THE BENEFITS OF THE E-LEARNING AGRICULTURAL PROJECT KISSANKERALA TO DIGITAL IMMIGRANTS AND DIGITAL NATIVES

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ABSTRACT

In recent times Information and Communication Technology (ICT) has been able to make inroads into the ways information is disseminated among those involved in direct farming and farming related enterprises.

This paper arose from a two-year study of the KissanKerala, the e-learning project underway in Kerala, a small state in India. It is more conspicuous when we learn that the KissanKerala project is able to disseminate agricultural information also among digital immigrants. Since 2003, the KissanKerala has been providing advisory services to the farming community in Kerala using a combination of technologies. Salient features of the project are discussed. Noteworthy are its interactive web portal and the online agri-video channel that uses the video sharing platform of YouTube.

In this paper, we look at the e-learning strategies adopted; virtual learning environments created and also discuss participative tools used for communication. We have also made an impact-study of the project with a large number of beneficiaries. We learn that the Kissan Kerala is one of the most successful learning projects undertaken in distance mode in India.

Keywords: e-learning, ICT, digital natives, digital immigrants, e-readiness, distance education.

BACKGROUND

We endure developing various non-traditional methods of reaching the growing numbers of people to exchange and share information and new experiences among them. Over the years, the three main components of communication, 'the source', 'the channel' and 'the receiver' have been undergoing an intensive process of transformation, primarily due to technological advancement.

Albeit criticised, educational communication has braved itself for a revolution. Traversing through oral and pictorial traditions, print and audio-visual media, we have stepped through the doors of e-learning, thanks to the capabilities of computing and internet technology and high speed communication networks.

E-learning

The term e-learning broadly refers to technology based learning. It is challenging to come up with a single definition of e-learning that will be acceptable to all. E-learning has been defined in different ways in different platforms. Keegan (2005) remarked that e-learning is the provision of education and training via the www.

For Bates (2009) "…it is a broad term, encompassing a variety of technologies used for educational purposes, and a wide variety of educational formats and designs." Sangra, Vlachopoulos and Cabrera (2012) consider e-learning as a natural evolution of distance learning which has always taken the advantages of the latest tools to emerge in the context of technologies for structuring education. The definition provided by Fee (2012) demonstrates some of the thinking needed to correct misconceptions. Fee defines e-learning as an approach to learning and development: a collection of learning methods using digital technologies, which enable, distribute and enhance learning.

The term e-learning covers a range of techniques, methods and devices. E-learning has encompassed, in one form or other, all gamut of our life, whether it is health, education, entertainment, industry, business or agriculture. In general, we may call e-learning as electronically supported and or internet enabled learning that encompasses education, training, synchronous and asynchronous communication and sharing of information. "E-learning has exploded on the awareness of education and training professionals and widespread use has been achieved in a few years whereas printing took centuries to reach large number of people. E-learning is a major force for change. It is not confined to formal learning but is also having an impact on informal training" (Clarke, 2012).

Compared to areas like commerce, management, education, health, etc. adoption of e-learning strategies in agriculture related fields is rather in the early stages. Now, e-learning for agriculture is given importance by many state governments, training departments and non-governmental agencies around the world. Unlike in other fields, the concept of e-agriculture goes much beyond technology. It integrates knowledge, information and culture aimed at improving the knowledge level and learning process by greater access, participation and exchange among the community involved; here the farming community. Qaiser, Khan and Alam (2011) point out that development communication and its evolution in the form of ICT have a positive impact on India. "It is now clear that ICTs can help to empower rural women and men in areas of importance in their day-to-day life such as health, education, agriculture, weather and, above all, markets. The work done by a wide range of institutions during the last ten years in different parts of India has shown that ICTs can help us to leap frog in the areas of knowledge and skill empowerment of the rural poor" (Swaminathan M.S, 2006). In e-agriculture, there is as well a greater consolidation of technology, business, education, training and agri-related sciences. Qaisar, Ali Khan and Alam (2005) remark that "in recent years farmers' attitudes towards access of agricultural information have got changed because of very fast networking of information and communication technology". The rural farming community has greater access to market information.

