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Impact Assessment of Video-based Information Dissemination in Agriculture: A Case of Digital Green Initiative

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ABSTRACT

Digital Information and Media are excellent tools to upsurge knowledge which is an important production factor in agriculture. The generic term used for the Digital Information Sector in agriculture is ICT (Information and Communication Technologies). ICTs contribute to the display, processing, storing and spread of information through electronic means by using several tools like mobile, internet, kiosks, audio, and video etc. There are number of ICT projects in India which uses different ICT tools for dissemination of information and knowledge. The effectiveness and efficiency of all these tools varies with the situation. This study was conducted to know the effectiveness of the digital video which was used by Digital Green, in dissemination of information. The study was conducted in the district of Andhra Pradesh and Madhya Pradesh. An ex-post facto research design was used for the study purpose. The data was collected from the 80 beneficiary farmers from both the states and 40 farmers from the control village in the respective states. The parametric test, *i.e.* t-test was used to compare the production of crops and change in income of the farmers before and after the intervention of the Digital Green services. A significant difference was found for the entire grown crop and also in the incomes of the beneficiary and control farmers.

Keywords: ICT, impact assessment, digital green

INTRODUCTION

The general use of media in agricultural development is to deliver information, to sensitize and to reach groups of rural people and also to put into a different and more accessible form of actual experience or learning that face-to-face cannot cover anymore. Knowledge and access to information are essential for people to respond successfully to the opportunities and challenges of social, economic and technological changes, including those that help to improve agricultural productivity, food security and rural livelihoods (Ilboudo, 2000). New information in agricultural production will enable rural people to learn about new ways of improving agriculture. This will create a situation where a producer (farmer) will be having a role of sender and not only being only. Therefore the current provider of information, extension officer/ researcher will also be being a receiver of the information..

Farmers use different types of home grown media to access the agricultural information. Some are more accessible and affordable, such as rural radio and extension aids it is digital revolutions which are now becoming more accessible and reasonable to those families who were unable to access them, for instance like the television or videos. The common methods of communicating with rural people include leaflets, newsletters, posters, exhibits, visual aids and radio programs in communicating agricultural information (Ozowa, 1997). Each medium has its own specific technical features that make it more or less appropriate for specific objectives; target groups, situations and type of message one wants to show. Different media strategies will be required for different objectives. The selection of a medium depends mainly on the message and the target (Bohmann, 2003.

For people with low literacy level print media may hinder the main message that is to be communicated causing hold back of transformation, as transformation, all starts with information and understanding of that information. In the past decade(s), there was a great evolution in agricultural knowledge, methods of training farmers, communication of message and sources of information (Blum, 1996). The information age and its supporting technologies, such as the internet and other digital tools, has enabled work and learning to occur during time periods and in locations based upon individual needs (Tennessen *et. al.* 1997).

However, the advent of the internet, and especially the world wide web (www), offers unique opportunities for information exchange and knowledge transfer to the rural poor. The internet like other print media is largely

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unavailable to the lives of rural people (Müller-Falcke, 2002). Though it can be available to the community at large, it will be like other print media and not be used to its up most level as majority of people in developing rural areas are illiterate.Therefore compared to other media, due to the digital revolution, video films became very affordable and they have a comparative advantage because pictures stick better in the mind and they are available for a wide range of people (Khadar and Ndiaye, Undated).

Hence digital videos are becoming common to supplement other methods of information transfer. This approach has been used by Digital Green in India to support existing extension services provided by Government and NGOs. Digital Green promotes a video-based process for disseminating technology and agricultural practices. The videos are made with local resource people from the community it self and are shown to farmer groups established by the partner Government and NGOs. The video show the farmers what their fellow farmers have done and this it does not take much to convince them to adopt the technology or improved practice. Assessment of adoption practices in the pilot program of Digital Green shows a higher adoption rate through this video-based process than through T&V-style extension approaches (Gandhi *et al.* 2009).

Hence the digital video developed by Digtal Green system was "*participatory video"*. Participatory video is defined by Mengi (2000), as a scriptless video production process, directed by a group of grassroots people, moving forward in iterative cycles of shooting-reviewing, and aiming at creating video narratives that communicate what those who participate in the process really want to communicate, in a way that they think is appropriate.

