

Farmer Initiatives in ICT Use for Information Exchange

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INTRODUCTION

Kerala state tops in India with regard to e-statistics. The tele density of the state is 95.70 persons with telephone connections for every 100 individuals. Similarly 34.71 internet subscribers per 100 population, 12.31 million internet subscription, 2.68 million wireline subscribers of which 65 percent is rural and 31.13 million wireless subscribers. The projects of Akshaya and IT @ school projects initiated by Government of Kerala would have its impact for these statistics along with demographic indicators. As per Telecom Regulatory Authority of India (TRAI) data, out of internet penetration in the state, 20 percent of households through broadband and 15 percent mobile.

The productivity of the production factors in agriculture ie., land, labour, capital and managerial abilities and technologies could be improved by reliable and quality information. Hence agricultural information is an important factor in successful farming. In Kerala State the share of agriculture in the State Domestic Product (SDP) was on the decline. Since 1970, the area and production of food grains drastically being reduced and presents dismal figure in terms of food self sufficiency. The withdrawal from agriculture and emphasis given to service sectors, resulted in long term effects in environment, water scarcity, reduction in women farmers and labourers, growing gap in food production and demand as well as change in land use pattern not using for farming purpose ,but as real estate or as an investment asset only.

The share of agriculture to the SDP declined to a dismal 8.83 percent in 2013-14 from 22 percent in 1990-2000, in the state. Several reasons such as land conversion, increasing small and marginal holdings, low level and fluctuating price of crop outputs/ products, decline in agricultural labourers and high wage rates are being cited as reasons in several studies. In view of the fragmentation of land, individual interventions or research and extension approaches/strategies may not yield expected results. But as indicated continuous technical support and knowledge provision is essential for desired level and impact from farming. Hence it could be expected that these facilities would have been impacted the access, transfer and utilisation of farm information among farming communities. In this context an analysis was done on the online information management among and between farmers as groups or individual, through Facebook mainly, in local language.

Methodology

The facebook groups or individuals on farming and related objectives facilitating and managing information exchange in local vernacular, Malayalam, were browsed and the content analysis done in

terms of information management among farmers. A total of 18 facebook pages and 13 facebook public groups in Malayalam language entirely devoted for information facilitation for farming or farmers' services were analysed. Also the profile of the members and utility of the information provided were documented through personal telephone interviews and online group discussions. The utilisation patterns were collected through purposive facebook discussion group and telephone interview with sample farmers.

Results and discussions

These factors of special nature of farming in Kerala State compared to other states of India, includes fragmented small and marginal holdings, urban or semi urban nature and predominance of family farming situations. Hence the information services and the policy support for Kerala farming is entirely different and requires appropriate customized treatment. A study in Edava grama panchayath, Kerala provided representative utilisation pattern of available land by the owners for farming.

Table.1. Cropping/farming systems prevalent in small and marginal land holdings

Sl. No.	Coconut based Homestead system	Households (%)	Average area (ha)
1	Coconut + Banana + Tuber crops	9.2	44.1 cents (0.18 ha)
2	Coconut + tuber crops	7.4	20.75cents (0.084ha)
3	Coconut + Banana	2.1	24 cents (0.01ha)
4	Coconut+ Banana +spices (turmeric/ ginger)	3.7	37.2 cents (0.15 ha)
5	Coconut + pepper + areca nut	5.6	62.7 cents (0.25ha)
6	Coconut + banana + tubers + pepper	29.6	54.4 cents (0.22ha)
7	Coconut + inter/mixed + poultry	11.0	126.8 cents (0.51ha)
8	Coconut + inter/mixed + cattle	7.6	147.5 cents (0.59ha)
9	Coconut + inter crops + goat	11.0	15.8 cents (0.06ha)
10	Coconut + inter/mixed + cattle+ goat	5.6	150.0 cents (0.60 ha)
11	Coconut + poultry	3.7	7.5 cents (0.03ha)
12	No intercrops	3.7	62.0 cents (0.25ha)

Field survey(2013).