A number of ICT projects have been in operation in India providing agricultural information services. These e-learning projects have been developed to integrate ICT for agricultural information dissemination, particularly to farmers. One such is the Kissan Kerala, an integrated, multi-modal agricultural information system conceptualised by the Department of Agriculture, Government of Kerala.

Kerala's Developmental Strides And Infrastructure: Windfall To New Projects

The state of Kerala is located on the Malabar coast of south west India. It has an area of around 39,000 sq. kilometers, which is about one percent of the total land area of India. The state is divided administratively into 14 revenue districts with the capital at Thiruvananthapuram. As per 2011 Census, the state has a population of 33.38 million people. The social infrastructure of Kerala is very advanced. Indicators of Physical Quality of Life Index (PQLI), like infant mortality (10%), female literacy (91.98%), and life expectancy at birth for males (71.6%) and females (75%) are well above the national levels. Human Development Index (HDI) for Kerala was 0.790 in 2011 as against the national level of 0.467 (Census of India, 2011). According to the Census, 2011 the state has the highest literacy rate in India with 94.2% literate males and 87.7% literate females.

ICT enabled initiatives turn out to be successful in Kerala significantly due to the availability of infrastructural facilities. Kerala has advanced digital infrastructure (Rajalekshmi, 2007). It has the highest tele-density in the country. All the 988 telephone exchanges in the state are digital and are connected to the National Internet Backbone (NIB) by optical fiber cables. Kochi, the primary International Gateway in India, handles two-thirds of the country's data traffic. The state has the highest density of science and technology personnel. Rajora Rajesh and Harris Roger (2006) have remarked that 'the people of Kerala are known for their fast learning skills'. All villages of Kerala are electrified. "Kerala tops the country in terms of households having both landline and mobile phones with 31.3 percent having twin connectivity compared to the country average of six percent. Among all states in India, Kerala has the highest penetration of computers and internet. Desktop and laptop computer penetration in households with internet connection, the State's average of 6.3 percent is more than double the national average of 3.1 percent of the total households. Kerala's total desktop or laptop penetration without internet connection of 15.8 percent of the total households is much more than the national average of 9.5 per cent" (Praveen, 2012).

Kerala was one of the first states in the country to initiate free and compulsory computer education in high schools through its IT@School project that covers 1.6 million students every year.

By constructing a composite index of development, the levels of development for agricultural sector and infrastructural facilities have been conducted by Narain. P et. al. (2007). The study places the state of Punjab on top and the state of Kerala on the last position in agricultural development. However, in one the composite indices - infrastructural facilities - the state of Kerala is placed on the top position.The precursor to the KissanKerala Project is the Akshaya, a joint project between local bodies (gram panchayats) in rural areas, municipalities in urban areas and private entrepreneurs in Malappuram district of Kerala to bridge the digital divide by providing community access to computers and the Internet.

"The Akshaya Project began in 2001 with an e-literacy campaign and subsequently targeted teaching basic computer skills to at least one person in every family" (Harris Roger and Rajora Rajesh, 2006). The objectives were achieved in less than a year. "More than half a million people have been provided with basic computer skills and around 65% of the beneficiaries under this program are women" (Gurumurthy et al, 2005). The project also aimed at making Kerala a complete e-literate state in India.

KissanKerala Project

The KissanKerala Project (Karshaka Information Systems Services And Networking Kerala Project) has been developed to support the farming community by providing right information at the right time by using Information and Communication Technology (ICT) systems and tools, i.e. an e-learning platform (Stockholm Challenge 2010).

