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ICTs FOR RURAL DEVELOPMENT?: ANSWERS FROM BELOW- A MICRO-LEVEL STUDY OF FIVE ICT-ENABLED VILLAGES IN TAMIL NADU

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ABSTRACT

This paper explicates some of the perceptions and usage patterns concerning the rural information centres / kiosks and the limitations in effective implementation of the 'Information for Development' (I4D) mantra. This has been done through an empirical study of five ICT enabled villages in the Thiruvallur district in Tamil Nadu. The findings are based on extensive interactions with various stakeholders like the kiosk operators and various sectors of the rural community. Various parameters such as gender and caste; and issues such as cost, technology choice and sustainability have been considered. The findings highlight the potentials of I4D, the expectations and attitudes at the receiving end, the challenges, limitations and suggestions for more effective implementation in future.

Introduction

The diffusion of Information and Communication Technology (ICT) to rural areas is a phenomenon currently witnessed all over the world, especially in developing countries. In the past few years terms like 'knowledge economy', 'last mile connectivity', 'rural information kiosks','village information centre', and 'digital divide' have acquired common currency both in social sciences and engineering research. Revolution in information and communication technologies has considerably reduced the digital divide between the rural and urban areas. It has also raised the livelihood of the poor though it is debatable whether the divide between the rich and the poor has been reduced.

ICT is "an umbrella term that includes any communication device or application, encompassing : radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video-conferencing and distance learning. In this paper we primarily focus on the computer and internet based information and communication centres. In India, these are being established in many rural areas under the broad rubric of rural ICT programmes. This paper is an empirical micro-level study based on five such centres in five villages in Thiruvallur district near Chennai, wherein the villages are being looked at in their totality with regard to the issues and challenges facing the centres.

In the present scenario, the growth of ICT as a movement aimed at development of rural areas, involves many public and private players and many international agencies like the World Bank, the International Monetary Fund (IMF) and donor agencies of developed countries like Canadian Development Agencies (CIDA), the Norwegian Agency for Development Cooperation (NORAD), the United States Agency

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for International Development (USAID). Governments at the grassroots, local and international non-governmental organisations and private organisations have come forward with many initiatives to bridge the digital divide with the support of IT corporate leaders. Most of them have committed large resources to the development of rural information kiosks to provide access to information in various fields like agriculture, education, health, e-commerce, e-governance as well as training to first time computer users in rural areas.

The new ICT initiatives promise the offsetting of the economic disadvantages of rural areas by reducing the barriers of time and distance between major markets and villages, by providing faster and easier access to knowledge needed for local improvement in various areas, by promoting better learning opportunities and also job openings. They also connect the governments to citizens (G2C) more intimately through the e-governance measures. However, the sustainability of the ICTs in the rural communities is a major challenge in developing countries. There are many reasons for this, such as: low population density which translates to low demand levels for a particular centre, low literacy, lack of awareness, lack of interest in new technologies and infrastructure handicaps. These make it difficult to offset the high investment costs required to construct advanced information technology infrastructure. Adoption and accessibility are crucial factors for the diffusion of any technology in society. Specifically, the establishment and spread of internet based information technologies in rural areas is a highly challenging task, as it depends to a great extent on the basic understanding of the technology by the people, in their education, interest and involvement apart from basic local infrastructure facilities.

Need for Information/ Knowledge Centres in Rural India

Nearly two-thirds of the Indian population depend on agriculture and allied activities for their livelihood and 19 per cent of GDP comes from agricultural sectors (Ramesh Golait and S. M. Lokare, 2008). Considering this high dependence and low productivity, there is a need for more information and knowledge intensive approaches to improve productivity and employment generation. The farmers need dynamic information relating to meteorological, management and marketing factors pertaining to crops, animal husbandry, fisheries, agro-forestry and agro-processing. They need such dynamic and also generic information beyond what the conventional extension agencies are able to provide today. With regard to non-agricultural employment, a majority of rural adults face the problem of lack of proper information for career development. Even educated rural youth have low awareness about various development schemes and job opportunities in the government and private sectors. This leads to unemployment, underemployment and low standards of life resulting in major disparity between the rural and urban populace. Hence there is a need for greater information flow to enhance both the awareness of employment prospects as well as the employability of the youth. Also, better healthcare information, functional literacy and better governance in general can contribute to significant overall improvements among rural communities. In this context, the idea of reaching out to the unreached and giving voice to the voiceless through the use of ICTs has captured the imagination of governmental and non-governmental agencies. But has it captured the imagination of the people?

