

E-governance in a fisherman's community: A case study of Pondicherry

B. Bowonder, Akshay Jain and Narendra Kumar

Abstract

e-governance can make governance more efficient and more effective by improving governmental process (e-administration), connecting citizens (e-citizens & e-services) and building external interactions (e-society). E-citizens e-services and e-society are relatively new inclusions within the e-governance as they rely on the new information and communication technologies (ICT). This paper analyzes the application of new information and communication technologies (ICT) in e-governance by studying a detailed case on e-governance initiative in a fisherman's community in the union territory of Pondicherry, India taken up by an NGO.

Keywords

Information and Communication Technologies, Information Village, Rural Knowledge Centre; e-Governance and networked society

Biographical notes

Dr. B. Bowonder is Dean for Tata Management Training Centre, Pune. His contact address is: Dean, Tata Management Training Centre, No.1, Mangaldas Road, PUNE – 411 001, India, Tel: 91-20-612 0141, E-Mail: bowonder@tata.com

Akshay Jain is a Research Associate at Administrative Staff College of India, Centre for Energy, Environment & Technology, his contact address is 26, Gulmohar Extension, Indore – 452 001 Madhya Pradesh. INDIA, E-mail: jain21akshay@rediffmail.com

G. Narendra Kumar, IAS is a Secretary to Governor, Industries, Science, Technology & Environment, his contact address is Raj Nivas, Pondicherry – 605 001 Tel: 91-413-334085 Fax: 91-413-334025. E-mail: narendra_kumar@hotmail.com

"People lack many things: jobs, shelter, food, health care and drinkable water. Today, being cut off from basic telecommunications services is a hardship almost as acute as these other deprivations, and may indeed reduce the chances of finding remedies to them".

- Kofi Anan, UN Secretary General

Introduction

E-Governance is defined as a mere delivery of government services and information to the public using electronic means but E-governance is not just about government web site and e-mail. It is not just about service delivery over the Internet. It is not just about digital access to government information or electronic payments. It will change how citizens relate to governments as much as it changes how citizens relate to each other. It will bring forth new concepts of citizenship, both in terms of needs and responsibilities. E-governance will allow citizens to communicate with government, participate in the governments' policy-making and citizens to communicate each other. E-governance is the process of creating a knowledge community, which is allowed to participate in government decision-making process, reflect their true needs and welfare by ICT as a platform [1].

The Internet era ushers with it a world of greater inter-connectivity, accelerating flow of data, and shrinking time and national boundaries. But Internet delivered through dial up connection is not an affordable option for community uses. Inter-connected superhighways of Information and Communication Technology (ICT) and the rapid fall in the communication costs are changing the communication landscape in many communities. Over 300 million people are now wired in around the globe and around one billion will be online by 2005. This rapid fall in the costs of communications and computing and the extraordinary penetration and accessibility of World Wide Web is turning the world into a global village. The changes brought about by digital convergence, falling costs and universal accessibility are opening up a number of opportunities.

The magnitude of digital divide between the urban rich and the traditional rural communities is becoming an area of concern. Many initiatives are being implemented for reducing the digital divide. This study focuses on one of the major initiatives that have embarked upon by a voluntary agency in Pondicherry. This was selected since this has helped the rural poor

to benefit in a number of ways and the modes seem to be sustainable. This case study explains the evolution, implementation and growth of the project.

Government has supported various initiatives through government's technology delivery model. Many development agencies started looking for alternative models and institutional support systems. Only this can help in reducing the digital divide. In this case a non-governmental agency developed an ICT platform for an economically backward community [2]. This case study looks into the evolution of an e-governance system that provides an affordable and user-friendly platform which helps in creating a knowledge community.

ICT Platform as a Development Enabler

Poverty and deprivation has been the bane of the society for long. The advances in Information and Communication Technology are providing a new intervention that could help the traditional communities to meet their aspirations and needs. ICT gives the opportunity to leverage the transfer of knowledge, empowering people in ways that were not possible. Essentially ICT works as a platform that allows many new forms of interactions among the subjects. The seven modes that could benefit from ICT are:

- Increased access to market so that transaction efficiency is enhanced
- Improved productivity through newer ways of work
- Improved decision-making capability because of elimination of information asymmetries.
- Allowing newer modes of economic transactions with remotely located users
- Helps in enhancing the skill sets through rapid learning and acquisition of newer knowledge
- Opening up newer employment opportunities that did not exist before, in terms of newer services, newer products or newer markets
- Better time scheduling and planning of activities and reducing time wastage

Information and communication technologies are increasingly considered development tools to fix up the problem of digital divide. ICT includes Internet, telephones, faxes, digital radio, mobile phones, pagers and satellite technologies that help people gain access to, process, respond to, and distribute information in a faster and more far reaching way than ever before.

ICTs at a minimum can enhance the livelihoods of the poor and improve market efficiency. ICT helps in increasing the literacy rate through distance learning; gender equality through the empowerment of women who gain greater access to economic opportunities and civil society; sustainable development through easier dissemination of appropriate information; more balanced social relations through the greater accountability imposed on the powerful by the marginalized; and other global goods.

Numerous success stories - and failures - are emerging in this field of community informatics, which aims at finding ways to harmonize community capital with online ICT platforms, as shown in **Table 1** through applications in diverse economic contexts.

Table 1 : ICT Applications in diverse economic contexts

S.No.	Project	Application	Country
1	FarmNet	For agricultural workers	Uganda
2	Nabweru & Buwama Telecentres	For economic empowerment of women	Uganda
3	MahilaWeb	For information sharing about women	Nepal
4	Pakistan	For farmers	Pakistan
5	Tortas	e-commerce portal for homemade cakes	Peruvian
6	Bankilare	A Community network	Nigeria
7	Across Borders	Connecting Palestinians in refuge camps	Palestine
8	MarketWatch	Price information service	Mongolia
9	NairobiBits	Web services center for slum children	Kenya
10	Street Children Telecenter	For IT skills	Ecuador
11	Grameen Phone	For low cost telephone service	Bangladesh
12	HealthInfo	For IT among health workers	Ethiopia
13	Village Leap	For selling scarves	Cambodia

Similar initiatives have been taken in various part of India. Of these the very first and major initiative was taken by M.S. Swaminathan Research Foundation (MSSRF), Chennai, with the collaboration of IDRC, Canada in the form of 'Information Village Research Project' (Rural Knowledge Center) in 1998 by **electronic networking** the villages of the Union Territory of Pondicherry with each other and the rest of the world. The basic idea behind this project was to empower the information deprived rural community with the desired information, which will help in betterment of their standard of living using the various information and communication tools. The project has been successful in this regards and this success has been recognized internationally with the Stockholm Challenge Award for the year 2001. This case study essentially is an analysis of this experience. This examines the following aspects, namely:

- The beneficiaries
- Benefits to the beneficiaries
- Community involvement
- Self-sustainability of the project
- Replicability of the experience and
- Critical success factors

Origin o the Project

"**Electronic networking**" involves using **ICTs** to improve communications and increase access to information. Once formalized, this networking can be considered a virtual organization. In particular, the information flows of traditional orders are disrupted; the conventional barriers to communication between organizations are gone, thereby opening new horizons.

ICTs are proving useful to stimulate cooperation, to share knowledge and ideas, to develop partnerships, to seek consensus and areas of agreement, and to broaden perspectives for consolidating activities. In the cultural field, a series of actions are attempting to revitalize areas by promoting their history, traditions, architectural heritage, etc, and are using ICTs to facilitate field work (cataloguing, databases) and to establish a link with outside expertise. ICT essentially helps in the social transformation of the traditional societies either by providing new knowledge, new linkages and new work forms [3].

However, rural areas are suffering from poor communication infrastructure and service support and do not have the skills to use these technologies. In spite of the handicaps linked to poor infrastructures and qualifications, learning about the power of electronic tools and networks and using this force in rural areas can be a valuable experience. Networking can be an important platform to support rural life and the economy and in so doing improve the standard of living of the rural society. If appropriately designed and delivered ICT platform can help in immense benefit to the poorer sections of the society.