It is an integrated, multi-modal agricultural information system initiated by the Government of Kerala, provided over network in an e-learning framework. It provides useful information and advisory services for the farming community across Kerala. This e-learning project is implemented and managed by a group of core experts in the field of management, software engineering, network management, agriculture and media journalism. The key feature of KissanKerala is the integrated ICT enabled service delivery model that is made available by experts from agriculture related organizations to ensure timely reach and effective assistance to farmers anywhere in Kerala. The project was launched in the year 2003.The KissanKerala Project provides flexible environment and robust technological solutions for farmers. The e-agriculture resources of KissanKerala have been shown schematically in the following figure:

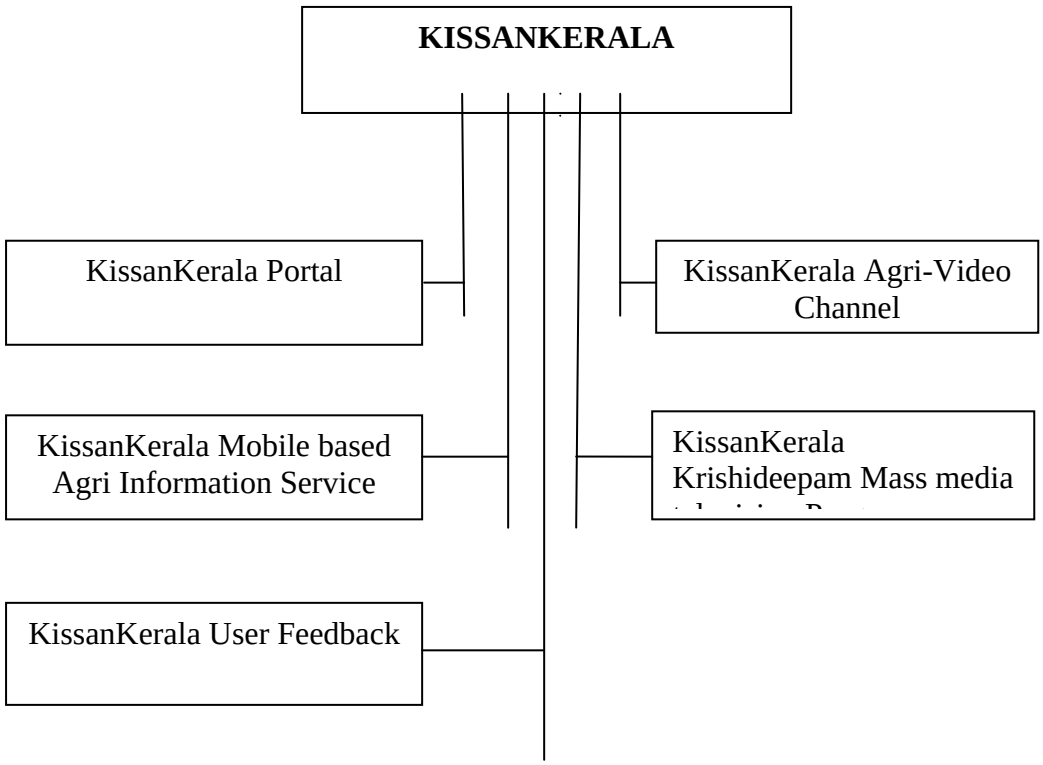

Figure: 1
KissanKerala Delivery Model

KissanKerala Portal

It is a single window access to all the agriculture and allied topics for continuous learning for the farmers free of cost. The following are the variety of interactive information services made available on the website:

- **Daily market information - virtual market**
- **Tele-advisory services are made available to the farmers through a dedicated toll-free telephone between Monday-Friday, 10 am to 5 pm**
- **Post queries and get expert answers**
- **Weather information**
- **Soil information**
- **Crop directory – crop information**
- **GIS based agri-advisory services for locale specific dynamic information**
- **Best farming practices**
- **Fertilizers and pesticides advisory and information system**
- **Details of availability of printed information material**
- **Access to e-publications and electronic newsletters**
- **A dynamic multilingual portal.**

Development of a web-GIS based dynamic weather information and forecasting system for the entire state of Kerala is a major feature of this portal. The system currently gives more than 300 weather locations across all districts of Kerala. It gives three basic weather parameters, namely, temperature, cloud cover, and precipitation (rainfall) for each location with weekly prediction (Ajith et.al. 2011).

