

HARNESSING BENEFITS OF COMMUNICATION TECHNOLOGY THROUGH PHONE-IN PROGRAMME: A CASE STUDY

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The agricultural sector is confronted with the major challenge of increasing production to feed a growing and increasingly prosperous population. Factors of particular concern are water shortage, declining soil fertility, effects of climate change and rapid decrease of fertile agricultural lands due to urbanization. However, the growing demand, including for higher quality products, also offer opportunities for improving the livelihood of rural communities. Therefore, new approaches and technical innovations are required to cope up with these challenges and to enhance the livelihood of the rural population. Simply transferring and dissemination of appropriate agricultural innovations would not be sufficient for the empowerment of farming community. Extension agencies, services and workers need to exercise a more proactive and participatory role for dissemination of agricultural innovations to farming community. The role of ICT to enhance the food security and support rural livelihoods is increasingly recognized. Information and communication technologies (ICTs) play a crucial role in addressing the agricultural problems and offers numerous opportunities to sustain and uplifting the livelihood of rural poor. ICTs contribute greatly to Indian agriculture by making information accessible to needy farmers. Benefits in utilization of ICTs for agricultural extension and training purposes are well documented (Hafkin & Odame, 2002; Richardson, 2005). ICT can be used to increase the effectiveness and efficiency of extension work and also help the farmers to utilize such information in solving their pressing problems (Klink in Leeuwis, 2004). Technological innovations lead to changes in the ways we acquire, transmit and use the information and thence to behavioral changes in individuals (Meadow, 1979). Thus, this challenge can be best dealt by adopting better communication technologies that transcend distance and mobility constraints. Creating better opportunities for farmers in Indian context is viewed as an effort towards improving information seeking behavior.

By and large extension organizations in developing countries have two major problems when it comes to having face-to-face contacts with the farmers and researchers: first, physical distances and the second, lack of transportation facilities. Information technology (IT) is already making headway in the area of rural and agricultural development. The phone-in technology can bypass these physical barriers to a great extent through application of appropriate and interactive information mechanisms. This article explores the potential contribution of ICT to livelihood of farmers of various categories and efficiency of agricultural sector in India. The major stakeholders in entire mission of phone-in technology are the farmers. The specific objectives of programmes are as: (i) Content analysis to understand the nature of farmers queries (ii) To understand the diverse social and economic issues arising out from this programme, and (iii) To classify the received phone-calls on states and districts-wise.

METHODOLOGY

The study was designed by ATMA Patna and operational time of the programme was 9.00 AM to 5.00 PM of every Friday of the week. All the queries were addressed in a single contact. Highly qualified and skilled multi-disciplinary team was constituted in collaboration of KVK, Agawanpur (Barh, Patna) and Agricultural Research Institute, Patna of Rajendra Agricultural University, Pusa, Samastipur (Bihar). The team consisted of following experts: (i) Social scientist (ii) Agronomist / Soil scientist (iii) Plant protection (Entomology / Pathology) (iv) Horticulture. However the sole responsibility of this programme was of Project Director, Agricultural Technology Management Agency, (ATMA), Patna.

Table 1 Strategy / methodology adopted for phone-in technology.

<i>Farmers contact call number</i>	Phone no: 0612-2207798 (No toll free number)
<i>Timings and days of contact</i>	The operational scheduled time for the programme was 9.00 AM to 5.00 PM of every Friday of the week.
<i>Contact numbers for all queries</i>	All the queries were addressed in a single contact
<i>Customer service facility</i>	Good customer service to the farmers and feedback provisions are available in the process
<i>Technical expertise</i>	Highly qualified and skilled multidisciplinary team was constituted in collaboration of KVK, Agawanpur (Barh) and Agricultural Research Institute, Patna of Rajendra Agricultural University, Pusa, Samastipur (Bihar). The team consisted of following experts: (i) Social scientist (ii) Agronomist / Soil scientist (iii) Plant protection (Entomology / Pathology) (iv) Horticulture.
<i>Support services</i>	Agriculture as well as other related areas based on their day-to-day needs like seed, fertilizers and other inputs.
<i>Management of programme / call centre</i>	Project Director, Agricultural Technology Management Agency (ATMA), Patna
<i>Content analysis for problem identification</i>	Detailed analysis of calls received and replies thereon are done regularly by call centre manager.