The Information Village Project was initiated by Dr. M.S. Swaminathan Research Foundation with the objective of "reaching the unreached". The project is one of the major initiative to bridge the digital divide in Pondicherry region by providing access to ICTs to the rural community thereof. The villages in this region have a very poor communication infrastructure with the tele-density of less than one phone per 500 people. For the people residing here information, which is widely available otherwise, was a scarce resource. They were majorly dependent on the local shopkeeper, the market place and the input supplier for most of the information. The linkage to the external world was found to be normally weak. This project started with the objective of providing the information, which cater to the needs of the rural society by setting up of village information shops with the access to a basket of modern information and communication technologies. The project started with setting up of six-village information shops (commonly known as Rural Knowledge Center (RKC)). The idea was to use Hub & Spoke Model for information dissemination i.e. One of these centers will be hub where all the required information will be collected, filtered, transformed and distributed to the remaining knowledge centers. Details are discussed separately.

Idea Initiation

The importance of the use of modern information and communication technology (ICT) in promotion of sustainable agriculture and rural development has been emphasized by the foundation for long. The 'Annual Dialogue' in 1992 was on the theme of "Information Technology: Reaching the Unreached". Out of this dialogue emerged the concept of the Rural Knowledge Center (previously known as Information Village). The idea was proposed in the meeting and project got conceptualized through the inputs of many experts from various countries who attended the 'Annual Dialogue'.

This project was envisaged as knowledge makes a positive difference in advancing rural livelihood security. Information held in many different locations could be accessed, reformatted and value added to suit to the local needs and disseminated using ICT platforms specially designed for the aforesaid purpose.

Project Conceptualization

The RKC project draws its sustenance from the holistic philosophy of Mr. Swaminathan, which emphasizes integrated pro-poor, pro-women, pro-nature orientation for development and community ownership and encourages collective action for spread of technology. This in itself is based on the concept of 'Antyodaya' given by Mahatama Gandhi over 60 years ago, who once said –

“Recall the face of the poorest and the weakest man whom you have seen and ask yourself, if the steps you contemplate are going to be of any use to him. Will he gain anything by it? Will it restore to him control over his own life and destiny?”

The idea of Information Village, which emerged in 1992, was later conceptualized as a project by MSSRF. The project was conceptualized with the five basic philosophies:

- Community Ownership
- Bottom-up Approach
- Principle of Inclusiveness
- Gender sensitivity
- Location specific information

The RKC project aimed for empowering communities with information in the fields of environment, health, sustainable agriculture and aquaculture, meteorology, markets and prices. More emphasis was to be placed on the human and animal population supporting capacity of the eco-system, particularly with reference to land and water resources.

- It was proposed that the community would own each Knowledge Center and the volunteers selected by the community would run and manage these centers. The community was expected to provide with a quality rent-free space setting-up of Knowledge center. The foundation would initially set-up the Knowledge center providing all the equipments and training to the volunteers. Later the volunteers

would manage the center, with project staff giving guidance whenever required. As the community would own the center the responsibility of maintenance of the Knowledge center i.e. electricity and telephone charges lie on the community.

- Based on the principle of inclusiveness, all the members of the rural population should be allowed to derive the benefit from the center regardless of age, caste, gender or social status.
- Gender sensitivity was proposed into all the operations i.e. assessment of information needs and managing the Knowledge centers.
- The project was designed to provide knowledge on demand to meet local needs using the World Wide Web, and it does so through bottom-up process. The process would start with local volunteers polling the villagers to find out what knowledge they want, later gather the required information, feed it into the intranet and provide access through nodes in different villages.
- Value addition to the raw information, use of the local language (Tamil) and multimedia (to facilitate illiterate users) and participation by local people right from the inception was proposed. The project gave highest priority to locally relevant information. The generic information from external sources would have to be transformed – i.e. selectively compiled, edited and integrated with local Knowledge – to become relevant or useful in the local context.

Objectives of the Project

With this in mind a number of objectives that could be achieved were identified so that it could meet the diverse needs of the rural population and they were:

- Setting up of villages information shops that enable rural families access a basket of modern information and communication technologies Training educated youth, especially women, in rural areas in operating information shops;
- Training the rural youth in the organization and maintenance of a system that generates locality relevant information from generic information;

- Maintenance, updating and dissemination of information on entitlements to rural families using an appropriate blend of modern and existing channels of communication;
- Conducting impact assessment based on organization of surveys, participatory rural appraisal, and other appropriate methods of data gathering;
- Building of a model in information dissemination and exchange in rural areas that uses advanced information and communication technologies.
- Conducting research on formation of multi-sectoral partnerships (private/public/government/NGOs) with rural communities to form a sustainable model of ICTs for rural area
- Development of ICT-based applications for rural areas, especially community banking online and distance education, to access their potential to contribute to the sustenance of a rural ICT programme
- Organization of workshops and other interactions such as consultation with policy makers to sensitize them to the critical issues in the use of ICTs to promote human development in rural areas
- Exchange of research results with telecenter programmes in different parts of the world, to arrive at a more comprehensive picture of impact assessment and sustainability issues and its possible internalization in project implementation
- Development of a set of parameters to make a choice of access technology and technology for powering the access devices

Project Implementation

Once the project was conceptualized and objectives of the project were set, identification of the suitable place was of utmost importance for the implementation of the project. The selection of the appropriate village for setting up of the Information Village was carried on by making a detailed survey of around 20 villages in the district. This survey was majorly focused on:

- Identification of information needs
- Identification of primary information disseminator
- Identification of information resource centers

- Identification & design of appropriate forms of services

Individual village profiles were prepared based on Participatory Rural Appraisal (PRA) technique. And based on the results of the survey it was on 1st February 1998 the idea of information empowerment of the rural community was actually implemented with the inauguration of First Rural Village Center at Villianur village, 20 km from Pondicherry in southern India. Dr. Ismail Serageldin, Chairman of the consulting group on the International Agricultural Research, inaugurated it.

The project, implemented in collaboration with IDRC, Canada, was located in the Union Territory of Pondicherry due to certain initial advantages:

- An accessible government
- A reasonable telecom infrastructure
- Existence of self-administered village community, though in the villages of Pondicherry region there is no formal Panchayat Raj system (i.e. elected panchayat) but the old traditional system of administration by the village head still works very well.
- Existence of large homogenous organization with plan membership
- Bio-village project being fully operational in this region

This ICT project was expected to complement the activities carried out under the Bio-village project and utilize the advantages generated from that project such as group mobilization, a more accurate identification of the ultra poor, etc.

The Villianur village was selected for the first RKC as it is a commune headquarters. This was where the 'last-mileposts' in development administration, such as BDO's office are located. Telephone facility is available here, including access to Internet through VSNL. From this central location, it is proposed to extend the wireless network for data and voice communication to other village information shops.

All the activities of the project were preceded by a set of detailed surveys of the region for incidence of poverty, status of literacy and education and the state of telecom infrastructure. A separate survey was carried out to identify existing communication habits

and channels of information flow. A good picture of the rating of various information sources by the rural families was also generated.

This detailed survey covered 10% of the resident families in the proposed area of coverage. It got started in April 1998 and about 320 households were covered by July 1998. The survey ended with capturing of certain trends:

Reach of electronic media, especially Cable Television is reasonably high when one considers the prevalence of poverty in village surveyed, clearly shown in **Table 2**.