KissanKerala Agri Video Channel

The KissanKerala agri video channel offers the following services having links through the main portal

- **An online agri-video channel available over Google and YouTube.**
- **The programmes are cybercast in local language, Malayalam**
- **Access to KissanKerala repository of more than 200 videos**

KissanKerala Mobile Phone Based Agricultural Information Services

Agricultural information services are provided through mobile phones that include:

- **Two way interactive services**
  - **Ask the experts directly**
  - **Receive interdepartmental information**
- **Push based services**
  - **Scheme alerts**
  - **Krishideepam television programme alerts**
  - **Alerts on training information**
- **Pull based services**
  - **District-wise weather details**
  - **Information on availability of planting materials**
  - **Availability of livestock**
  - **Soil test results**
  - **Monthly crop management advice**
  - **Krishideepam television programme information**

Text and voice based agricultural information services are provided over mobile phones. Besides these, access is provided to view agro-related videos over mobile phone. The success of the delivery of this component of KissanKerala is due to the high mobile penetration in the state.

KISSANKERALA KRISHIDEEPAM : Mass Media Television Programme

The highlights of Krishideepam television channel are mentioned below:

- **The television programmes are enriched with high quality multimedia content**
- **Availability of programmes in local language, Malayalam**
- **The programmes cover success stories, best practices, market prices analysis, weather information etc.**
- **Seasonal agricultural advisory services are provided**
- **The programmes are telecast three times per week over two popular television channels in Kerala, with repeat telecasts**

According to Ajith et.al (2011) the television programmes now reach more than five million regular viewers across the State and beyond. KissanKerala has completed the production and telecast of 450 unbroken weekly episodes during the last nine years. KissanKerala User feedback

- **A treasure corner to get the experiences and feedback on various services provided by KissanKerala.**
- **The feedback mechanism through posting queries and receiving answers from experts/scientists.**

The KissanKerala Project has been one of the most successful globally recognized e-learning projects undertaken in India. The KissanKerala portal with links to the mass media is an outstanding example of an e- learning programme for farmers.

SIGNIFICANT ACHIEVEMENTS

KissanKerala is India's first online agri video channel. Some of the major recognitions to the KissanKerala Project are:

- **e-India National Award 2009: Best ICT enabled Agriculture Initiative of the Year (Jury Choice Award).**
- **Manthan Award South Asia - 2008 for Design and development of integrated, multi-modal agricultural information system for Kerala**
- **First Kerala State e-Governance Award: 2009 for effective online services.**
- **Honourable mention in the Stockholm Challenge Award 2010**

KissanKerala's e-learning television episodes attract around three million viewers. Online agro-video programmes available over premier video hosting and sharing website YouTube is a big attraction. The videos receive a large number of hits from around the world.

IS KISSANKERALA WORKING AMONG DIGITAL IMMIGRANTS AND DIGITAL NATIVES OF KERALA?

Stockholm Challenge (2010) justifies that the KissanKerala Project has been one of the most successful ICT enabled ventures undertaken in Kerala and recognized internationally. The farming communities are not alone benefitted by the project.

Since multiple mode of delivery is practiced, the operational areas of KissanKerala include both urban and rural expanses, children, youth, men, women and seniors come under target groups. The project alleviates the problems of content gaps by providing the authentic agricultural information through various delivery methods like television, internet, telephone, mobile phones and print materials. The farmers have the choice and flexibility to choose the medium to seek the relevant information. While digitally modelling the KissanKerala Project for the future, there are opportunities for those who remain alien and who do not wish to migrate to new technology. They may benefit out of the services provided by KissanKerala over television and telephone. According to Fee (2012), the term digital native and digital immigrant arise from metaphor of digital technology. Many of those over the age of 20 or so are digital immigrants. The point is that our life experiences are very different from the life experiences of those who have lived all their lives with computers and internet. However, some digital immigrants rapidly become immersed in the new culture, adopt digital native behaviours and are just as responsive to the new technology as the younger generation.