The rural ICT endeavours have taken shape in the form of Village Information Centres (VKC), Rural Information Kiosks, Rural Knowledge Centres (RKCs) etc. While these endeavours are primarily computer and internet based, of late, the extensive penetration of cable TV and cell phone technologies have opened other modes of information, irrespective of rural and urban areas. Cable TV disseminates pre-programmed information and cell phone technology facilitates easier contact, and real time sharing of information. But the internet based communication

technology provides both the facilities and also one can save the information (in larger quantities) and send the same across. Even more, the ICT centres can also act as skill development centres. Therefore, in the present situation, the rural information centre movement can be an important milestone in rural development. But the questions again are: to what extent are the people enchanted with the idea or to what extent have they been convinced of its prospects and what the challenges are involved in capturing their imagination.

The Actors and Factors

IT Secretaries of the state governments of India in a meeting in Hyderabad in January 2002, declared that "IT would be used in a double capacity: first, to increase the international economic position of the nation by building on the success of the Indian software export industry; second, by developing programmes of 'IT for the Masses'... that would play a critical role in solving the as yet unsolved problems of development that beset large sectors of the Indian population" (Kenneth Keniston, 2003).

When one identifies the various information needs in rural areas some of the questions that arise are: "What kind of model is appropriate to serve the rural communities? What is the size of investment required? What problems and challenges an organisation is likely to confront if it sets out to provide such services? Will these services make an impact that would justify investing in ICTs for development rather than investing directly in health, sanitation, water, power, roads etc.? If we will get answers for all these questions, ICTs will attain their professed aims in the development sectors" (Gideon Hayford Chonia, 2005). In-depth and micro-level studies are therefore, needed on these various counts. This is particularly so, because there are still many contending priorities with regard to basic rural amenities. As explained by Subhash Bhatnagar (2000), (cited in Kenneth Keniston, 2002) "If you visit a village in India, where 70 per cent of all men, women and children are below the poverty line, where children's hair is grey and red from malnutrition, where there is no work, no school, no medical care – to say nothing of no infrastructure needed for modern IT – is necessarily to wonder whether, when, and how information technology can help". Surely there are other priorities such as "food, education, water, medical care, basic rights, social justice and freedom from corruption" and meeting them "must be the core criteria for any use of modern information technologies."

According to Grantham and Tsekouras (2005), "successful diffusion of ideas and technology depends largely on their merits being communicated between user and potential users". However, as we shall see it also depends on other actors and factors like the kiosk operators and the location of the centres, the information services, connectivity, relationship between the stakeholders and their approaches, understanding of the rural areas and the techniques used to mobilise and involve the community. There are also some specific challenges within developing countries with regard to use of ICTs such as: lack of appropriate products, cost of access, level of literacy, language barriers and human resources.

Among the many rural ICT initiatives in India, some are playing a vibrant role in the development of rural areas, while some of them are not very effective. Their performance is shaped by a combination of the above mentioned actors, factors and challenges. There are many studies analysing the functioning of various models or comparative studies (of the models) which are in the nature of broad overviews or reports or focused on the information centre as such or undertaken by the agency (running the programme) itself or appearing as reports. This study aims to have a more comprehensive approach by taking the rural setting as a totality and looking at the role of various aspects of the village in determining the effectiveness of the internet centres. The specific objectives of the study are :

* To assess the awareness of rural people about the Internet

Figure 1: n-Logue operational system (corDECT Design)

