming and 16% said nothing about it.

The data in Table 5 were quantified from the points written from the focus group discussions. This showed that the farmers who took part in the study for this paper had good water supply to both residence and farmlands, most of them had received electricity for their residence, and had toilets at their homes. The farmers had good access to their basic needs. When the farmers were asked whether their incomes increased as they expected after the information access from KVK, majority had answered 'yes' and added that they also were able to save money. From the study, it was learnt that KVK also

helped in accessing information on loans. Most of the farmers had said that their lifestyles had improved and their status in society had also gone up. A good number of farmers said that they had taken up some leadership positions in their community while most of the farmers said that they engaged with their community regularly. The data showed that women were involved at all levels of work in farming and there was no gender discrimination.

The education awareness among the farmers was high and almost everyone sent their children for education. The 12% 'no' shown in the table were not married, or had very small children or were aged 60 and above, and their children were already adults.

Interpretations and suggestions

The farmers had reported that there was no continuity on receiving SMS. The frequency of sending SMS had decreased in the past three years after the posting of a new Director at KVK showing that decision-makers played a vital role on providing information capabilities. The farmers also wanted to access the helpline service, and report that they were not able to reach the Kisan helpline most of the time. There was no gender

discrimination and both male and female equally took part in all activities. The female farmers were educated and used the mobile phone with ease and most of the messages were read and shared with the males in their residence. Age and education did have a role on the farmers' perception to select the communication medium; the young and educated farmers preferred both media while the farmers aged 60 and above with primary education did not show interest in accessing SMS through mobile phones. The data pattern showed that farmers aged 60 and above with more income and landholdings opted for face-to-face communication rather than mobile advisory, as they are not "digital natives".

Most of the respondents who got farm-related information from KVK had accessed information through face-to-face communication and had expressed their satisfaction over the demonstrative, trial activities and trainings (National Institute of Labour Economics Research and Development, 2015; Shankara et al., 2014). Only a few respondents accessed information through mobile advisory. Farmers said that visually and practically grasping information was easier for them rather than reading from a SMS or accessing information through a mobile application. Moreover, when a trial or demonstration was introduced in a farmer's field, the other farmers in the village observed the output and it was easier for the government officials to promote the new technology or technique that was tried for more production.

Focus group discussions showed that many farmers give importance to human development (Odongo, 2013). Acquiring knowledge, possessing a leadership position in the community and educating their children were more important to them than economic possessions, though they gave priority to economic-wellbeing. The perception was that one could achieve human development if they were economically strong.

The farmers who took part in the training programmes, demonstrations and trials had used the techniques and technologies taught and had increased their productivity. The increase in productivity for the particular crops tried and taught showed that information had reached the farmers through face-to-face interaction and had promoted knowledge delivery. In this context, farmers particularly mentioned a trial on sweet corn. The peer farmers who got information from the farmers who attended the training programmes had also implemented the technology and techniques, and reported more yield. The farmers mostly depended on their traditional knowledge to predict the weather.

Some of the farmers managed with less water to produce more varieties. Some of the farmers used organic fertilizers to produce greens and brand it as organic for marketing and got more profit. It was an advantage to the farmers in Kancheepuram that they had easy access to a big market as the district is next to the metropolitan city of Chennai. This knowledge on

marketing skills had been transferred by KVK's face-to-face trainings. Most of the farmers were well aware of water management and conservation. The farmers said that they were blessed with many ponds, lakes and rivers around the district and the recent Chennai floods in 2015 had made the water bodies that they did not have any problem till the next rains in 2018. Most of the farmers had chosen horticulture rather than grains like paddy because it gave more profit due to an easily available huge market in Chennai.

This showed that knowledge was transferred to the farmers by KVK through face-to-face communication efficiently, but the farmers also wanted information through mobile advisory to keep them updated and to maintain the productivity or for more productivity.

There are some limitations. Apart from KVK, the Tamilnadu Agricultural Department actively transfers agricultural information in this region and that intervention also did have an effect on the capability building of the farmers which was not measured in this study. The researchers learnt that the role of the head of administration of KVK was very important on effective transfer of information to the farmers which was not included in this study. Through this descriptive study of an overall period, the researchers found that a cross sectional study may be done in future to include the role of each administration which will help in devising a self-assessment toolkit for the KVK administration to play a more efficient role in capability building.

Conclusion

All the indicators taken in this study for quantifying the access to capabilities for economic wellbeing and quality of life showed high percentage indicating that face-to-face communication and mobile advisory had an impact among the farmers in knowledge transfer, leading to improved productivity (Zhang et al., 2016) through capability building of the farmers. But the results clarified that there was an unexplained digital divide among farmers aged 60 and above and below 60 in the preference of the communication medium.

As productivity is seasonal, the trainings need to be more season specific; productivity does not mean more profit every time. It was learnt from the study that the Kancheepuram farmers who accessed information from KVK were better informed on that area and tackle issues efficiently.

KVK in Kancheepuram follows diffusion method on transferring information to the farmers though it aims at need-based intervention. If a bottom up approach is followed for information transfer for capability building of farmers through regular meetings with representatives of each village, there will be a better impact among farmers and that will benefit in their economic wellbeing and quality of life.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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