

ROLE OF ICT IN RURAL INDIA

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On the fateful morning of 13th October 2013, a severe cyclonic storm 'Phailin' hit the Odisha coast near Gopalpur. However, it was not the first time that people of Odisha were facing the wrath of the nature. Devastating cyclone of 1999 had left more than 15000 dead and lakhs of people homeless. In contrast, fatalities due to 'Phailin' were a mere 45, mainly due to uprooting of trees.

This miraculous turnaround, no doubt, was the result of meticulous planning on the part of government with effective evacuation and relief measures. But, one thing that played most important role in saving loss of life and property was – Information and Communication Technology (ICT).

ICT tools enabled *Meteorological* Department to know precise location of the cyclone in the Bay of Bengal and give accurate forecast. Further these tools helped the government and district administration to coordinate their in-house efforts and disseminate important information to the public in real time. Radio and mobile messages were used extensively. This specially helped the rural and remote areas of the state as the people were able to prepare for the cyclone before hand and give a distress call when needed.

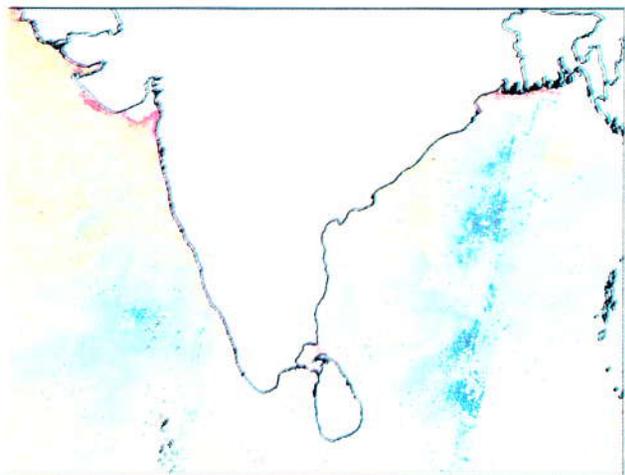
Other than such emergency situations, ICT can contribute immensely to the rural life in India through all such possible applications of ICT as follows:

Resource Mapping

India is vast with abundant natural resources available across the length and the breadth of the country. Some of these resources like water are vital for agriculture. Remote sensing technology can be leveraged for their effective management. Using data from satellites, government agencies and institutions can plan their effective utilisation such as watershed management and development of fisheries.

Following Chlorophyll Image of Indian coastline retrieved from Oceansat-2 Satellite Data, helped increase in fish catch by two-three times. Chlorophyll is a substance found in the leaves of green trees where photosynthesis takes place. In ocean, there are *phytoplankton*, also known as microalgae, which are similar to terrestrial plants as they contain chlorophyll and require sunlight in order to live and grow. These phytoplankton are food for small fish which in turn are food for bigger fish. This way, if we come to know the exact amount of the phytoplankton at any place, we can predict the fish number in that area.

About 70 lakh people living along the Indian coastline, spanning over 7516 km, are depending on fishing for their livelihood. Locating and catching fish is always a challenging task. A hand held GPS device can help fishermen navigate in the sea. They can go out further from the coast without fear of getting lost, increasing their catch manifold. Earlier, when a fisherman had a good catch, would find it difficult locating the exact spot the next day. This was time consuming, but now, equipped with GPS, he can locate and record all favourable spots and get there the next day without any hassle. Also, often reports of fishermen being arrested by neighbouring countries are received when they inadvertently enter their territorial waters. Solution is a GPS-enabled device, which will alert the fishermen as and when they are about to enter



Chlorophyll Image retrieved from Oceansat-2 Satellite Data

a foreign territory. An app 'Fisher Friend' gives fishermen alerts on weather, potential fishing zones and maritime boundaries.

ICT for Agriculture

One of the challenges for farmers in rural India is their lack of access to market information. This creates an imbalance in bargaining power with urban buyers which are big companies that have the resources and information to influence the market. Other than market information, a farmer needs to know about weather on a day to day basis, about new technologies and various government schemes for farmer welfare. With the use of ICT, this information asymmetry can be solved effectively.

Up till now in India among various media, radio, television, literature and newspapers are certainly most utilised by the extension workers to transfer agricultural technology to the huge illiterate and literate segments of the rural populace. But this approach has some major drawbacks one, there is limited scope to get feedback from farmers and second it is not demand driven. One farmer may require information about new rice variety, but radio and newspaper may be giving information about sugarcane. These anomalies can be effectively solved by using IT tools. Through these, we can give exact information that a farmer might be looking for without any delay. Also it can be a two-way process using interactive tools and farmers' opinions and queries would reach the desired officers within seconds.