Table 2 : Reach of cable television in rural areas of Pondicherry

Village	Number of Telephones		TV Sets (with cable connection)	Total Number of Families	Families Below Poverty Line*
	Public	Private			
Sorapet	1	3	300 (150)	626	264
Vambupet	1	Nil	100 (10)	160	118
Sellipet	2	Nil	110 (50)	424	313
Thondamanatham	2	2	50 (50)	472	51
Ramanathpuram	2	2	50 (50)	356	50
Pillayarkuppam	1	1	75 (50)	421	54
Olaivaikkal	1	Nil	15 (0)	106	12
Oussudu	1	Nil	25 (0)	444	5
Uruvaiyaru	1	4	50 (50)	531	45
Mnaglam	4	1	75 (30)	569	268
Kizhur	2	3	30 (30)	400	120

Details as of June 1998.

* Poverty line is officially defined as an annual family income of Rs. 16,000 or less.

Note: A survey carried out in the neighboring region (Dindigul district in Tamilnadu State) in January-March 2000 covering 108 hamlets with a population of 44,211 families (about

2,29,897 individuals) showed that there are only 38 public phones in this area, while there are 3,897 TV sets in private homes.

The predominant sources of information are the local shopkeeper, the market place and the input supplier. A very considerable amount of information transaction takes place between the rural poor households and this also acts as a primary source of information. In other words the information channels starts and terminates within the supra- locality. The linkage with the external institution is normally weak, as shown in **Fig. 1**.

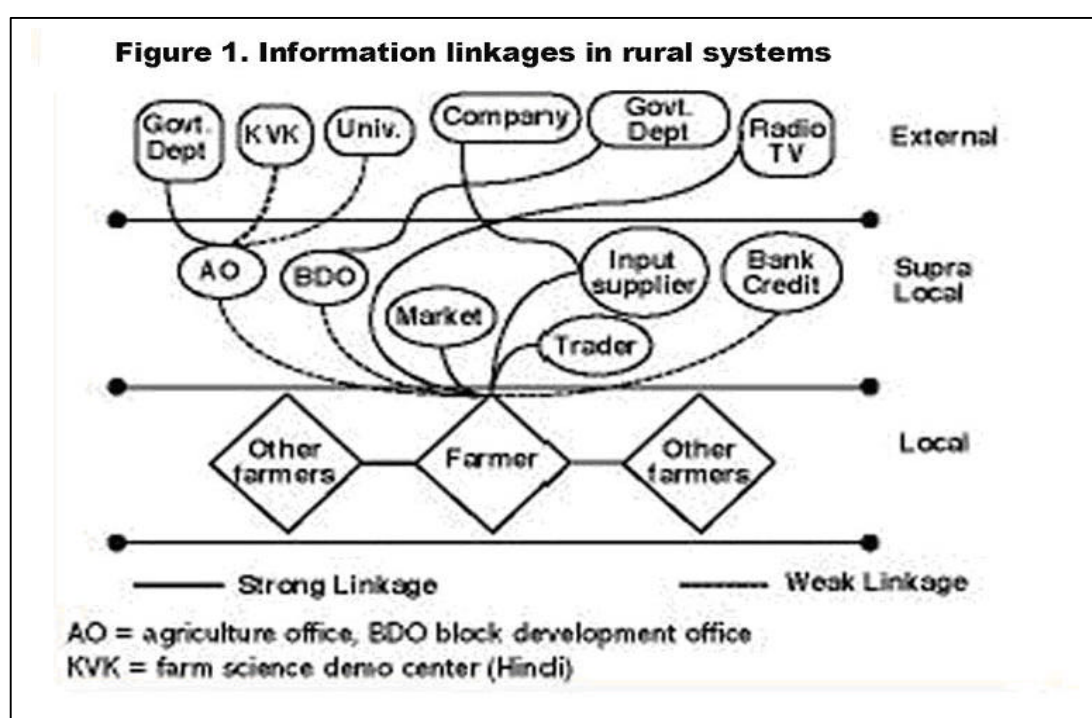


Fig 1 : Information linkages in rural systems

There is wide spread perception that channels of development information available to the public, such as the AO or the BDO, are not very effective, because the information flow through these channels does not corresponds to material/benefit flow which should be the results.

Also from the earlier survey two striking features came into picture. One is, 11 villages in the area around Villianur had a population of 22,000 but only 18 public telephones and 16 private telephones – an average of not even 1 phone per 500 people. Two is, a high percentage of the household are below the poverty line, as shown in Table 2.

The detailed surveys and their results clearly identified the information needs of the rural population and showed the direction for the proposed ICT project. Also the trends made it clear that the information center at the villages need to complement the existing local channels of information to gain credibility and then go beyond to provide value-added information. Information requirement of the information deficient villagers could best be met by strengthening the existing linkages. Also the generic knowledge from external sources would have to be transformed i.e. selectively compiled, edited and integrated with local knowledge – to become relevant or useful in the local context. This is necessary to ensure that the system is demand-driven.

But another major step for the success of the ICT project was the community involvement and their voluntary participation. The needs for generation of interest of the people living there and their acceptance of the project.

To achieve this, the foundation had involved the local people from the initial stage of making surveys. They clearly mentioned about themselves and the proposed project before gathering any data from them. Also the success of Bio-village project, presently in operation, helped the foundation in building required trust among the rural population. After the survey and selection of places for establishing the Knowledge Centers the project staff frequently visited the selected villages. They held several group meeting presenting before the village their future plan and telling them how this will be beneficial for them. Also they arranged numerous corner meeting with the village heads, who have a strong say in the village administration, discussing with them their information requirement and how this project will achieve this and help in improving the life of the people residing their. Generally there are 8-10 village leaders who form the informal panchayat and administer the normal working of the village. Convincing the village leaders is the most important as they are the people who make decision on behalf of the whole village.

These group meetings and corner meetings; presentations and discussions made local people understand their implicit needs for information. This informal nod from the village's side leads to formal setting up of the Rural Knowledge center. Before starting any Rural Knowledge center there are few initial conditions that need to be satisfied by village. Three basic points were emphasized from the start.

- Community Ownership and involvement:
- No specific treatment for any caste
- RKC is initiated as a development tool and not as a technology demonstrator

The community has to identify and provide an accessible quality rent-free space (preferably a public place). The community has to identify two to four volunteers (preferably men and women in equal ratio making gender sensitivity effective) and agrees to compensate the volunteers whenever required. The volunteers are young men and women with requisite qualification and skill sets, chosen by the community. They manage the Rural Knowledge center on a voluntary basis. The space provided by the community should be a common place where any local person can visit without any restriction. There should not be any discrimination on the basis of age, sex, caste or social status. The RKC should be a place of information where information is gathered, edited, localized and provided for the benefit of the local population. It is not a place just for technology demonstration.

To get a bias free assessment of the community needs participatory rural appraisal was used as the starting point. Participatory Rural Appraisal (PRA) is carried out in order to identify the information needs of the community. PRA is also used to assess how far the community was willing to go in operationalizing the local center, by way of making in-kind or cash contributions. This was also used in the identification of a group of individuals, who would be chosen by consensus by community for managing the local knowledge center. The project staff suggested that 50% of them must be women and they should have sufficient education, at least up to high school.

To bring a seriousness and legal understanding between the two parties (i.e. the foundation and the village community), an MOU is signed with clear goals.

The village community was entrusted with the following responsibility:

- Providing rent-free space
- Common place i.e. where entry for everybody is permitted
- Electricity and Telephone bills to be borne by the community
- To take due and proper care of all the equipments provided for the RKC
- No restriction on project staff in RKC
- Volunteers identified and selected by the village community

MSSRF undertook following activity:

- To provide the required training to volunteers
- To provide the required equipments and computer systems for RKC
- To maintain the equipments regularly
- To guide the volunteers in content development
- To guide the volunteers in general management of the RK center

Technology

The project envisages the use of a hybrid of wired and wireless network – consisting of PCs, telephones, VHF duplex radio devices and e-mail connectivity through dial-up telephone lines – that facilitates both voice and data transfer for the electronic knowledge delivery to the people residing in the villages of the Union Territory of Pondicherry in southern India.