The rapid growth of Digital Green in various states has a wider impact in information dissemination in agriculture. The empirical research studies on the effectiveness of participatory digital video are limited. This study discussed the effectiveness of digital video as a ICT tool for rapid information dissemination and wide applicability for all types of the audiences.

METHODOLOGY

To assess quantify the increase in production and change in income of the farmers because of the information provided by Digital Green through participatory digital video, a survey was conducted with 80 beneficiary farmers of Digital Green in two districts, Mehboobnagar (Andhra Pradesh) and Guna (Madhya Pradesh)and 40 farmers as control in other villages of same district where the services of Digital Green was not available. In both the states, Digital Green were providing services its intervention. There were majorly seven crops *viz.* paddy, cotton, maize, wheat, soyabean, bengal-gram and coriander which were extensively grown in both the states. The data were collected for the production and income through farming from all the respondents before and after the interventions of Digital Green. The parametric test, *i.e.* t-test has been used to study the significance of the services of Digital Green by utilising before and after technique.

RESULTS AND DISCUSSION

Increase in production of crops: Increase in production referred to the difference of the production of different crop for a given period of time. In Mehbbobnagar district of Andhra Pradesh, the three main crops; paddy, cotton and maize, were extensively grown. The videos related to IPM of rice, seed treatment of rice and maize, and preparation of Jeevamrutha for cotton. The data for the production of all the crops were collected before and after interventions of the digital Green from the beneficiary farmers. For the same period, production data of control farmers were also recorded.

Table 1 shows the production of the paddy, cotton and maize. There were no significant differences in the production before the intrusion of Digital Green among the beneficiary farmers and the control farmers. After the intervention of the services of Digital Green, there were significant differences among the beneficiary and the control farmers for the same given period of time. The t-cal value for rice and cotton was 4.785 and 4.301 respectively which were highly significantly different at 0.05 per cent level of significance between the beneficiary and control farmers. Similarly for maize it was significantly different at 0.05 per cent level of significance.

Table 1: Increase in production of crops of Mehboobnagar's farmers

Sample	No. of Farmers growing (N)	Before Intervention			After Intervention		
		Mean	t-cal	t-value	Mean	t-cal	t-value
Paddy							
Beneficiary	27	444.45	1.507	1.645	724.07	4.785***	1.645
Control	19	371.05		(44, 0.05)	434.21		(44, 0.05)
Cotton							
Beneficiary	37	341.08	1.30	1.645	558.78	4.301***	1.645
Control	20	300		(55, 0.05)	370.0		(55, 0.05)
Maize							
Beneficiary	21	425	0.116	1.703	1920	1.867*	1.703
Control	8	350		(27, 0.05)	1450		(27, 0.05)

***significant at the 0.05 level, *significant at the 0.05 level

Four main crops, wheat, bengal-gram, soyabean and coriander were extensively grown in Guna district of Madhya Pradesh. The videos were related to the seed treatment of wheat and bengal-gram, control of disease in coriander, control of pest attack in the crops.

The table 2 shows that the production of various crops of the beneficiary and control farmers had no significant difference for the given period before the intervention of Digital Green.

After the intervention of Digital Green services, there was significant difference in the production of wheat, bengal-gram and coriander where t-cal value was 1.797, 1.980 and 1.694 respectively. The t-cal value of soyabean was 2.480, which was highly significant as compared to the control farmers.

Table 2: Increase in production of crops of Guna's farmers

Sample	No. of Farmers growing(N)	Before Intervention			After Intervention		
		Mean	t-cal	t-value	Mean	t-cal	t-value
Wheat							
Beneficiary	39	371.25	1.386	1.645	505.0	1.797*	1.645
Control	20	345.0		(57, 0.05)	412.0		(57, 0.05)
Bengal Gram							
Beneficiary	28	98.21	0.688	1.645	172.3	1.980*	1.645
Control	17	101.47		(43, 0.05)	139.7		(43, 0.05)
Soyabean							
Beneficiary	22	97.72	0.159	1.701	185.45	2.480**	1.701
Control	8	100.0		(28, 0.05)	151.25		(28, 0.05)
Coriander							
Beneficiary	30	112.5	0.719	1.645	164.2	1.694*	1.645
Control	14	101.8		(42, 0.05)	137.5		(42, 0.05)

Change in Income: Change in income referred to as differences in income from farming by selling of crops for a given period of time.