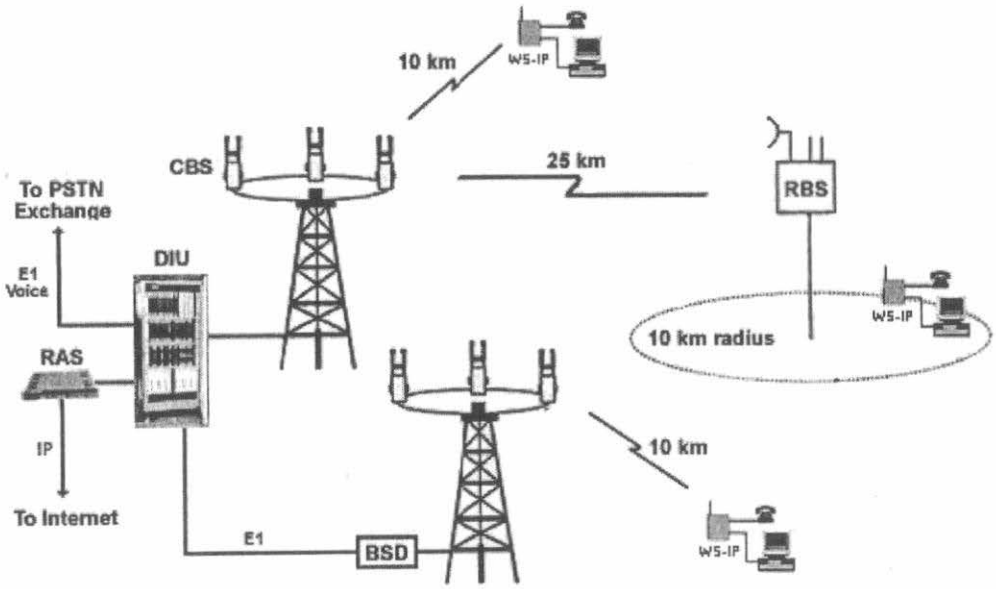
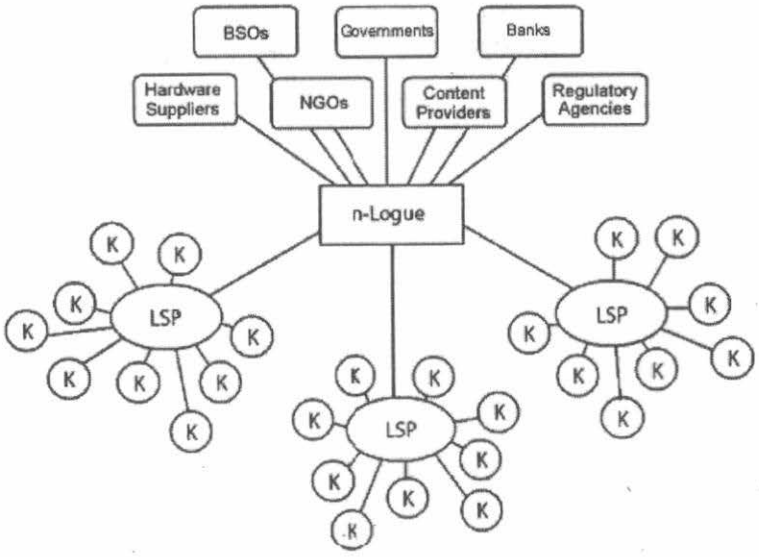


Figure 2 : n- Logue business model



* To analyse the relation between centre operators and rural people
* To identify the problems in usage of the rural ICT centres
* To analyse the perception of rural people about the rural ICTs
* To highlight the broad issues affecting the rural ICT programmes