The main technology used here is the VHF full duplex radio for instantaneous communication. In this the design is based on two major components. The intelligent controller of 2-channel network, capable of interfacing with telephone line in full duplex operation. The controller does the primary switching with EPABX/PSDN and diverts the call to the selective subscriber unit. The controller with two Motorola GM300 base radio makes as a full duplex single channel with the capability to connect two telephone inputs. It can store up to 4000 subscribers ID for selective calling.

The subscriber unit is based on Motorola GM300 and GP300. With the combination of two numbers of GM300 with the suitable interface board of ST869 in full duplex mode, we can add the intelligent controller to the subscriber in full duplex mode. With the help of the interface board, we can combine both Rx & Tx GM300 radio and convert as a loop line interface. This loop line can be connected to the exchange or to a simple telephone. The interface is capable of generating ring voltage needed for the telephone instruments to generate the ring tone. The interface also has an intelligent system to scan 15 channels. The advantages and disadvantages of the VHF technology is elucidated in **Table 3**:

Table 3: The advantages and disadvantages of the VHF technology

Advantages	Dis-advantages
<ul style="list-style-type: none"> Distance from the Hub is maximum 25 Km. 	<ul style="list-style-type: none"> Maximum speed is 4800 bps
<ul style="list-style-type: none"> Signal transmitted 360 degrees. 	<ul style="list-style-type: none"> File size should be below 1.5 mb
<ul style="list-style-type: none"> Use of voice as well as data in the same transmission 	<ul style="list-style-type: none"> Messages sent only sequentially, not simultaneously to all the villages
<ul style="list-style-type: none"> Retransmit any type of files like html, word, power point, images, excel etc. 	<ul style="list-style-type: none"> It supports only 7-8 villages

This technology has been successfully used in the project for two-way communication and also for which the project has achieved 'Motorola Gold Award' for 2000.

Special attention was given to the selection of technology so that the project is sustainable. The foundation is in continuous search for the best and cheapest possible technology for Information Village Project. In furtherance of this recently it has adopted spread spectrum technology. This technology had been previously tested at Kannivadi in Ddindgul district of Tamilnadu. It is only using this technology that three Rural Knowledge Centers started with video conferencing facility. This technology has not replaced the earlier technology rather both the technologies are simultaneously used to get the best output.

Spread spectrum technology has its own advantages and disadvantages. Here the line speed is very high (2 mbps). But signals travel only point to point, not 360 degrees. But one can connect another village from last point not necessarily from the Hub. We can cover more than 80 km from the Hub using this technology but maximum village-to village distance is 33 km. As Government of India has not permitted voice over IP in this technology, so voice cannot be transmitted from the village to the outside world. But within the villages and the Hub center it is possible to transmit voice and data through the net meeting option provided by Microsoft Corporation.

Training and Skillset Development

In most of the earlier rural development project skill development was given only a limited focus. Since rural areas have skills in ICT, it was considered that skill development is a critical success factor and this formed an intrinsic part of the project.

The project staff trains the volunteers at RKC. They are trained in all of the basic operations of using a PC running Microsoft Windows 95. They are also made familiar with dispatch/receipt of messages using Microsoft Exchange, which was found to be the optimal protocol for use on the analog wireless network. In addition, they have been trained in composing documents on Microsoft Word 97, using I-LEAP Tamil fonts and the keyboard layout developed by C-DAC, Pune. Training in elementary maintenance, such as defragmentation of a hard disk, has also been provided. Also they are trained in data-cum-voice network usage. They are trained in maintaining a register to log use of the center by the local residents. Training is also imparted in basics of management and handling queries from illiterates. Following **Table 4** gives details for Training imparted to the volunteers

Table 4 : Training to volunteers

Particulars	Duration
Average time for gaining familiarity with basic operations (Windows 95)	2 weeks
Time taken to transact data on wireless	3 settings
Time taken to gain preliminary knowledge of HTML	1 week
Word 97	2 days
PowerPoint 97	1 week
Use of Windows 95 keyboard for Tamil fonts	10 days

It was found that a period of two weeks is necessary to train volunteers in all of those operations, given that they have not seen a PC before and that the level of education is limited to 10 years in school. A small number of volunteers, on their own, have picked up the use of HTML, the techniques of recording voice in .WAV format, and the compression of

.WAV files using REALAUDIO for ease of transmission of voice as an e-mail attachment. The project staffs in the center frequently meet them and all the center operators and the project staffs meet once every month (the last Saturday) to sort out issues. This also helped the project staff in maintaining a view of the changes in the community needs and perceptions. The project staff was occasionally helped by the staff of the Informatics Centre. Continuous feedback from both the side is a big motivational factor for going on with this project.

Project Progress

With Villianur, the first RKC, the foundation took 6 months to come up with other Knowledge centers. By July 1998 Knowledge centers were established at 5 other places. The locations were Kizhur (21 km west Pondicherry), Embalam (19 km southwest), Veerampattinam (13 km South), Pillayarkuppam (17 km south) and Pillayarkuppam Bio-center (9 km north). Here the foundation adopted a hub and spoke model, Villianur was made the hub (a value addition center) and all other knowledge center were the spoke to the hub. All the spoke are connected to the hub by a hybrid of wired and wireless network – consisting of PCs, telephones, VHF duplex radio devices and e-mail connectivity through dial-up telephone lines – that facilitates both voice and data transfer. This has enabled the villagers to get information that they need and can use to improve their lot.

Although all Knowledge centers perform the same function, viz. satisfying the information needs of the local community, they are not managed in the same way. Each RKC requires a space to start its operation, volunteers to run it and funding to keep it going. Different villages have evolved their own ways of managing the center. Some are located in public buildings, some in temples and at least one in a private house. The **Table 5** given below states the list of RKC's along with the details.

Table 5 : Rural knowledge center membership

S. No	Knowledge Center	Space Provided by	Run by	Financed by
1	Kizhur	Village Development Council	A Family	IDRC, Canada
2	Embalam	Temple Trust	Women SHGs	IDRC, Canada
3	Veerampattinam	Grampanchayat	Volunteers of Fishermen community	IDRC, Canada
4	Poomonkuppam	Temple Trust & Grampanchayat	Volunteers of Village community	IDRC, Canada
5	Pillaiyarkuppam	Bio-Village Center	Volunteers of Village community	IDRC, Canada
6	Thirukanchipet	Government TV center	Volunteers of Dalit community	Government of Pondicherry
7	Villianur (Hub center)	Village Development Council	Project staff	IDRC, Canada
8	Kalitheerthalkuppam	Grampanchayat & Milk Cooperative Union	Milk Cooperative Union	Government of Pondicherry
9	Nallavadu	Grampanchayat	Volunteers of Fishermen community	Government of Pondicherry
10	Ariyur	Government building	Volunteers of Village community	Government of Pondicherry

'Information Village Research Project' handled by MSSRF Informatics division is financially supported by IDRC, Canada and some assistance from the Department of Science, Technology and Environment of Government of Pondicherry. With the end of first phase of

the project in November 2000, it was successfully running 10 Knowledge centers. Except the first few Knowledge Centers, almost in all villages, the local people demanded the RKC once the need was felt. The foundation acted as catalysts.

The ride in phase I was not all success. As it is said failures form the step stones for the future success, so it happened in this project. Two of the other Knowledge centers started in 1998 were failure. First, Mangalam, which was the 3rd RKC of this project. This center was run by the youth member, who initially showed a great interest but gradually lost the interest and became very irregular. Also they violated some of the clauses of the MOU like tempering of the equipments, not allowing dalits to use center etc. This led to the closer of this Knowledge center. Another Knowledge center established at Nettapakuppam, 18 km from Villianur (the hub) got closed due to political interference and improper maintenance of the equipments provided for the Knowledge center. The hub and spoke model is explained in the **Fig 2**.