RESULTS AND DISCUSSION

1. Content analysis of queries of farmers

Content analysis of farmers' queries was classified based on their relative ranks. Table 2 shows that most of farmers needed the information related to package of practices of various agricultural and horticultural crops and was ranked first, as 43.53 % farmers asked questions related to these aspects only. It is a fact that farmers were performing these activities in their daily routine, hence were aware about these activities but information about recent advancements in production technology were sought through phone-in programme. Production technology of medicinal and aromatic crops was ranked as second as 36.20 % respondents inquired about its scientific cultivation. This is new area where farmers can fetch a good income. Information on scientific dairy farming was ranked third as 34.34 % farmers sought this information from the experts. Interestingly, 31.89 % farmers showed their willingness to opt for other income generating activities like mushroom production technology, vermi-composting etc. Marketing aspects of agricultural produce was ranked as the fifth priority, as 18.96 % respondents marked it

important. Farmers (15.51%) were also interested to know about various institutions like Agricultural Technology Management Agency (ATMA), Indian Council of Agricultural Research (ICAR), State Agricultural Universities (SAUs); as specific questions were asked about their mandate, activities and functioning. About 12.06 % farmers were eager to learn about the process of getting crop loans, Kisan Credit Card and other banking aspects. About one-tenth (10.34 %) of the farmers asked about Resource Conservation Technologies (RCTs) and 8.79 % were interested in rearing of fish. Few farmers (5 %) also enquired about poultry farming, and how to prepare the project for bank finance. This shows that farmers were asking diversified questions through this programme and the phone-in programme was one help-line available to them from where they could get all relevant information for their day to day farming needs.

Table 2 Content analysis of calls received through phone-in technology, Bihar, India (N=1160).

Sl. No.	Area	f	%	Rank
1	Package of practices of agricultural and horticultural crops	505	43.53	I
2	Production technology of medicinal and aromatic plants	420	36.20	II
3	Scientific dairy farming	403	34.34	III
4	Other income generating activities like mushroom production technology, vermi-composting etc.,	370	31.89	IV
5	Marketing of agricultural produce	220	18.96	V
6	Institutions like ATMA, ICAR, KVK, SAU etc.,	180	15.51	VI
7	Credit and banking aspects	140	12.06	VII
8	Resources conservation technologies	120	10.34	VIII
9	Rearing of fish	102	8.79	IX
10	Poultry farming	58	5.00	X

2. Lessons learnt from the phone-in programme

The major lessons learnt from this case study are as follows.

- Knowledge and information have become 'commodified' (Buttel, 1991) and farmers have been increasingly called on to pay for services. Reforms in financing extension

shows towards cost recovery, aside from radical reform measures, such as those just reviewed. There has been a push by governments for extension systems to institute cost recovery for services rendered. As the study shows that though, there was no toll free number for this phone-in programme, response of farmers was incredibly encouraging, it shows the willingness of the farmers to pay for services which are useful to them and also an increased level of awareness amongst them.

- The knowledge available was better harnessed to disseminate the socially acceptable, economically profitable, environmentally safe, and practically efficient agricultural technologies amongst the farming community in their own language and at grass root perspective.
- This sincere effort by ATMA, Patna established a network of relationships among scientists, experts, policy makers, extension workers, farmers and other stake holders which in turn may be used to handle the other issues like traditional knowledge systems available with farming community to enrich the knowledge bank in agricultural sector and their application in farmers' fields. The phone-in programme also provided an opportunity for agricultural scientists to play a dynamic and pro-active role in transformation of Indian agriculture to a sustainable one.

3. State and district-wise distribution of farmers

3.1 State-wise allocation of phone calls

The data was categorized based on the states from where information was sought (Table 3). Study reveals that most of the calls (96.66 %) were from Bihar state only. Naturally, all the states have their own agricultural universities at state level and Krishi Vigyan Kendras at district level to support the farmers of their state. These institutions provide not only verbal support but also imparted skills to carryout daily farm related activities. Instead of this, phone-in programme crossed the state's boundary which is a clear indication of its popularity. Out of total, few farmers (1.33 %) of Uttar Pradesh also utilized this programme to fulfill their information needs. More interestingly, this programme also attracted the attention of far flung states like Jharkhand, Delhi, Uttaranchal and Andhra Pradesh with 2.01 % of farmers utilizing this facility by ATMA, Patna.