The Government is actively promoting use of ICT to reach the farmers. Some of the initiatives are described as below:

- i) **Kisan Vikas Kendras (KVK)** form the backbone of information and technology dissemination in India. At present, around 630 KVKs are in operation whereas several new ones are being established. These KVKs work as a link between scientific community and the Indian farmer by demonstrating new technology at district level. The present Government has asked KVKs to use more and more ICT tools in their work to reach the remotest farmer. Generous funding is being provided for this.
- ii) **Mera Gaon Mera Gaurav** is a scheme in which Agri-Scientists would go to villages and help

farmers adopt new technologies. Again, ICT can be very effective in this. Scientists can form WhatsApp and facebook groups with youth of the villages and interact with them more frequently.

- iii) The Government is working on linking all agricultural colleges of India through IT. This way there would be more interaction among the academics so that any good technology developed anywhere would reach other parts without much delay.
- iv) Easy access to internet is a problem in India, especially in rural hinterland. In many villages network coverage is poor. Further, not everybody can afford a laptop or smart phone in rural India. The problem of connectivity would be largely solved by connecting all Gram Panchayats through cable broadband under **Digital India Initiative**. Also **Common Service Centres** in villages will make sure that even the poorest have access to the affordable internet services.
- v) **Kisan Call Centre** is an expert advisory system. The farmers need to call the toll free number 1800-180-1551 to seek expert advice on different matters related to agriculture and allied sectors.

mKisan Portal

It (<http://mkisan.gov.in>) is an effort to provide information to the farmer at the single place. We know that **internet penetration in the countryside is still abysmally low, therefore, mobile messaging can be the most effective tool. So an SMS service on this portal was also launched on July 16, 2013 by the President of India.**

This mKisan SMS Portal for farmers enables all Central and State government organisations in agriculture and allied sectors to give information/services/advisories to farmers through SMS in their language, preference is given to agricultural practices and location. Semi-literate and illiterate farmers have also been targeted to be reached through voice messages.

In addition to above, various farming related apps can be downloaded from mKisan portal. E.g.-

- i) **Kisan Suvidha** - it is an omnibus mobile app developed to help farmers by providing relevant

information to them quickly. This app has following information-

- information on weather of current day and next 5 days,
 - market prices,
 - agro advisories,
 - plant protection,
 - Integrated Pest Management (IPM) practices
- ii) **Pusa Krishi:** The app will provide farmers with information related to new varieties of crops developed by Indian Council of Agriculture Research (ICAR), resource conserving cultivation practices as well as farm machinery.
- iii) **Bhuvan Hailstorm App:** A mobile app has been developed to capture crop loss due to hailstorm. Agriculture Officer will go to the field with mobile or tablet loaded with this mobile app. The captured data will automatically be plotted to Bhuvan Portal and analysis can be done easily. This will reduce the delays in the payment of compensation to the farmers.
- iv) **Crop Insurance App-** It will provide all the information about government crop insurance scheme. It can be used to calculate the Insurance Premium for notified crops based on area, coverage amount and loan amount in case of loanee farmer.
- v) **AgriMarket-** This mobile app can be used to get the market price of crops in the markets within 50 km of the device's location. There is another option to get price of any market and any crop in case person does not want to use GPS location.
- vi) **Pashu Poshan-** With its help balanced ration is formulated while optimising the cost considering animal profile, i.e. cattle or buffalo, age, milk production, milk fat, and feeding regime etc. and milk producers are advised to adjust the quantity of locally available feed ingredients offered to their animals along with mineral mixture.

ICT in Dairy Sector

Emphasizing on the 'White Revolution', in his budget speech, Union Finance Minister made an allocation of Rs 850 crore for four programmes — *Pashudhan Sanjeevani*, *Nakul Swasthya Patra*, *e-Pashudhan Haat*, and National Genomics Centre.

Here lies the scope to utilise IT for dairy development. *Nakul Swasthya Patra* is a 'health card' that can help the dairy farmer to keep a record of his livestock, as well as ready information on the age and dates on which he should get his animals vaccinated and inseminated. The card would keep track of the veterinarian who has given the medicine, vaccination, artificial insemination and genetic background of the bull or semen used. On the other hand *e-Pashudhan Haat* wants to create an online platform to buy and sell cattle.

