

TITLE-“BRIDGING THE DIGITAL GAP AT VILLAGE LEVEL: LESSONS LEARNT FROM PONDICHERRY'S VILLAGE KNOWLEDGE CENTRE”

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KEY WORDS-VKC, Digital Divide, WAP, VHF, Kiosks, IRDC, Hub, GIS

ABSTRACT

With widening gap in digital divide among urban and rural areas, it has become imperative to bring the people of disadvantaged groups to the main streams of society and have similar accessibility to the information technology for overall growth and prosperity of any country. Any intervention to bring the rural masses to the door step of IT, GIS and ITES can bridge the digital gaps in the society and facilitate growth and prosperity of any region, people and country. Pondicherry, a eastern state of India, exemplifies the evidence of such a deliberate effort, promoted by a research NGO organization, who have made it possible to take advantage of the IT revolution for various aspects of the local people in terms of improvement in their information access, sharing, better preparedness for disasters and exposure on e-extension and education. The working of such a system making the whole village a environment friendly and bio-village and transformed the database to a knowledge base. Predominantly a fishing community set up, villages developed computer infrastructure and WAP based Motorola Spread Spectrum technology to have high speed distributed internet centres and share among them daily weather, agricultural information, health, education, credit linkups, GIS on land use and land cover, disaster information through downloading web heights and other multi purpose centres and also generate resources for the sustenance and promotion of the set up reliably. Village school children no longer scared of computers and plays games and educational CDs on the computers. Fishermen plans for his schedules to the sea based weather prediction and web heights. Village women have been managing the computers and also using them for multipurpose activities like job works, educational purposes, information sharing, developing various sectoral information base for village level development activities, policies and programmes of GO and NGOs and a host of activities. Now that computerization process and IT been operational in their villages and the village people are linked to the outside world, there is a conscious effort to take all advantage of the IT, Geomatics and ITES revolution for their own local use and development. Land use and Land cover information, land information system at the cadastral level, satellite information on natural resources and linking various layers of attribute data on socio economic, infrastructure, natural resources and market information, helped the village community to take decisions more judiciously in an optimum manner with various alternative action plans. Various action plans generated by GIS help the villagers save time and money and take actions in time. The Pondicherry experiment of Village Knowledge Centres made it possible to prove that IT, Geomatics and ITES can be effectively implemented at the local level and people can be partners in progress and decision makers in their own development.

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Genesis

The Village Knowledge Centres Project was initiated in 1998 for sustainable food security in the region by the MS Swaminathan Research Foundation (MSSRF), a non-profit organization (NPO) and has now become a useful network for rural development. The MSSRF, Chennai; the government of the Union Territory of Pondicherry, and nine villages in Pondicherry have gone into a MOU for setting up the Village Knowledge Centres. Based on the successful operation of MSSRF VKC and People's acceptance

and involvement, the Government of Pondicherry decided to connect all the villages in the UT using the MSSRF model.

The Village Knowledge Centre Project started in Villianur village in Pondicherry, where the Bio Village Project was ongoing. A Family Model approach was adopted, where the Village Councils were first discussed as an entry point activity.

Mission

The Village Knowledge Centres project is based on local agricultural communities' demand for information on sustainable agricultural practices, credit, and marketing of produce and value addition by agriculture experts. The content on the network is prepared locally, using indigenous knowledge combined with expert information. The project began as an experiment in electronic knowledge delivery to the poor. A hybrid wireless network comprising of desktop computers, telephones, VHF duplex radio devices, and email connectivity through dial-up

telephone lines facilitating both voice and data transfer, connects ten villages in the UT of Pondicherry.

About half the population in these villages have a total family income of less than 25 US\$ a month. The project is pro-poor, pro-women, and pro-environment in its conception. Community ownership of the technology and collective action to spread the use of technology is encouraged.

Content

The content provided is demand-driven based on the needs of the community. The information provided to the villagers is area-specific such as prices of agricultural inputs and outputs, market information, entitlements, healthcare, livestock care, transport information, and weather. Local volunteers, mostly women, gather the information, feed it into the intranet, and provide access through nodes in different villages. Value is added to the raw information by using the local Tamil language and multimedia. For example, weather forecasts for fishermen along the Coromandel Coast are downloaded from the Naval Oceanographic Office, which are then translated into Tamil for the intranet as text, as well as audio information that is broadcast on microphones every few hours to the fishermen along the coast.