KissanKerala is unique as it serves both the digital natives and digital immigrants. This may be affirmed if a digital native/ immigrant comparison is made through the structure provided by Fee (2012) as given at Table 1 below..

Table : 1
KissanKerala services digital natives and digital immigrants

Digital immigrant	Digital native	Provisions made available in KissanKerala
Looks for phone numbers in a directory	Looks for phone numbers on the web directory or in search engines	Data available in web portal and at Krishi Vigyan Kendras
Reads prints of documents and e-mails	Subscribes to online magazines/information	KissanKerala publications and newsletters are available in print and electronic form
Writes a letter	Sends an e-mail	Multiple options to receive feedback and queries
Makes a note of URLs	Saves URLs to his or her favourites	Choice is individual's

The project has made several impacts which have been highlighted by the Stockholm Challenge (2010). It has helped to improve the extension and communication efficiency of the officers of the Department of Agriculture in Kerala. The extension officers are now confident in giving on demand information support for the faring community. Usage of several decision support systems helps the officers to provide advisories on time, while also improving their capacity and knowledge level.The agricultural production in the state has improved during the last couple of years. This has attracted youth and women into agricultural sector. The project has played a major role in the growth of agricultural production.

An effective extension and support service for the farmers was the major factor for this growth. Moreover, several awareness programs, media campaigns and other capacity building and knowledge sharing activities were conducted which helped the farming community in building confidence. Fallow land cultivation in the state is an example to this. The KissanKerala Project has conducted six months' exclusive campaign and awareness programmes for farmers on the relevance of fallow land wasteland organic paddy cultivation in Kerala as part of the food security programme.

Due to the continuous effort, the growth of fallow land cultivation has increased from 12% to 70%.

Kissan Kerala Project has played a very significant role on disseminating the scientific and technical knowledge to the farming community on time especially women self-help groups and children. Displaying the best practices, success stories, farmers' campaign and interaction have improved the knowledge sharing process among this group. The online video channel is used extensively to telecast relevant videos on best practices, method demonstrations, and other scientific inputs for the farmers. Timely information on available government schemes and policies, information on subsidies, loans, etc. are given to the farmers through various platforms. The KissanKerala Project has developed separate mechanism and initiative to sell organic products especially from various self-help groups and women's clusters across the states. Transactions in several crores of rupees have taken place especially during the last couple of years. Several new export market opportunities have got created especially for organic products. The growth in agricultural production and aggressive marketing has resulted in economic growth of the farming community.

A study conducted by Arunbabu and Raj (2009) to analyse the e-readiness of beneficiaries of ICT projects in Kerala revealed that KissanKerala beneficiaries had the highest mean e-readiness score followed by Akshaya project beneficiaries. This study concluded that majority of the KissanKerala beneficiaries (85%) belong to the high e-readiness group. E-readiness was calculated by assessing six indicators viz., e-access, e-learning, e-society, e-business, e-governance and e-willingness. The respondents had low scores for e-society, e-business and e-governance. Arunbabu and Raj (2009) further remarked that there is a need to make beneficiaries aware about the ICT enabled services and care should be taken to make them adopt more such technologies.

OBJECTIVES OF THIS STUDY

KissanKerala has been considered as one of the most successful ICT enabled ventures undertaken in Kerala, playing a prominent role in providing agri related information to the people. The main objective of the study was to analyse the impact of the e-learning schemes envisaged through KissanKerala on a heterogeneous target group in a state where adequate infrastructure has developed for delivery of blended learning and awareness programmes.

Instrumentation

In order to collect information with regard to the objectives formulated for the study, a brief questionnaire consisting of five questions was constructed.

The questions were designed to gauge the respondents' awareness on KissanKerala Project and component of the project they make most use of.