In Mehboobnagar district of Andhra Pradesh, (table 3) it was found that before the interventions of the Digital Green, there was no significant difference in the incomes of the beneficiary and control farmers.

After the inter venation of Digital Green, (videos) for the cotton growers, the t-cal value was 6.218 and hence can be inferred that there was highly significant difference from the control farmers.

Similarly for the paddy and maize growers, the t-cal value was 1.860 and 3.885 respectively. It can be implied that there was significant difference between beneficiary and control farmers.

Table 3: Changes in income of Mehboobnagar's farmers from all the crops

Sample	No. of Farmers growing (N)	Before Intervention			After Intervention		
		Mean	t-cal	t-value	Mean	t-cal	t-value
Paddy							
Beneficiary	27	8318.59	0.82	1.645	18114.8	1.860**	1.645
Control	19	11078.9	9	(44, 0.05)	12631.6		(44, 0.05)
Cotton							
Beneficiary	37	11430.3	1.64	1.645	17276.3	6.218***	1.645
Control	20	9662.5		(55, 0.05)	10975.0		(55, 0.05)
Maize							
Beneficiary	21	8078.6	1.58	1.703	16339.3	3.885**	1.703
Control	8	3487.5		(27, 0.05)	4350		(27, 0.05)

In Guna district of Madhya Pradesh, table 4 before the intervention of Digital Green services, the income of the beneficiary and control farmers had no significant difference. After the inter venation of the Digital Green services, significant difference was found between the beneficiary and control farmers. The t-cal value of the wheat, soyabean and coriander were 1.647, 1.807 and 1.879 respectively.

All were significantly different at 0.05% level of significance. The t-cal value for Bengal-gram was 3.601, which was highly significantly different form the control farmers.

Table 4: Change in income of Guna's farmers from the crops

Sample	No. of Farmers growing (N)	Before Intervention			After Intervention		
		Mean	t-cal	t-value	Mean	t-cal	t-value
Wheat							
Beneficiary	39	3518.7	0.22	1.645	6809.8	1.647*	1.645
Control	20	3429.0		(57, 0.05)	6029.0		(57, 0.05)
Bengal Gram							
Beneficiary	28	1941.5	0.24	1.645	4962.9	3.601**	1.645
Control	17	2037.5	7	(43, 0.05)	3868.6		(43, 0.05)
Soyabean							
Beneficiary	22	1797.5	1.55	1.701	5496.5	1.807*	1.701
Control	8	2371.5		(28, 0.05)	4541.3		(28, 0.05)
Coriander							
Beneficiary	30	2575.6	0.23	1.645	6912.9	1.879*	1.645
Control	14	2709.6		(42, 0.05)	5651.9		(42, 0.05)

CONCLUSION

There are a number of important factors like illiteracy of the farmers, lack of location specific practices, lack of in frastructural support, lack of paraprofessional aides, high investment on the ICT technologies, *etc.*, preventing rural communities in developing countries from reaping benefits of ICTs. Digital Green had addressed all these problems by developing participatory digital video for the farmers for their information enpowermnet. They had used regional languages in the videos and also involved

the local people for shooting specific practices in their field. Hence the action resulted in providing rural people the localy specific technologies and paraprofessional aides utilised in this ICT model. Besides that, there were very less infrastructural facilities required for projecting such digital videos in the villages. It can be said that most of the problem of implementing ICT project in India can be solved by using Digital Green model of information enpowerment. It was the reason that the production of all the crops as well as income from farming had increased compared to the control farmers and also significantly different. It needs to be extrapolated to all the states of the country especially where the farmers are illiterate, lack infrastructural support and utilize less number of extension agents.

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