The villagers need to know all information on weather, prices, employment opportunities, agriculture information, good or bad dates on local astrological base, bus timings and routes, auction information from regulated markets, fertiliser prices and stocks availability and other important information within 12 AM everyday, as time is the essence of everything at the village level and people live on daily basis.

The catalysts for such reliable information are officials from various Government Departments, who provide timely information on a token honorarium of Rs 750 per month by the MSSRF.

A Notice Board is placed in each VKC office in which all vital information is written on Tamil at 4 PM everyday. The information is also announced on public address system at 10.30-11 AM every day for the benefit of the village people.

The daily weather information is collected from the Meteorological Department and information on Sea Web Heights is downloaded from US Navy site everyday morning and based on the sea web heights and weather, prediction is made through the VKCs.

The information needs are decided by the community themselves and accordingly the

information is accumulated from various sources and provided to the community. The women need information on immunisation, childcare, nutrition and gynae related information, which are being collected from doctors and Resource Organisations and forwarded to the women through the VKCs. Similarly the farmers on regulated market information, availability of specific fertilisers, pesticides, seeds etc, weather information etc. The fishermen wants web heights, weather conditions etc. The students want courses, examination results, practice tests, information on education, universities, entrances etc.

Technology

IT for the poorest of the poor envisaged any technology that will better serve the commonmen in the most efficient and useful manner. The Motorola communication technologies are being used in IT experiments in the UT of Pondicherry. The hub, stationed at the central kiosk is stationed at Villianur Village, and is connected through a full duplex wireless link, using Motorola technology. The center also functions as the Local Area Network (LAN) hub, providing data and voice transmission to the other kiosks of the area. Each kiosk is a node that functions on VHF radio (full duplex). This saves the expense of laying expensive communication infrastructure (i.e. copper wires and/or fiber optic cable). The MSSRF maintains a comprehensive database, which collects daily information on network usage, questions, and problems regarding the village kiosks. Information can be easily obtained through simple queries to the server's databanks.

The Motorola's V Link Communication Technology based on the two way communication for data transmission and audio/video communication could be established with 30 kms range, through wireless technology. The speed of data transmission is 14.5 kbps.

The Motorola Technology is known as Spread Spectrum Technology, where the data transmission is on real time, with no scope for stale data and operates on a dynamic information base.

Backup Energy

Energy to the Villianur Centre and other eight(8) VKC are sustained though battery and solar (photovoltaic system) power provided by the Bharat Electronics Ltd, Bangalore, a Government of India Enterprise, costing about Rs 1,00,000, for the Solar Panels, Battery Pack and other peripherals related to the power system, which gives a back up for 10 hours uninterrupted and has proved as a dedicated tool of power supply in the rural remote areas. There is no continuous maintenance of the batteries and mostly

refilling the cells with mineral water is required sometimes.

Empowering Women

Female workers at the Kiosks upload information regarding weather and a variety of other daily information.

Language Interface

Tamil is used for all information exchange over a wide array of media. C-DAC, Pune developed the I-Leap Tamil fonts and keyboard layout. WAV audio format using Real Audio compression makes audio transmissions lightweight and easy to transmit via email. MS Exchange (email application software) was found to be the optimal protocol for analog wireless networks.

Funding And Support

The total investment for the entire setup is around Rs 1.5 to 2 lakhs per village.

The IRDC, Canada has funded the MSSRF Research Project and the Friends of MSSRF, Japan have donated the computer systems.

The community bears telephone bill, electricity bill, rent free accommodation and provides volunteers to run the VKCs. The MSSRF imparts training, develops content, maintains hardware and updates dynamic information. Now as extensive training is imparted by the MSSRF to the VKC volunteers, the community volunteers including women are able to operate, maintain and train others in the village.

The village school going children gather in the VKC and get familiarised with the computers and often found playing computer games at nominal payment (Rs 5 per child). The VKC volunteers are well versed with MS Office, Page Maker, Photoshop softwares and take job work from local Milk Cooperatives and other petty merchants/business agencies, which generate good revenue for the VKC to maintain itself sustainably.