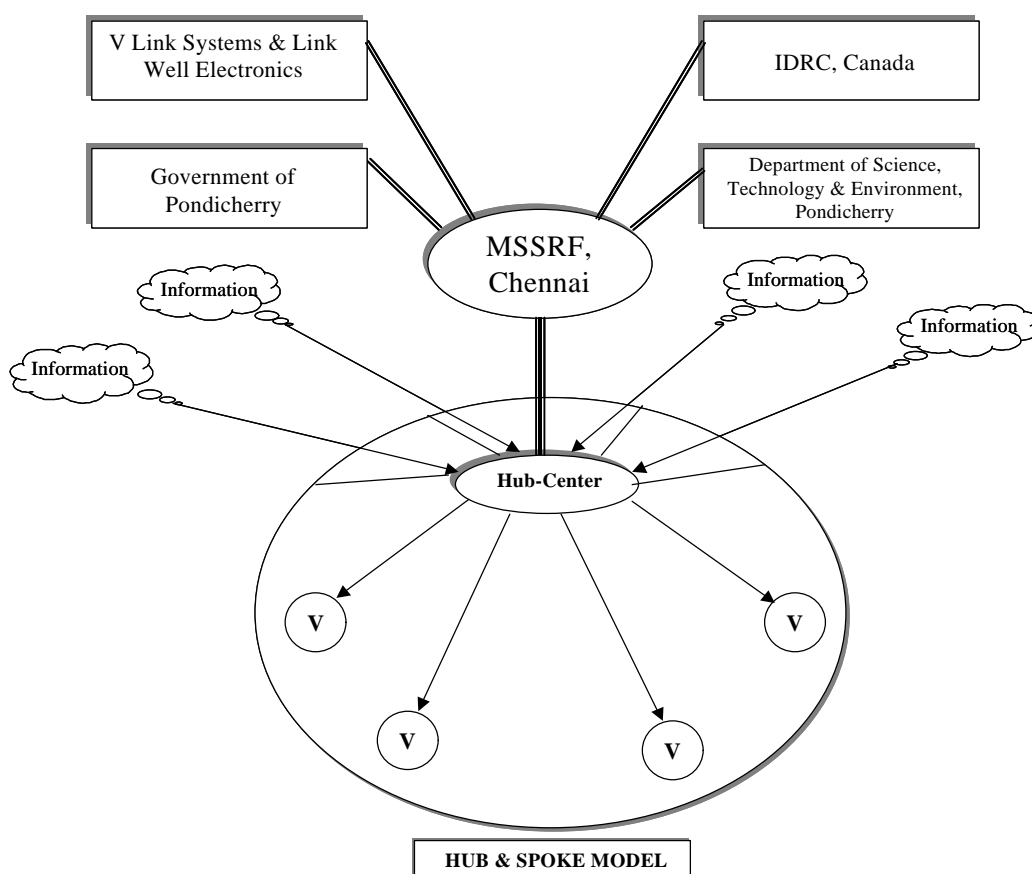


Fig 2: Diagrammatic representation of the working of the Information Village Project

Daily Working at Knowledge Center

Generally any RKC is open for villagers on an average for 9 hours every day. The volunteers start their day at Knowledge center at 9'O clock in the morning. First the volunteers at the Hub start gathering the required information. The major sources of information are local newspapers. Also there are volunteers placed in the various markets (i.e. vegetable, agriculture, fish, regulated market, etc.) and various government departments. These volunteers pass on the information collected to the Hub through telephone or e-mail. The volunteers at the hub download the required information from Internet like information wave heights and direction in the next 24 hours is downloaded from US Navy site (www.nemoc.navy.mil/LIBRARY/Metoc/Indian+Ocean/Bay+of+Bengal/MODELS/SWAPS/Sig+Wav+Ht+and+Dir+Series/Index.html)

Daily all this information is first collected at villianur (Hub). Then this generic information is transformed into locality-specific information. In the transformation process the generic information is selectively compiled, edited and integrated with the local knowledge. Also the information is converted into the local language (Tamil) so as to make it relevant and useful in the local context. The use of multi media helps in making the content more effective. The whole process is said to be 'the value addition process'.

Daily this activity is carried on at Villianur (Hub) and generally by 10.30 a.m. the daily bulletin is transmitted to the other RKC's linked to the hub in the form of data-cum voice files.

On receiving the information, the volunteers take printout of it and paste it outside the center on the news board. From there any person in the village can collect the information. Also at some places the information is delivered through public broadcasting system (e.g. Veerampattinam, here the information is delivered through 7 loud speakers placed around the village).

Content Creation

Once the infrastructure and skills are in place the next aspect that could make the knowledge center useful is the richness of the knowledge that the center can provide. This is done through content identification and content creation. Developing appropriate content in itself is a specialized task. This requires a thorough understanding of the users requirements.

Content creation to suit local needs is the key element in this project. Unless the people get what they want – unless they get answers to their queries – they will lose interest in the whole programme. The value addition center in Villianur has generated a number of databases to fulfill many of these requirements. Prior to commencement of content-building activity, extensive consultations were held with the participating village communities through small groups. It emerged that provision of dynamic information on prices and availability of inputs for cultivation--seeds, fertilizer, or pesticides--was important to all farmers, especially to medium- and small-scale farmers. Knowledge of grain sale prices in various markets in and around Pondicherry is critical to farmers during the harvest season. Agricultural laborers, especially women, whose wages are paid partly in grains, are also anxious to know the sale prices. Detailed surveys revealed that women in rural families are interested in obtaining health-related information--particularly concerning disorders in the reproductive tract and in child health. The village centers, according to them, should provide such information in a substantial way. They also emphasize the need for information on opportunities to augment income, such as training in new skills in manufacturing. There is near consensus that the village centers should provide all information on public schemata for rural welfare and the government's list of eligible families living below the poverty line [3].

Databases in use

- Entitlements to Rural Families: This database provides the details of about 130 schemata that are operational in Pondicherry during the current five-year plan (up to 2002).
- Families below Poverty Line: The details of families in the communes of Ariyankuppam, Villianur, and Nettapakkam have been provided in this database and

were compiled from the Uttar Pradesh administration. They have been updated to April 1999. Approximately 22,000 families are listed.

- Grain Prices in the Pondicherry Region.
- Input Prices (quality seeds/fertilizers) in the Pondicherry Region
- Directory of General and Crop Insurance Schemata
- Integrated Pest Management in Rice Crops
- Pest Management in Sugarcane Crops
- Directory of Hospitals and Medical Practitioners in Pondicherry Grouped by Specialization
- Bus/Train Timetables Covering Pondicherry Region and Two Nearby Towns

Most of these databases are frequently updated. A considerable part of information is accessed through local sources. These databases in Tamil (except the Families below Poverty Line data, which is an official document in English) are available in all of the village centers. Updates are transferred via the wireless network. In addition, interactive CD-ROMs for health-related issues have been developed, on which frequently asked questions are posed to medical practitioners, whose replies are video graphed and converted to REALVIDEO format for retrieval via a PC. Topics related to general hygiene, dental and oral hygiene and eye care have been covered. (Videography was conducted in health camps organized by the village communities.)

Also rural yellow pages have been created and people are permitted to insert advertisements. For example, one can know who is renting a tractor and at what price. A tailor buying a new sewing machine can announce the sale of his old machine and someone renovating house can announce the sale of the old tiles and bricks.

In addition to such defined content, daily transactions take place covering important public events and government announcements of significance to rural families. Cricket information is much sought after through well-known Web sites. One important service provided was

the announcement of results of the 10th and 12th standard examinations during June 1999 and June 2000. The results and the mark sheets were available on the Web and were made available to a total of 931 (in 1999) and 1,219 (in 2000) students resident in and near the project sites, which cut short the time of waiting by at least one week.

Project Coordination

Any big task undertaken involves a group of people who take up their part of the job and contributes to the successful completion of the project. It is very important that each party to the project clearly identifies its role in the project. Once this is done the various activities undertaken by the various parties need to be coordinated in order to achieve the planned output. The **Table 6** given below clearly identifies the various parties to this project and state the roles played by each of them.