The average area of the holdings was found to be 0.28 ha (68 cents) with major crop combinations of coconut + banana+ tubers + pepper. It was found that banana, tuber crops and backyard poultry was the most popular combinations followed in marginal holdings or even smaller sub marginal holdings. Animal husbandry along with inter/ mixed crops were adopted in holding sizes of 0.5 ha and more. The data indicate the range of resource base, the scale of needed technologies and the subsistence nature of farming followed by majority of the farmers. Hence the information or skill needs also varies highly among them. It could also be inferred that the system of family farming prevails which needs customized information for utilization and facilitation and field support to reach the widely distributed farming community members.

Table.2. Correlation of variables with technology adoption by farmers

Sl. No.	Variables	'r' value
1	Age	0.21500
2	Education level	-0.12949
3	Family size	0.067713
4	Occupation status	0.18606
5	Local participation	0.64627**
6	Land holding size	0.51256**
7	Yield obtained	0.54451**
8	Mass media exposure	0.13259
9	Farm magazine utilization	0.55842**
10	Cosmopolite sources	0.16304
11	Interpersonal localite sources	0.52731**

Table.2 clearly showed that technology or information use was positively and significantly correlated with local participation, land holding size, yield of the main crop obtained ie. Coconut, farm magazine utilisation and inter personal localite sources of information. The ranked preferences of the farmers showed their highest preference of interpersonal localite sources of information followed by farm magazines, personal cosmopolite sources, Krishibhavan / pesticide agencies and mass media respectively. Warwick and Starasts (2004) stated that information will be most used by farmers when providers of agricultural information use it less like a library and more like an interactive field day. It is not the scarcity but the local contextualisation of information that makes it valuable for farmers. Starasts (2004) also found that farmers seeks information in relation to their available time, current problem based needs, past experiences and social connections and physical environments. Online mass information often did not meet users situated information needs. The main focus of their learning was their individual experience or assessing information from others about their experiences.

Profile of the facebook groups/ pages for farmer to farmer information dissemination

The facebook groups/pages of farmers in Malayalam language provided an interesting profile features. The membership of groups ranged from 66 to 1,26,214 members indicating the number of farmers who are interested as well as engaged in farming and adopting farming practices from these

ICT forums. One of the features to be highlighted is that majority of these groups were initiated since 2012 to 2015. There were closed membership groups also which we were not able to access. Objectives of the groups ranged from generalised farming topics to specialised themes. General objectives stated were motivating young generation towards farming, sharing information/knowledge / innovations created by the farming community, safe food production for family needs, and to reengage relearning of farming among keralites. ICT groups with specific objectives were purposive and customised for catering specific information needs and services of target segments of farming community. The specific groups were for sustaining paddy cultivation in Kerala and taking the message across, groups furnishing links to relevant information sources, groups providing videos on farming activities/technologies, online marketing services, online marketing of organic process, fish farmers groups, group for exchange of seeds, stingless bee farming community, localised groups for showcasing location specific farming features, organic farming, and nutrition gardening. The number of facebook groups' admins were one to 12 persons, showing the collective information services being taken, maintained and sustained by farmers themselves utilising ICT facilities. We could find that both genders are in the leadership, with men more than 90 percent. Regarding the gender of farmers / interested persons who visits these groups indicated 72.17 percent were men and 27.83 percent women. Mistr (2007) that future of information system will be user friendly computer programmes and portals in agricultural information system

Topics of information/ knowledge provided by farmer groups

Topics of farming were crops, livestock and poultry, fisheries, integrated farming, agricultural machineries, water and soil conservation measures, seeds and inputs, farm enterprises etc. The details are given in the following table3.