Table 3 State-wise allocation of received phone calls, Bihar, India (N=1160).

Sl. No.	State	%
1	Bihar	96.66
2	Uttar Pradesh	1.33
3	Jharkhand, Delhi, Uttarnchal and Andhra Pradesh	2.01

3.2. District-wise allocation of phone calls

The table 4 reveals that most of phone calls (65.80 %) were made by the farmers of Patna district as this programme was initially designed for them by ATMA Patna. The popularity of Phone-in programme spread slowly as calls were received from almost all over the states. The Patna district was followed by Saran (3.8 %), Vaishali (2.5 %), Nalanda (2.5 %), Aurangabad (2.3 %), Siwan (2.1 %), Samastipur (2.1 %), Buxar (1.3 %), Madhubani (1%), and Bhojpur (1 %) district. However, altogether, other 29 districts of Bihar together made 13.5 % calls.

Table 4 District-wise allocation of received phone calls, Bihar, India (N=1160).

Sl. No.	District (s)	%
1	Patna	65.8
2	Saran	3.8
3	Vaishali	2.5
4	Nalanda	2.5
5	Aurangabad	2.3
6	Siwan	2.1
7	Samastpur	2.1
8	Buxar	2.1
9	Madhubani	1
10	Bhojpur	1
11	Other 29 district	13.5

ISSUES FOR IMPACT ASSESSMENT FOR PHONE-IN PROGRAMME

Indeed IT revolution has virtually shrunk the world and affected almost every walk of life. IT is a tremendous power that could be harnessed for the benefit of mankind, and extension services cannot keep themselves aloof from its application. They need to exploit the potential of ICT to strengthen their own capacities and to educate the farming community.

1. Issues for Social Impact

- Monitoring the impact of phone-in-live programme in agricultural sector requires a better understanding the farmers' viewpoint for adoption and adaptation of an innovative information tool. In Indian context, there are many initiatives based on ICTs, however, these tend to be uncoordinated, and information on different initiatives is not easily accessible.
- The nature of phone-in technology for the overall development of farmers is in itself quite relevant but it requires careful research and development to understand all its aspects. It could be the 'right' choice for agricultural sector when it is linked to livelihood improvement and poverty reduction in the real sense.
- Although it is recognized that uptake of promising ICTs (like phone-in technology) can influence greatly by the availability and / or functioning of input supply systems, credit systems, land tenure arrangements, organization of marketing, distribution of benefits, etc., such social organizational phenomena have mostly been considered as conditions that can hamper or enhance the adaptation of rural phone technology.
- Resource poor farmers especially in India's eastern region who are in high risk and diverse, rain-fed environments face very small windows of opportunity for innovations. Hence, while developing an appropriate information dissemination technology, alteration of boundaries and conditions that affect the space for change need to be considered.
- In a country like India, where population is highly diverse and scattered, it seems very difficult for extension workers to meet the farming community to understand their problems. Here this technology (phone-in-live technology) could have a tremendous impact.

- To provide an enabled dynamic encyclopedia for use by farmers, agricultural extension workers, agri-input dealers and other stakeholders. Programmes like Phone-in live can help in creating a database of farmers' problems which can be utilized by decision makers, researchers, traders etc. for strategic research and policy implementations

2. Measuring economic impact

- Scientific interventions are aimed at reducing transaction costs which would encourage the farmers' participation in competitive markets to meet the broader poverty reduction objectives.
- In economic terms, role of agricultural informatics is to reduce the information search costs in agriculture value chain and to link the decision to grow with that of to sell. The final objective is reducing total transaction costs to increase the incentives for smallholder farmers to participate in commercial agriculture as opposed to being stuck in subsistence farming.

CONCLUSIONS

The phone-in-technology initiative of ATMA, Patna has paved the way for integration of communication and agricultural technology to facilitate the flow of scientific knowledge to needy farmers without any distance and time barrier. The operational scheduled for programme was 9.00 AM to 5.00 PM of every Friday. This programme has immense potential as dependency of farmers on other sources for technical information was reduced. The up-scaling of similar initiatives could target the more number of farm families. More content will be questioned by the research community and other stakeholders. This technology can give better results among well organized learning community in the form of farmers' associations, cooperatives, women's groups, etc. It is hoped that it may open up the existing limitations and will encourage every farmer to access the facility across the state boundary.

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