The questions were framed in a way that it could be answered in a minute or two. Personal details were not sought besides their names, occupation and phone number/e mail addresses. The questions raised were:

Have you heard of KissanKerala ?
[✔Tick your choice] YES NO

Which among the following constituents of KissanKerala you are familiar with: [Tick on your choice(s)]

a) KissanKerala Portal http://www.kissankerala.net
b) KissanKerala Agri-video channel on YouTube
http://www.youtube.com/kissankerala
c) KissanKerala Mobile Phone Based Agri-information Service
d) KissanKerala Krishideepam Television Programmes
e) KissanKerala User Feedback
f) All of the Above
g) None of the Above

Do you find the KissanKerala Project beneficial?[✔Tick your choice]
YES NO

How do you rate the KissanKerala Project? [✔Tick your choice]
VERY GOOD/ GOOD/ AVERAGE/ BAD/ VERY BAD

Provide your comments/suggestions, if any, on the KissanKerala Project. Please feel free to be critical.

Procedures

The printed questionnaires were distributed randomly among passengers waiting for trains in three railway stations in southern, central and northern Kerala, Trivandrum, Thrissur and Kozhikode respectively. Some of the questionnaires were distributed among people involved in farming related activities in the adjoining districts of Kollam, Palakkad and Kannur. Their responses were collected right away. The questionnaire was also sent by e-mail to randomly selected e-mail addresses of people across the states inviting them to answer the brief online questionnaire and with a request to further circulate the questionnaire in their mailing groups.

The replies received were documented. Responses were also collected over telephone calls to randomly selected phone numbers obtained from the telephone directory.

The three-prong approach in collecting the required data has more or less covered all the beneficiary subgroups including tech-savvy digital natives, digital immigrants, and unsophisticated population.

The responses collected in person, the e-mail replies and the information obtained over telephone helped the researchers to determine the respondents' awareness on KissanKerala, their acquaintance with multiple ICT mode of delivery of the project and their knowledge and skill-acquiring manner. This has helped the researchers in the evaluation of the project.

FINDINGS AND DISCUSSIONS

The population of the study were more or less scattered across Kerala. They belong to different professional groups.

The responses given in a tabular form (Table 2) provided a comprehensive opportunity for the researchers to understand the population's perception on KissanKerala.

Table: 2
Results of the impact study on KissanKerala (51 persons)

Sl No	Questions & Given Optional Answer choices		Received Responses				No Response
			Yes	Yes%	No	No %	
1	Have you heard of KissanKerala ?		50/51	98.04%	1/51	1.96%	None
2	Which among the following constituents of KissanKerala are you familiar with? (Some of the respondents were familiar with more than one constituents)	a)KissanKerala portal	10/51	19.61%	Not Applicable	Not Applicable	Not Applicable
		b)KissanKerala agri-video Channel on YouTube	5/51	9.8%			
		c)KissanKerala mobile phone based agri-information service	None	0%			
		d)KissanKerala Krishideepam television programmes	48/51	94.12%			
		e)KissanKerala user feedback	1/51	1.96%			
		f)All of the above	None	0%			
		g)None of the above	None	0%			
3	Do you find KissanKerala Project beneficial?		43/51	84.31%	1/51	1.96%	7/51
4	How do you rate KissanKerala Project ?	Very good	12/51	23.53%	Not Applicable		5/51
		Good	29/51	56.86%			
		Average	5/51	9.8%			
		Bad	None	0%			
		Very Bad	None	0%			

It is encouraging to note that out of the 51 persons, randomly picked up from across the state, 50 have heard of KissanKerala. This near total awareness of an ongoing e-learning agricultural project in itself speaks of the success of the project.