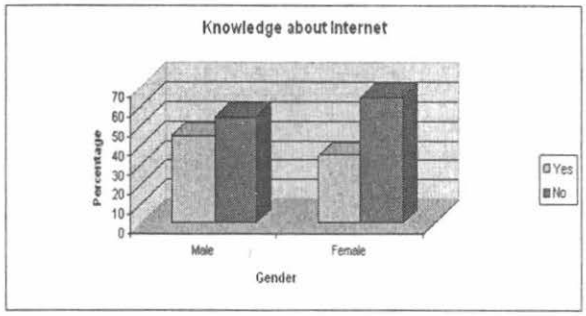
Methodology

For the above stated purpose, this paper has taken up five specific villages for study, namely: Alamathi, Chinnamapet, Veppampet, Grandlin, and Alingivakkam. The study areas are situated near Chennai, the capital city of Tamil Nadu. Out of the five villages, two are located in the vicinity of towns. The population is below 2500 in each village and the majority of the people are engaged in agriculture and allied activities. The Chennai based rural internet service company n-Logue is the internet services provider for the rural information centres or 'kiosks' in these villages.

n-Logue is a private company incubated by the Telecommunications and Computer Networks (TeNet) group at the Indian Institute of Technology, Madras. The stated goal of the company is "to significantly enhance the quality of life of every rural Indian by driving the digital revolution profitably" (Kentaro Toyama, *et al.*). The TeNet group developed the corDect wireless local-loop technology, with which n-Logue provides rural connectivity. The n-Logue model has three levels in its operational set-up: the first level includes Government, Non-Governmental Organisations, hardware suppliers, banks etc. The second level is that of Local Service Providers (LSPs), who run a regional kiosk business based around a corDect tower that provides phone services and internet connectivity; and finally the village level operators, who run the information kiosks in villages. These kiosks are run on the broad principle of social entrepreneurship. The structure of the n-Logue operational system and business models are proposed in Figures 1 and 2, respectively.

There are 160 centres run by the n-Logue in Thiruvallur district. However, only 20 of them are in good functioning state. Five such centres (from the aforesaid five villages) have been selected for this study by random sampling method. From the entire five villages, again by random sampling, 140 individuals (80 males and 60 females) from the general population and the five kiosk operators were chosen to be respondents. The primary data were collected through separate interview schedules for the people and kiosk operators. The interview schedule for people consists of nine chapters such as: personal information, family information, awareness about information technology, awareness about kiosks, usage of kiosk, relation between operators and users of the communities, attitude of the community when the kiosk is established in the villages, problems related to the kiosk and some general questions. The interview schedule for the kiosks operators

Graph 1: Knowledge about internet



deals with their relationships with the community and with the Local Service Provider (LSP), their personal circumstances and challenges and their own social and economic development due to the running of the kiosks.

Analysis and Discussion

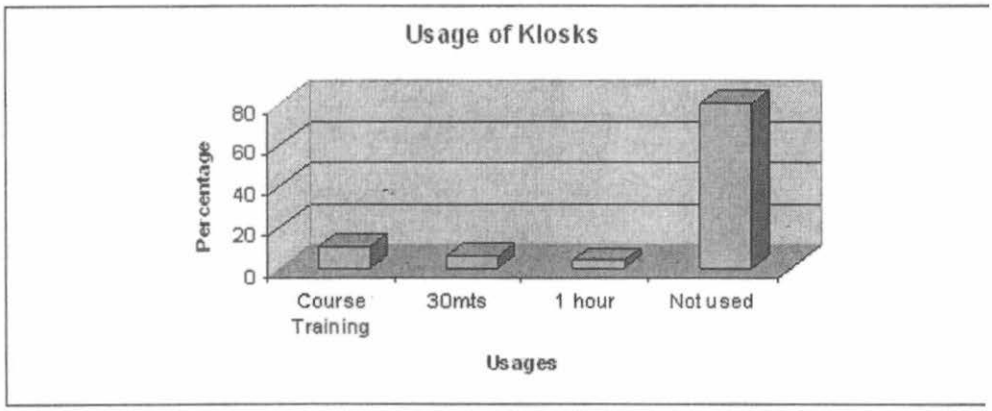
Concerning Usage : The following section analyses and discusses the data related to the internet awareness and usage profile, collected through the above instruments. This section and the following one on findings and conclusions highlight some of the major trends, issues and challenges concerning the spread of rural ICTs.