Table 6 : Parties to the project and role played by them

S.No.	Parties to the project	Roles played
1	MSSRF	<ul style="list-style-type: none"> • Conceptualization of the project • Bringing together the financial resources • Providing the initial set-up i.e. various equipment and initial training • Software maintenance and provide all required technical support • Liaison with the Government of Pondicherry • Monitoring and Evaluation of the project • Enrichment and expansion of the project • Providing the vision to use IT for rural masses
2	IDRC, Canada	<ul style="list-style-type: none"> • Provides financial support • Helped in getting literature on wireless technology in the early phase • Provided data on the way ICTs are used in helping fisher community in Latin America
3	Department of Science, Technology and Environment, Government of Pondicherry	<ul style="list-style-type: none"> • Later joined the project • Part funding of the project • Overview the progress of the project • To expand the project to all the 208 villages in Pondicherry in future
4	V Link Systems and Link Well Electronics	<ul style="list-style-type: none"> • Technology provider for wireless systems
5	Village Community	<ul style="list-style-type: none"> • Provide a quality rent-free space • Provide for the electricity and telephone bills • Identify and select 2 to 4 volunteers from the village community • Proper maintenance of the RKC • Comply with all the clauses of the MOU

Project Evaluation

No project ends without the effective evaluation of it. Project evaluation, whether internal or external, helps in assessing the success or failure of the project. It compares the actual results of the project with the planned results and lays out the gap that couldn't be achieved. This helps in devising the future plan of action.

In this project there is as such no formal system for internal evaluation or assessment of the success of an RKC. The project has not set any parameters for measuring or quantifying the effectiveness of the RKC. But some sort of analysis is done using the 'Users' Register'. Each RKC maintains a user register that helps in collection of quantitative data on the use patterns of the RKC. An analysis of user register reveals can be seen in **Table 7**.

- The total number of users
- Percentage of users in various categories
- Type of users – one-timers/frequent users
- Type of information used
- Preference of information

Table 7: Pattern of Usage (in %) in the Village Centers (up to June: 2000)

Particular	Percentage
Voice Personal	16.33
Programme related	1.18
Data Agriculture & Fisheries	6.69
Education & Training	32.01
Employment	2.05
Health	1.51
Govt. Sector / Entitlements	40.43

The project staff meets the volunteers regularly (once a week), talk to them face-to-face, take their feedback and guide them. This helps in evaluating the proper working of the RKC. Also they hold the public meetings with the village community

- To get the satisfaction level form the RKC

- To get their information requirements.

Also occasional impact assessment exercise, which involves taking the addresses of users, visiting their places, talking to them one to one, checking the ease of flow of information from RKC, recording the benefits they are deriving from the RKC, analyzing their further information requirement etc., helps in keeping a due check of the effectiveness of the working of the volunteers and the RKC itself.

Also there had been evaluation done by external party - PANAsia Telecenter Learning & Evaluation Group (PANTLEG) during November 1999. The evaluation was base on the stories recorded from the telecenter (RKC) users and operators. Stories, whilst anecdotal, offer a rich picture of the impact of ICT interventions in local, complex and dynamic social settings. They are accessible and verifiable easily and they acknowledge the often-indirect influence that development interventions have on the behaviour of their beneficiaries. Moreover, stories as evaluation concede that the benefits of telecenter activities are often detectable only after they have been installed, contrary to traditional approaches to information systems, in which expected benefits are usually specified before the technology is installed.

The PANTLEG conducted an intensive consultation with almost all the stakeholders in the project to ensure that the project benefits the target group.

The main issue of research relates to sustainability in a context where most users tend to be ultra-poor. Formation of partnerships between local bodies and the local administration appears to hold the key. Development of applications, such as an online system for community banking, will contribute to the economic sustainability of the operations.

Benefits Derived from the Project

The benefits to the beneficiaries were assessed using three inputs:

- First, the foundation was approached to provide the information on the benefits
- Second, an independent assessment carried out on the project was used
- Third, some beneficiaries were interviewed (only a sample of users)

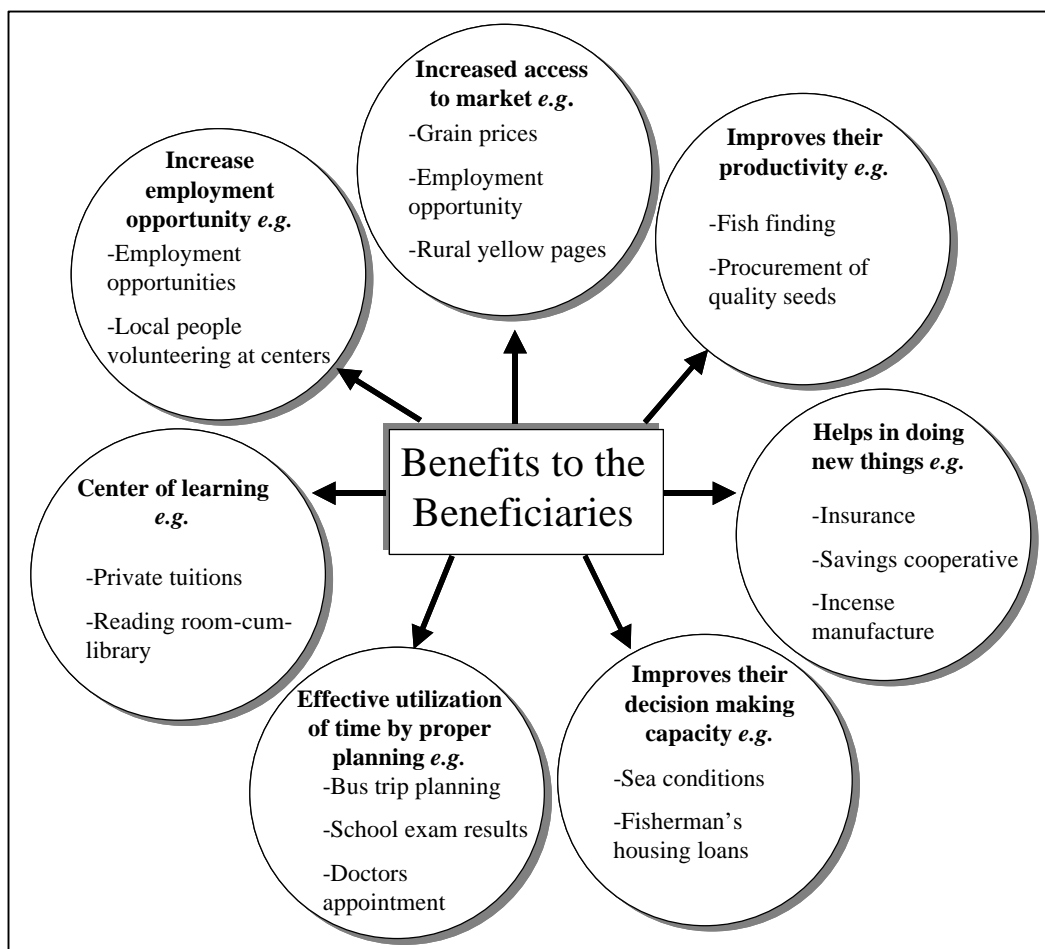


Fig 3 : Benefits to the Beneficiaries

There have been many instances where local residents have derived benefits from the use of data and information derived from this network. Some of them are:

- Availing farm labour insurance by landless Women; 157 women obtained this insurance
- School examination results and mark sheets downloaded from the web; over the last 2 years about 2100 students in all the centers have used this option and saved waiting time by at least one week per person.
- Ease of contacting medical practitioners and veterinarians: the local databases have been found specific and useful.