Table3. Topics posted in farmers facebook public groups or page

Sl.No	Topics	Percent
1	Farming (general crops- 30.81), High tech farming (4.16) Terrace cultivation (1.22) Mushroom (1.47), Honeybee (1.22)	38.86
2	Organic farming (9.78) + organic pesticides / nutrient formulations (8.07)	17.85
3	Animal husbandry - (Livestock (1.47), Goat (1.22), Poultry (1.00)	3.69
4	Fisheries	1.71
5	Success stories	6.11
6	General agricultural related topics (environmental issues/ policy matters/ government decisions, agriculture and health, etc)	10.76
7	Announcements of public interest	10.27
8	Marketing	8.56
9	Processing	2.44

The data furnished in table3 indicated that a wide range of topics were covered in these ICT groups of farmers. However farming techniques for various crops and organic farming topics occupies more than 50 percent showing the demand or need for these technologies. An array of information is transmitted in virtual interactive mode in the ICT tools. Farming includes cultivation practices on vegetables, medicinal plants, paddy, jack, pepper, turmeric, ginger, fruit crops, ornamental plants, coconut, fodder crops, pulses, sesamum, new crops etc. Organic farming practices were the most sought after information with more interaction among the member farmers. Family farming concept was adopted by most of the members which could be triangulated from their messages/ action photos shared/ experiential advices to others etc. The findings of Ozowa (1995) indicate that the information needs may be grouped into five headings: agricultural inputs; extension education; agricultural technology; agricultural credit; and marketing. Modern farm inputs are needed to raise small farm productivity. These inputs may include fertilizers, improved variety of seeds and seedlings, feeds, plant protection chemicals, agricultural machinery, and equipment and water. In this study also similar information needs motivate farmer groups in providing customised messages through ICT mode.

Table.4. Form or mode of information dissemination in farmer to farmer ICT

Sl.No	Mode or form of message transmitted	percent
1	Photo only	6.65
2	Photo + text	60.94
3	Scanned news (including success stories published)	17.17
4	Videos	5.27
5	Text only	4.43
6	Scanned publications	5.54

It could be seen that the farmers groups were utilising various forms of modes for transmitting or mutual exchange of information. The most common mode was photo + text (61 percent), which could provide details and specific messages across. Also it was opined as easy, simple but effective by the members. However the maximum likes recorded were for the videos stating the experiential learning through them. The less number of videos in spite of preference, may be due to the lack of resources or skills in producing and posting video clippings. Scanned news/ success stories/ events organised occupied 17.17 percent of the total messages, indicative of the cross transmission as well credibility of printed media in convincing audiences. It may be an indirect indication of the low preference of text only or scanned publication in an ICT media for information exchange among farmers, due to its secondary nature.

Table 5. Information services performed by ICT groups of farmers

Sl. No.	Information Services	Percent
1	Collection, sorting of relevant news from print/ audio/ television/ internet for farmers and informing	11.80
2	Providing services for online marketing (even small quantities of seed/ manure/ farm produces/ animals etc)	7.41
3	Dissemination of farming information (cultivation practices/ plant protection/ new crops/ breeds/ varieties/ processing etc	54.62
4	Gender aspects in farming (motivational stories, experience sharing, women in agricultural enterprises)	0.93
5	Sharing of success stories of various aspects and scale of operations	5.79
6	Virtual Demonstrations (step by step photos or videos)	1.62
7	Innovations (mostly small sale innovations of farmers)	4.17
8	Linking or sharing to other ICT forums or individuals or institutions for facilitating members for getting additional information/ clarification	13.66

From the table. 5 the information services provided by the ICT groups among their farmer members ranges from general to specific information. Information assimilation, sorting based on need and quality, regular postings, answering queries in responsible manner, maintaining the momentum and research for current information needs, restricting negative / low quality / weed postings are the activities requiring time, resources and vigilance on the part of the admins. Integration of information was found to be the best services they are doing and the farmers required not the advisories or technical support for one of their crops but integrated farming demands better knowledge based decision making which these groups are trying to provide. Byamugisha *et.al.*(2008) found that seminars, women development initiative (NGO), radio, Plan International (another NGO) and other farmers in that order appeared to be the most popular sources of information for the farmers. However, views from the focus group discussion indicated that the most reliable source of information for most people was fellow farmers, friends, relatives, neighbours, and opinion leaders, an indication of quick ways of obtaining oral information. The key informants complemented these responses and in addition mentioned on-farm demonstrations, agricultural exhibitions, written materials (magazines, newspapers, brochures and posters) and the Internet as other sources of agricultural information. Most responses appeared to imply that informal sources of information

were predominant. This may be one of the reasons for preference of farmers managed ICT platforms for information management.