Hub Centre

The project centre at the Villianur village is where the information is fed into the Intranet. This centre functions as the Intranet hub for the project villages. Other villages of the VKCs are Embalam, Veerampattinam, Killur/Kizhor, Kalithirthakuppam, Nallawadu, Purnamgkuppam, Aryur and

Thirukanzipet, where the information nodes are located mostly at the village *panchayat buildings*.

Villagers meet last Saturday of each month to discuss on chronic problems and system problems and decide on appropriate action agenda and follow it up to maintain the facilities functional at optimal level.

Procedure For Setting Up Of Vkc

The procedure for setting up such a node requires a request from a village with signatures of all the villagers. A formal memorandum of agreement (MOU) is signed by the MSSRF with the villagers indicating that the community is willing to supply the basic infrastructure such as electricity and the space, and identify volunteers to operate the facility. MSSRF provides three computers and a printer, a wireless device, and a solar panel.

Manpower Development

All the volunteers are trained in operating the systems and undertaking basic maintenance and repairs. More than half the volunteers are women and in some villages all the volunteers are women. The proportion of women users varies from 34 to 50 per cent and about 16 per cent of the users are from households below the poverty line (the average number of families living below the poverty line is 21 per cent). The content has been created with the active participation of the villagers and to help them identify with the information, culture-specific aspects have been included such as astrological advice on daily activities.

Strengths

The remarkable features of this project are the focus on women and the local creation of content. This has resulted in extensive use of the system and a strong sense of ownership among the villagers.

The success of the knowledge centers has resulted in the Government of Pondicherry replicating the project in all the villages in the Union Territory.

Weakness

The weaknesses of the project are its financial sustainability, as services are provided free of cost to the users and the systems are installed through grants.

Sustainability

To ensure financial sustainability, means of generating revenue are being considered such as collection of revenues from advertisements on the Intranet of agricultural inputs such as fertilizers, tractors, and pesticides. Training of kiosk managers, the community to participate in creation of information, and government personnel to deal with system changes brought about by e-governance are identified as key concerns. The role of an intermediary agency in dealing with the community is found useful and important, in the success of an area-wide strategy to wire all the villages in Pondicherry.

Future

Future technological innovations by Motorola may lead to better reuse of the VHF radio spectrum. This may be one of the projects strengths, in that the focus remains on the users (demand) and not on the technology (supply). The use of technology, nevertheless, is being well received by both the initiators/ facilitators and the villagers/end users.

Two new Villages to be added to the existing VKCs are Periakallapet and Kunichempet, which are Dalit habited villages.

International Recognition

The Information Village Research Project of the M.S. Swaminathan Research Foundation (MSSRF), Chennai, was awarded the **Stockholm Challenge Award 2001** for pioneering IT projects worldwide for focusing on the positive effects of today's information society. Projects competed in seven categories, in areas where IT has great influence on people's lives. The information village research project of the MSSRF won the award under the category -- a global village.

Recommendations

The following recommendations emanate from the study observations and lessons learn from MSSRF Case Studies:

1.Gram Panchayat Support

As the investment is reasonable i.e Rs 1.5 to 2 lakhs per village and as the funding is forth coming from IRDC and Friends of MSSRF,Japan , the Gram Panchayat need to provide at least the School Building/Panchayat building for establishment of the Village Knowledge Centre.

The Pilot Studies in Pondicherry amply established fact that it is possible to take the ICT to the door steps of the poor and to the remotest of the remote village in the rural India.

Secondly all the village information needs could be gathered on realtime basis which is enshaping the lives of the people for betterment economically and empowering them with information and decision making power.

2.Service Charges

Each and every service in the VKC should be charged for generating funding support for the operation and viability of the VKC and in generating potential gainful economic activities at the village level for the educated youth and the village women.

The charges may be as fixed by the Gram Panchayat acceptable to the community. Multiple use of these VKC would usher new opportunities in generating revenues for the village as well as those involved in promoting ICT in rural areas.

Training to school students, educated youth, job work for traders, local industries, etc should be encouraged for economic viability of VKC.

3.Corporate Industry Support

Corporate Industries should come forward to promote VKC for promoting not only their business interests but societal needs as well in all parts of the country and generate employment opportunities and income avenues for the rural poor and in bridging the digital divide.