Graph 1 shows the level of knowledge about internet among the rural people in the selected villages. As can be seen, the majority of respondents were not aware of the internet. Only 40 per cent of the male respondents said they were aware. It was further low among women respondents of whom only 30 per cent were aware. The reason for the relatively low rate of awareness among women in these villages is that the majority of the female respondents were of average level of education and most of them were housewives and labourers. Interestingly, when some kind of explanation was given about the internet, most of the male respondents exhibited an air of familiarity (though still vague) about the internet. It is thus a matter of some re-assurance that although the awareness level about internet has a long way to go, yet internet is not so alien or sc unheard of a thing as a UFO in these villages!

Graph 2 shows the usage of the kiosk by the respondents in the selected areas. The majority, 80 per cent of the respondents did no use the kiosks. Nearly, 10 per cent of the respondents were using the kiosk for compute related training courses – i.e on a fixed regula basis. Only 5 per cent were using the kiosk fo internet related purposes, on an average of 3(minutes daily. These users were mostly educatec and of the age group of 20 to 30 years. Other used these kiosks for specific need-based service like DTP and digital photograph services. Apar from these, the school students came to th kiosks for playing computer games. It is one c the major sources of income for three of th kiosks in this study.

As these kiosks come under the entre preneurship model, the operators are mor concerned with making profit tha disseminating development related informatio to the community and creating awareness o the content. Thus, they end up doing mor offline work than online. If the kiosks did mor online work, the operators frequently woul contact the access centre (located near town, i LSP) for issues related to connectivity an content. It will also ensure constant relationshi between the operators and the access centr

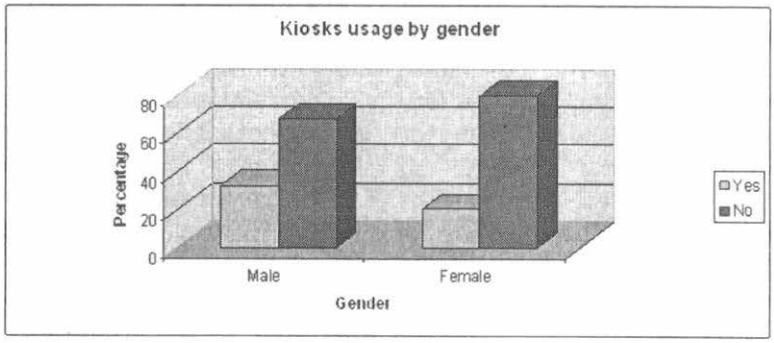
Graph 2 : Usage of the kiosks



and the technology provider. But in reality, as, internet connectivity is not the major concern for the kiosks, they have not contributed much to local development based on increased access to information, which is the central theme of the idea of *'I4D'* (Information for Development) or ICT4D as espoused by the proponents of various rural ICT initiatives.

Graph 3 shows the usage of the kiosk by the respondents based on gender. The usage of the kiosks by the male respondents was considerably higher than the female respondents. (32.5 per cent male and 20 per cent female). In general, the male respondents came to the kiosks for DTP work and playing games. The female respondents said that they used it more for digital photography services and to some extent for DTP related work. Some reasons given for low usage were common to both and women such as the nature of their employment and lack of interest in accessing the new technologies. But there were some reasons which were specifically related to the women such as: their domestic work load, location of the kiosk and male domination of the kiosks' activities.