Farmer to farmer information exchange in coconut

An analysis of the distribution of crop based information indicated that 9.20 percent of the messages were on various aspects of coconut and its cultivation. The distribution with respect of other crops were vegetables (26.44 %), medicinal crops (6.13 %), paddy (4.21 %), fruit crops including traditional fruits (14.56 %), enterprises (4.98%), organic plant protection measures (18.39 %), inputs (2.68 %), nutritional formulations (6.13%), soil management (1.92 %), health aspects and environment factors (5.36 %). The information pertaining to coconut was on dwarf varieties and coconut products mostly, very few on plant protection. Technologies regarding management and plant protection were meagre in the groups' messages /postings. Another feature that could be noticed is that the farmers groups of vegetable, paddy etc are more coherent in their exchanges unlike the contents of the coconut farmers organisations like Coconut Producers Company (CPC) or Coconut Producers Federation (CPF). The contents of facebook hosted by them were very poor as required by coconut farmers for management of coconut palms or problem diagnosis and experience sharing as in other popular groups, but posted with only announcements or paper cuttings of the meetings, they organise. Coconut farmers were found to be in the old age category unlike vegetable farmers which fetches income within a short period. Moreover, experiences from coconut cultivation by farmers require long period of involvement or adoption of technologies. The perusal of the ICT information sources on coconut indicated that most of them are by research or extension organisations, in English language.

Table. 6. Profile of the farmer members of the ICT based groups

Sl. No	Profile characters	Categorisation	Percent
1	Age (in completed years)	Less than 25	21.24
		25-50	61.37
		Above 50	17.39
2	Education	Up to X standard	23.00
		Graduation	47.05
		Above graduation	29.95
3	Mode of farming	Family farming (consumption and income)	87.03
		Model collective farming	12.97
4	Information Utilisation pattern*	Not applied any information	20.43
		Management of limited land for vegetable cultivation for nutritional security	66.82
		Virtual experiential learning of farming practices (Triangulation by members)	39.00
		Learned about new and traditional crops	35.72
		Increased use of local fertilisers	33.10
		Organic pesticides preparation methods	40.00
		Practical, simple innovations of farmers	12.86
		Market support for small farmers	15.67
		Obtained seeds (Mainly vegetables)	13.54
		Networking with interested farmers	66.30
		Motivated to farming	28.40
		For obtaining general information on agriculture	62.99

- Multiple responses

Majority of the farmers are using the facebook groups for multipurpose objectives. More than 80 percent of the users or interacting farmers were up to 50 years of age indicating the use of smart phones or computers among them compared to old farmers. Similarly highly educated persons are active in these groups as furnished in table.6. Mostly family farming or urban or semi urban famers resort to ICT for information access and utilisation, as per data in table above. The data also indicated that more than 60 percent of the users are depending on internet farmers groups for their needs of safe food and nutrition of family and for networking with other farmers. Byamugisha

et.al.(2008) also reported that 10-30 percent of farmers utilised farm information for adoption of practices, learning about new crops and production technologies, obtaining inputs and market. They found that urban farming activities are heterogeneous in nature and information needs vary according to farming activities and prefer local language for accessing.

This study pointed to the role of ICT platforms managed by farmers/their groups is gaining prominence in improving access, innovations in message dissemination, and integration of formal sources of information along with farmer level innovations to the information system. The formal extension systems may find ways for utilising these platforms for popularising and managing information effectively. A case in point is the low information management in these farmer forums in case coconut which is the major crop of Kerala state, indicating need of studies for analysis of present systems of ICT based information, content analysis, attributes and treatment of information crop wise and farmer contexts. The validity, reliability and content verification system or methodology also needed for quality and sustainability.

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