- **Only about 20% have accessed or have been accessing the KissanKerala portal. Since 2004, the KissanKerala website has received around 76,000 hits.**
- **YouTube video streaming provisions of KissanKerala are made use by those 10% (apx) of the sample population in the state, who have access to broadband internet connection and having fast computers that enables uninterrupted video streaming. Telephonic discussion respondents have revealed that the internet facility available in households in Kerala is mostly used for contacting the family members and friends residing outside the state.**
- **Further studies are required to assess the reason for non-utilization of the provisions of mobile phone services in the project.**

- **KissanKerala programmes on popular television channel Asianet is the medium of learning for the majority from within the state of Kerala. More than 94% of the sample population is familiar with the television broadcasts of KissanKerala.**
- **There was only 2% response to the KissanKerala user feedback mechanism.**

Comments and suggestions provided by the respondents are noteworthy. Most of the comments provided are based on the programmes delivered through television. These include:

- **The programme helped me to grow Adenium on commercial basis**
- **I watch all episodes of Krishideepam. I like them very much**
- **All programmes are very beneficial**
- **Wonderful**
- **KissanKerala should give priority to marginalized peasants in teaching farming**
- **At local level KissanKerala should be vigourously implemented**
- **Krishideepam programmes in Asianet helps to understand facts very fast**
- **KissanKerala activities should made popular among youngsters**
- **KissanKerala is the most informative programme among all similar programmes in Malayalam visual media. This programme has helped me to plan my post retirement life productively**

The researchers also studied the viewer reviews of KissanKerala on YouTube and found more '*likes*' than "*dislikes*". Many suggestions were found requesting for the videos be produced in English and other languages. There are several encouraging comments on the content quality. Two such are quoted below:

"By luck, I stumbled upon your channel when searching for anthurium this summer. Since then, I have watched so many of your videos and felt very peaceful and happy. I've also learned to understand Malayalam by watching a lot of videos. I wish, that I could come to Kerala sometimes and volunteer in these farms." (Delinjo 2009)

Reply: "Thanks for your comments. You can subscribe the channel and post your comments in the channel page so that others can view your feedback - Coordinator, KISSAN Kerala in reply to Dellinjo".

"The stories from Kissan is amazing. It is such a progressive and encouraging project people are doing in Kerala. I am a Keralite living abroad for many years. After viewing all these clips from Kissan, I have half a mind to come back to Kerala and start farming".(Lee 2012)

"Reply: Thanks for your comments. We request you to subscribe this channel and post your comments under channel comments section. It will be an encouragement for others to view your feedback- Coordinator, KISSAN Kerala in reply to Lee".

The study shows the significance of multi-mode delivery system that benefits the digital immigrants and the digital natives, a reason for the success of Kissan Kerala. It can be established that KissanKerala offers tremendous potential for providing useful information at the right time and advisory services to the farming community.

The medium of delivery of KissanKerala programmes on mass media is the Asianet Satellite Television, which is available all over the world. Nevertheless, viewers from outside India mostly view the programmes online. Philip (2002) claims that "according to YouTube insights and Google analytics, the KissanKerala videos are getting huge hits from the countries like Asia, USA, Africa, Europe, Middle East and South America. Most of these videos in the channel get high user rating and channel comments". This could be due to the availability of high-speed broadband internet access in the developed countries that enables the viewers the option of choosing the required KissanKerala modules from the repository. Affordable high-speed broadband connectivity has to further expand in Kerala, like electricity reaching all households, so as to bridge the digital divides and distance education programmes delivered through e-learning mode like Kissan Kerala gets their optimum utilisation.

CONCLUSION

This paper arose from a two-year study of KissanKerala Project in Kerala. We interacted with the beneficiaries of the project; ordinary farmers, homemakers involved in roof top gardening, small- time kitchen gardeners and orchid growers. The project has benefitted even bankers, postal assistants, school teachers and young students who have some taste in farming and gardening.

The present study has been undertaken with sample groups from all districts of Kerala who either filled in a simple questionnaire format or responded through e-mails or telephone. The openness of the project, the physical separation of the learners and the virtual delivery mode make the KissanKerala Project a true distance learning initiative. The innovative project is undoubtedly bringing tangible benefits to the distance learners. KissanKerala is reaching the unreached and voicing the voiceless. Learning environments for the digitally minded people (possessing a positive mentality with the new media) should be further strengthened and the existing e-learning environment must be nurtured for delivery of programmes for future technological society through digital formats.

"I believe in education, which gives me the knowledge to work wisely and trains my mind and my hands to work skillfully." - George Petrie

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