- Price information related to grain sales: this is the most important benefit according every farmer (121 interviewed in June 2000) as it helps him/her with better negotiating position in dealing with price-fixing middlemen.
- Fishing hamlet receives information on wave heights downloaded twice daily from the US Naval Oceanographic laboratory. This is viewed by the craft-vessel fishermen as life- saving.
- Largest number of users finds govt. sector data most useful; at least 147 individuals reported deriving benefits from housing schemes.

There are many more such instances. These Knowledge centers provides large amount of information, which benefits the rural community in various ways. And these benefits can be categorized under the following heads, as also shown in **Table 8**

Table 8 : Analysis of User Registers in 5 Village Knowledge Centers (1 Jan 99- 30 June 00)

Type of User	Number of Users
Females	2832
Asset less Families	4571
Illiterates	392
Persons below 14 yrs age	4421
One-time users	3674
Total Number of Users	15890

- **Increased access to market, e.g.**
 1. **Grain Prices:** In the village of Embalam, local farmers are able to obtain the market prices for their produce on a daily basis from the village RKC. There are two prices to obtain; one from the government market, which fluctuates little, and another from the private market, which tends to swing much more. Consequently, there is considerable benefit from choosing which market to deliver produce to and in monitoring the differences between the two prices on daily basis. The farmers consistently obtain the best possible price for their produce.

- 2. Rural Yellow Pages:** After making an extensive survey the project staff has created rural yellow pages, which give detailed information about the business and market in around the region. Also people can insert business advertisements. For example, one can know who is renting a tractor and at what price. A tailor buying a new sewing machine can announce the sale of his old machine and someone renovating house can announce the sale of the old tiles and bricks. This has increased their access to market and increased the business potential.
- **Improve their productivity, e.g.**
 - 1. Fish Finding:** Similar to the sea conditions, the fishermen at Veerampattinam have been able to locate a source of information that informs them of the whereabouts of the shoals of fish that they seek. The information is fresh enough to be useful to help them in their daily fishing expeditions.
 - 2. Procurement of Quality Seeds:** Like all farmers, the villagers served by the MSSRF RKC require high quality seeds for the fruits of their efforts to achieve their maximum potential. The RKC at Kizhur performs an important function in locating suitable sources of quality seeds and ensuring adequate supplies for the farmers at the time when they need them. Prior to the installation of the RKC, securing an adequate and timely supply of quality seeds was a highly unreliable process, and it led to significant variations and uncertainties in the crop levels. The RKC therefore contributes to food security.
 - **Helps in doing new things, e.g.**
 - 1. Insurance:** Through the information services of the RKC, villagers discovered a national life insurance scheme that is subsidised by the government and operated by a local insurance agent. The agent had done little to publicise the scheme and the villagers did not know whom to approach. The RKC network was mobilised to obtain further information regarding the entitlements and the name of the agent. As a result, the villagers were able to approach him directly with sufficient confidence to enable them to make their applications and to receive their entitled insurance policies. Furthermore, the local RKC operator devised and implemented a database that generates a premium renewal advice for every household covered by the

scheme and this is used to ensure that no insurance policy lapses for the want of a late renewal payment. The policy is so advantageous to the village folk that every household in Embalam village has taken one out and they are confident that their coverage will be continuous and that premiums will be renewed in time.

- 2. Incense Manufacture:** A group of ladies in Kizhur village decided they wanted to start a small business enterprise manufacturing incense sticks. They began as sub-contractors but their confidence and enterprise grew as a result of utilising the RKC. As a result of some searches by the RKC operators, they were able to develop the necessary skills for packaging and marketing their own brand name incense. The ladies were quickly able to develop local outlets for their products and they are confidently using the RKC to seek out more distant customers. The RKC facilitates small entrepreneurial activity and mobilises latent productive capacity among women who live in a culture that has traditionally tended to marginalise them.
- 3. Savings Co-operative:** Village women learned about the concept of savings co-operatives through their interactions with the RKC information sources. In India, savings co-operatives are a popular means of obtaining loans for people who would not normally qualify for a loan from a bank. The co-operatives work by members making regular payments to the scheme, and then borrowing money from it when the need arises. Members are allowed to draw a loan that exceeds the value of their contributions, and new members can borrow even before they have commenced payments. The popularity of the scheme is derived in part by the support they receive from the government. Under certain qualifying conditions, registered savings co-operatives are entitled to receive government loans at interest rates well below prevailing market rates. Local banks are required by law to provide banking facilities to registered savings co-operatives. Having discovered the scheme through the RKC, the village women in Embalam formed a co-operative and they use the RKC computers to administer the accounts. One of the RKC operators, a woman, acts as the co-operative treasurer and secretary, utilising the RKC facilities.
- 4. Herbal Remedies:** Villagers in the MSSRF study area, as in most rural communities throughout the developing world, possess considerable knowledge about herbal remedies that can be derived from the herbs to which they have local access. One of the RKC initiatives is directed towards building a database of such remedies,

recording the characteristics of the plant, methods for collecting the herbs, techniques for preparing the remedy, applicability and dosages. The database, which is accessible by other villages, is seen as a valuable resource for several reasons. Firstly, it can be consulted by anyone with the need of a remedy for which a known herbal treatment is available. Secondly, it is a means for recording indigenous knowledge which is held in many cases by old people, and which can therefore be recorded before it is lost. Thirdly, recording such knowledge has been demonstrated to be an effective weapon to fight against the usurping of local knowledge by foreign interests who attempt to patent the crucial ingredients of indigenous bio-resources in their own country. In one instance, some non-resident Indian chemists in the USA attempted to patent the specific ingredients of a strain of coriander that was well known by local people living in the area from which the herb was taken. Sympathetic lawyers challenged the patent, citing the local knowledge, which had been recorded, and were successful in having it revoked. Villagers in the MSSRF study area are highly sensitised to the possibility of such plundering of local resources by foreigners, and they are highly motivated to use whatever means are available to them to protect what they consider to be theirs.

- **Improves their decision-making capacity, e.g.**

- 1. Weather condition at sea:** The MSSRF Value Addition Centre at Villianur delivers daily images obtained from a web site run by the US Navy of the predicted wave conditions in the Bay of Bengal to the centre at Veerampattinam. The villagers there are fisher folk, and the sea conditions are of crucial interest for their safety. The information is so critical that it is transmitted verbally across a public address system from loud speakers on the roof of the centre to the fishermen as they are preparing their boats in the early morning. "It saves lives" said one respondent when asked about its usefulness.
- 2. Fishermen's Housing Loans:** One of the tasks of the MSSRF Value Addition Centre is to seek out and publicise the various entitlements for which community members may be qualified to obtain. Over 100 such entitlements have been identified so far and it has become a highly complex task for individual families to understand what they are entitled to and how to go about obtaining the benefit. One such entitlement of particular interest to the villagers at Veerampattinam is the Fishermen's Housing

Loan, a government-subsidised scheme for providing low cost loans to fishermen for the purpose of buying or constructing a home. Prior to the advent of the RKC, nobody in the village had any knowledge that the scheme existed. Now, nearly every fisherman in the village has benefited from the scheme.

- **Effective utilization of time by proper planning, e.g.**

1. **Bus Trip Planning:** A regular source of useful information is the schedules of the many bus services that operate in the districts in and around Madras and Pondicherry. Village travellers find that they are able to plan their journeys; often involving several connections with overnight stays, so that they are able to reduce the time spent waiting to catch connecting services. It is the nature of low-income rural households that time lost usually equates with lost income, or the accumulation of duties that have to be performed at a later stage. As for any busy working person, saving time represents a real benefit.

2. **School Exam Results:** The schools in and around Pondicherry release their exam results shortly after they become available, but it takes the local newspapers up to two weeks to publish them. The Value Added Centre has been able to obtain the results and it transmits them to the village RKC within 24-hours of release. Parents and pupils queue for several hours at the RKC to receive the results, something they are prepared to do in preference to waiting for the newspapers. This type of social benefit would probably not register in most contemporary designs of benefit measure, focussing as they do on economic returns, yet the willingness to queue for the results testifies to its desirability.