It is a known fact that farmers depend on informal channels such as friends and relatives to buy and sell their cattle. Therefore, a need for a virtual livestock market was long felt. 'Health Card' of an animal integrated with *e-Pashudhan Haat*, can help farmers in buying the desired cattle. This can be associated with *Pashu Posahn* app also.

Also, farmers would be able to keep the past record of their cattle e.g. health, fertility, production, etc. This way, many concepts of genetics and breeding could be encouraged to develop dairy sector.

Another area for IT application in dairying can be automatic milking systems which are computer controlled stand alone systems that milk the dairy cattle without human labour involved.

ICT for Effective Implementation of Welfare Schemes

Every year, government spends billions on the welfare of the poor. As around two-third of the total population and large number of the poor reside in rural areas, most of these welfare schemes are targeted at the rural populations. Use of ICT can improve the efficacy of these schemes, plug leakages and eradicate corruption. Some examples are described as follows:

- i) ICT will be used in *Pradhan Mantri Fasal Bima Yojana* in a big way. In this, a farmer will have to send the photo of his damaged crop to authorities on net. Then the government will also access damage through satellite imagery of the field. After that insurance claim will be directly transferred to farmers' account. Thus delays and corruption in payment of claims would not be

there. This scheme has the potential to change the way farmers' look at crop insurance.

- ii) The Government is investing a lot in irrigation through *Pradhan Mantri Krishi Sinchai Yojana*. IT can be used here also for **Smart Agriculture** by measuring soil moisture through and then automatically supplying water through drip irrigation.
- iii) Leakages in **Public Distribution System** can be plugged by connecting the ration shop through internet and using biometric authentication system of beneficiary.
- iv) Through **Direct Benefit Transfers**, the government is trying to give subsidy directly in the bank account of the beneficiary. This has effectively stopped black marketing of subsidised LPG cylinders.

ICT in Rural Education and Skill Training

Thanks to the relentless efforts by the government and schemes like mid day meal, India has achieved universal enrollment at primary level. But one worrying fact is that learning outcomes of enrolled children are very abysmal. Attention needs to be focused on this now. Using ICT tools in education can help improve the learning among the kids e.g. through projector and computer, teachers can make children understand complex concepts easily. But problem here would be to train the teachers in use of ICT tools so that their attitude towards teaching may be changed.

The Government is promoting use of ICT through *Rashtriya Madhyamik Shiksha Abhiyan*. Under this following steps are being taken-

- The establishment of smart schools, which shall be technology demonstrators.
- Provision for engagement of an exclusive teacher for ICT, training all teachers in use of ICT.
- Development of e-Content.
- National Award for teachers using ICT in schools in the teaching learning process.

Also a project called *e Basta* is conceived under **Digital India Initiative** to make school books accessible in digital form as e-Books to be read and used on tablets and laptops.

Further, ICT can be used in skilling rural youth under various Government skilling programmes e.g. Skill India, *PM Kaushal Vikas Yojana*.

ICT for Rural Health Sector

Healthcare is the right of every individual but lack of quality infrastructure, dearth of qualified medical functionaries, and non-access to basic medicines makes it difficult for the poor to access Medicare. There are few Primary Health Centres in villages and many of them do not have doctors as no one wants to be posted in remote rural areas. This can be solved effectively through **Telemedicine** in which a doctor sitting in a city can interact with the patient in the remote village and prescribe medication. This is not only cheap but also convenient and less time consuming.

Also apps like '*MeraDoctor*' are launched by private sector which offers WhatsApp-like chat sessions between patients and licensed doctors to answer questions.

Government has also adopted ICT in health by issuing biometric smartcards to the beneficiaries under *Rastriya Swasthya Bima Suraksha Yojana*.

ICT for Marketing Needs in Rural India

ICT in rural areas will provide unique opportunities to producers of rural products, agriculture/agro-processing products, rural handicrafts etc. to have direct access to markets. It can also be used to promote Village and heritage tourism. Many artifacts are made by the women in the villages which can be sold online to outer world.

One important reform undertaken by the Government in the field of agri-marketing is **National Agriculture Market**. It is a well-defined plan to integrate the *mandis* through internet. It enables a farmer to sell his produce anywhere in India depending on the highest price which means a trader in Mumbai can buy a farmer's produce kept in a *mandi* of Delhi.

Conclusion

Thus we see that ICT has immense potential. If this potential is leveraged effectively, it can uplift the lives of the rural masses in a big way by bridging the cultural gap between different parts of the country.

(Author is an IT Expert)