4.Government Support

The Government should fund setting up VKCs in coastal villages, prone for natural disasters and other areas vulnerable for disasters, for giving early warning and in building better preparedness among vulnerable areas and people.

5.HAM Radio VHF Receiver Sets

In villages with fishermen communities and where the organised fishing activities are more, provision of HAM Radio VHF Receiver Sets should be provided and training should be imparted as the fishermen wish to have two way communication when in sea .

6.E-Learning

The IGNOU and other Open Schools should set up rural centres for promoting professional and technical education among the rural people in the remotest corners of the country through the VKCs infrastructure and facilities, which can be affordable and accessible for the rural poor.

7. Extension of VKC

The concepts of VKC as an affordable tool for information dissemination and communication can be extended to urban/Semi-Urban/Small Country-Town areas as well, as it could prove beneficial, as knowledge centres for the Municipal application and Utilities management like Electricity and Telecommunication and for logistic management.

8. WAP enabled VKC

New technology with WAP without the limitation of any radial distance could prove immense potential for the VKC as an information tool for multiple uses for all purposes. IIT, Chennai has developed WAP technology and there are also many other technologies available presently which can be integrated to develop a WAP enabled VKC for wider use and information base.

9. GIS enabled VKC

Geographic Information System enabled VKC could give various analysis of information and generate decision alternatives for taking realtime decisions judiciously and in a cost effective manner. GRAM developed by IIT, Mumbai, which is currently distributed freely by the Minister of IT may also be integrated with Spread Spectrum Technology making the VKC as a hub centre of powerful information base for all purposes for multiuse potential.

10. Integration with Rural PIKs

Wherever there are rural PIKs in the country, these may be integrated with the VKC with MSSRF technologies for making them rural information growth centres and backbone for rural information needs for all planning and decision making. Funding may be considered for this integration from private, government, corporate and public sources. The Ministry of Rural Development may also consider making Village PIKs more versatile and information enriched on realtime basis with MSSRF technologies.

CONCLUSION

A fisherman in Veerampatinam village near Pondicherry goes to the Village Knowledge Centre (VKC) and gets information on seawave heights likely in the next 24 hours. This is downloaded for him from a US Navy website. He then asks for information pertaining to safety at sea, fish/shoal occurrence near the seashore and post-harvesting techniques so he can fish in the right area. Seems impossible in a remote village in India?

This is what the IT revolution is doing in the country -- opening up opportunities to access information even in the most 'unreachable' of villages.

The VKCs villagers now access information on grain and agricultural input prices, integrated pest management and pest management in rice and sugarcane crops. Important public events and government announcements that are relevant to the villagers. Locale-specific information has also been compiled -- a detailed account on sugarcane cultivation, a guidebook on the application of bio-fertilisers in rice cultivation, a how-to-style document on herbal remedies for disorders among children and one on local religious festivals. There is also a provision for exchanging information on the availability of labour and materials in the region. Bus/train timetables and opinions of medical practitioners are also available at the click of a mouse.

There's miles to go yet. But a beginning has been made. The cyber revolution that already has urban India in its grip, is slowly but surely making its foray into the villages and irrevocably changing lives. If the fishermen of Veerapattinam near Pondicherry were earlier at the mercy of nature each time they set out in their boats, now they know for sure what to expect of the weather, the waves and what it will throw up by way of a catch, courtesy the PC. In tribal Tejgadh, Naginbhai Rathwa is eagerly awaiting the day he can tap the Internet for info on tribal civilisations around the world. Wishful thinking? No more. The promise of connectivity which has already shrunk the world is at long last ringing true in the countryside.

From providing lists of veterinarians and doctors, to bus timings, locations of various hospitals and news of goods for barter or sale, IVRP has irrevocably changed villagers' lifestyles. While some like K. Jagadeesan drop in at the centre "only to find out what computers are all about," there are an increasing number of women who come with health-related queries, and students who want to check an exam result, browse through educational CDs or learn to design slides on Power Point.

It's a great change over years in rural India coming up close to urban areas through ICT initiatives in rural areas. ICT have paved the way, only time will take the rural masses ahead of our times and may be one day, we have all the progressive growth oriented economies emanating from rural areas, making them centres of prosperity, through the threadbare of ICT.