3. **Doctor Appointments:** Visiting distant doctors for rural dwellers usually involves long journeys and long waits on arrival, with resultant loss of productive capacity. Using the services of the RKC, villagers are now able to book appointments with doctors and therefore they can save much of this wasted time.

- **Center of learning, e.g.**

1. **Private Tuition:** At the Embalam village RKC, an enterprising local school teacher has started using the computer facilities to provide additional after-hours tutoring for

local school children, a service for which he charges. Considering the service a community benefit, the RKC manager initially allowed the teacher to use the computers free of charge, but seeing that the teacher was profiting from the service, whilst the children had to pay, the manager decided to start charging the teacher provided he reduced the charge to the children. Thus, both the teacher and the RKC benefited and the children enjoyed the value of the extra tuition.

2. Reading Room-Cum-Library: Each knowledge center generally subscribes one daily newspaper and couple of journals for the users. Here the people of the village come and read and use center as reading room. Also at couple of knowledge centers they have kept few books for general reading. Thus these centers acts as place of learning, both online and offline.

- **Increase employment opportunities, e.g.**

1. Employment Opportunities: An agricultural processing factory about five kilometres from Embalam was recruiting and one of the RKC volunteers heard about it. As the factory was seeking women applicants, and the volunteer was a woman, she was keen to bring the employment opportunities to women in her village. She therefore distributed the information via the RKC network. The factory was able to fill its vacancies much quicker than expected and henceforth, on hearing about the RKC network, the factory has decided to use it as their channel of first choice to obtain local labour. Such a partnership represents a win-win situation with benefits accruing to both parties. The factory accesses a steady supplier of labour quickly and cheaply, and the villagers get first look-in when job vacancies arise.

2. Local People Volunteering at Centers: Each knowledge center is run by the rural community. The community selects young and qualified people as volunteers for running the center. Though these people don't get any fixed compensation for volunteering but they get chance of earning from the various job-work they do using the facilities of the center. This way there is an increase in employment and also the earning of the local people.

In addition to provision of data and information, each of these centers has become a routine, operational contact point between government agencies and local families. Government departments such as agriculture, rural development, fisheries, and the State Electoral Office frequently and regularly use the village centers to disseminate information to the village families. This development has been rated well by the local families.

Also the village community as library with reading space facility uses these RKC's. Every RKC subscribes Daily newspaper and couple of magazines that are read by the local people. Also Villianur (the Hub) has maintained a library that is used by the village community. Also in RKC are placed several educative posters about general health care, childcare, importance of lactation, nutritious diet, agriculture, fishing, railway routes, nature, social welfare etc.

Benefits of the Project as Perceived by Others

Success of the project can be measured using various parameters but the project is said to be really successful when it is actually recognized and appreciated by the external world. In this regard 'The Information Village Project' had been really successful, as it had been honored with the following awards at international level:

1. The Motorola Dispatch Solution Gold Award for the year 1999

News we get in a matter of few seconds by tuning in to the radio or Television or through flipping of the newspaper is not usually deemed as luxury. However to the villagers of Pondicherry in India, it is.

But the MSSRF has succeeded by enabling the villagers to stay in tune with the latest news and information, through the use of information and communication technologies. Also this helped in promotion of sustainable agriculture and rural development thereby improving their quality of life.

In 1998 with a MOU between V Link Systems and Link Well Electronics, MSSRF connected small coastal villages of Pondicherry through full duplex wireless link using Motorola systems, GM300 mobile radios to six satellites hubs ranging from 10-15 km away. This system allows simultaneous data and voice transmission allowing people to stay in touch. Motorola GM300 mobile radios and GP300 portable radios with retrofit two ways radio and accessories complimented the system. This VHF (12.5 khz) network connects the local

people distributed over several square km of land, to the external world by creating and handling customized information.

This ingenuity and creativity in the use of Motorola two-way radio dispatch equipment fetched the project 'Motorola Dispatch Solution Gold Award' for the year 1999.

2. The Stockholm Challenge Award under the Global Village Category 2001:

Since 1999 the city of Stockholm, in cooperation with the European Union, has recognized outstanding global efforts in reaching the benefits of information and communication technology to society at large, with the Stockholm Challenge Award. This award is given under seven categories.

On 26th September 2001, The Stockholm Mayor, Mr. Carl Cederschiold, announced this award for 2001, in favor of the 'Information Village Research Project' of the MSSRF, Chennai, under the Global Village Category.

It has also been noticed in Communications of the ACM (November 1998), in Science (June 11, 1999), in the New York Times (May, 2000) and has been presented in key international forums such as the GDK2 (March, 2000) and the Geneva Forum 2000 (parallel to the UN General Assembly session on Social submit). The 1999 Human Development Report of the UN Development Program cites this as an example of a creative project in addressing the global information divide.

Replicating the Experience

Success attracts attention and leads to replication. Similar thing happened with RKC's. The 'Information Village Research Project', which started, with 5 RKC's is at present successfully running 10 RKC's and other 3 are in pipeline. This project started as a research project with the objective of setting up of villages information shops that generates locality specific information from generic information using the modern information and communication technologies (ICTs), which can be used by the rural community for the betterment and upliftment of their standard of living. The benefits derived by the village community from the localized information provided by the RKC's made it popular and known in the region in and around the villages where the RKC's were established. This made communities in other

villages to foundation to start with RKC at their village. These successfully running RKC prove its replicability.

A number of key officials of the Government of Pondicherry are closely associated with this project and preparing the extension plans of the project. It is proposed to increase the number of RKC to 25 in this (10th) Five-year plan. Further the Pondicherry Government wants to widen this network to all 208 villages of the Union Territory.

The factors critical for the success of this project were:

- The strong sense of ownership that village communities had developed towards the RKC
- Conversion of generic knowledge into localized information (locality-specific information)
- Hundred percent dedication and commitment shown by the project staff and the MSSRF
- Skill-set development of the volunteers
- Formation of partnerships between local bodies and local administration

Conclusion

RKC has the potential for contributing significantly to rural development. The challenges of this project were selection of the appropriate place to set-up RKC, which was taken up by framing a systematic procedure for site selection and identification of the information and various needs of the rural communities, which was done by making a detailed survey of the villages of the Pondicherry. Also the community involvement was an integral part of the project. The project staff had involved the rural people in their surveys and operation of the project from the beginning. Dedication and close engagement of the recipient communities has been there from the beginning. The lesson to be learned appears to be the enhancement of the skills and capabilities of the rural communities through effective training and development program, in order to take up the new-technologies to its greatest advantage. The real success of this project comes from the evolution of a sustainable development model in the form of RKC, which will help in balancing the development process going on in the urban as well as rural communities. RKC to be operationally successful needs a combination of technical expertise and social awareness, probably in equal measure.

The experience of e-governance implementation has the following learning:

- Systematic procedure for selection of an area for implementing e-governance
- Comprehensive assessment of user requirements that could be met by e-governance
- Involving a large numbers of users through community involvement covering all the communities to ensure intense participation and activity ownership
- Intensive skill development efforts to train the beneficiaries to acquire the required skills
- Designing a system with a multitude of applications covering a range of activities so that diverse users could benefit from the ICT platform.

Non-governmental agencies have enormous reach. They can create knowledge communities using low cost options [4]. Some of the soft aspects that make the things work are commitment of the implementers, credibility of the organization among the users and capturing the user requirements through a systematic user requirement assessment. Sustenance of knowledge sharing communities requires high levels of trust. NGOs generally, have extensive working relationships with members of communities in which they operate. The main reason for the success of the programme has been the existence of higher levels of operational trust. ICT platforms act powerful development enablers. To be successful, the platforms have be sustained in terms of social acceptance, technical feasibility, economic viability and organizational effectiveness. Among all the variables social readiness, economic viability and technological feasibility are the three aspects that played a crucial role in the success of the Pondicherry Project.

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