Graph 3: Kiosks usage by gender

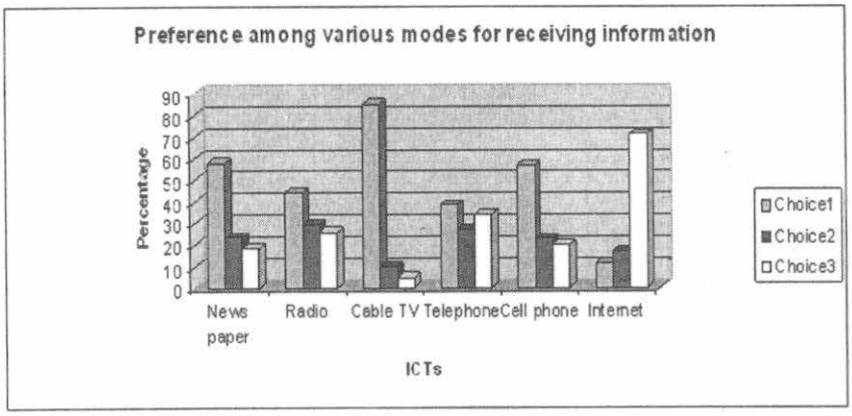


Graph 4 presents the preferred modes among various options of receiving information. Here, the majority (above 80 per cent) of the respondents' first choice was cable TV, followed by the newspaper (nearly 60 per cent) and thirdly the cell phone (57 per cent). Internet was their last choice. The cable TV and newspaper can be accessed by people on shared basis whereas the internet is accessed individually. That access also depends on other factors like education, the cost of access, availability of the internet connectivity etc.

A recent (National Readership Studies Council 2006) survey said, India's 112 million households own television of which 61 per cent have cable or satellite service. The cable or satellite penetration has reached about 60 per cent of the population in Tamil Nadu. Our study in these five villages confirms this phenomenal reach of cable TV. The visual appeal, the diverse entertainment and minimum cost are the main reasons for such penetration of cable TV. An important challenge that lies here for the internet kiosks is that the cable TV itself can be (apart from being just a source of entertainment) rich source of information and tool for individual and social development. The kiosks therefore, have to work hard to sell themselves by showcasing what is so special and more valuable about them.

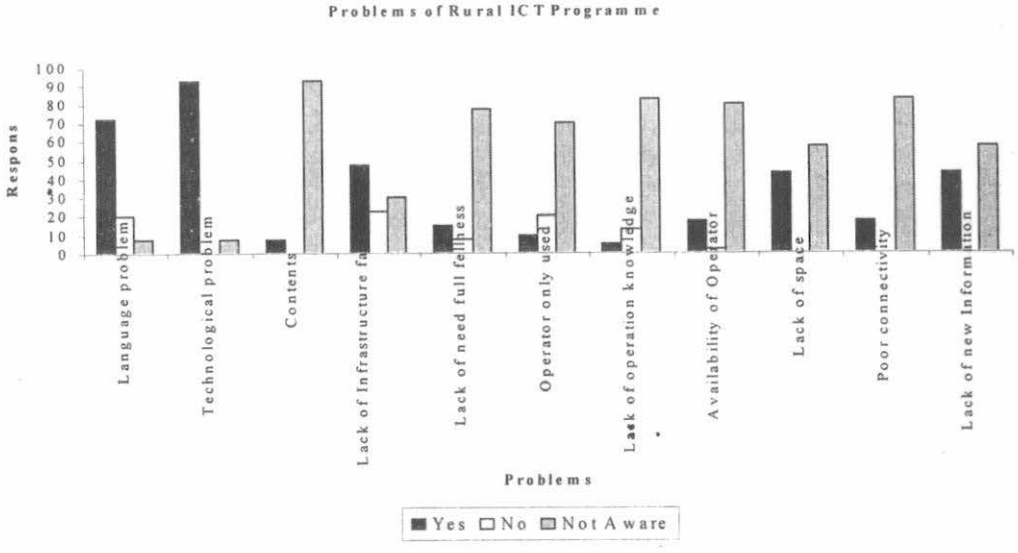
Graph 5 gives an idea about the problems of rural ICT programme in the selected study villages. Majority of the respondents (irrespective of usage) felt that rural ICT programmes are necessary for development of rural areas. Similarly, 72.5 per cent of the respondents felt

Graph 4: Preference among various modes of receiving information



language (English) is a key problem in accessing the kiosk's facilities effectively. In the eyes of a huge majority of 92.5 per cent, the internet signified very high and sophisticated technology and therefore, a bit distant. About 47.5 per cent of the respondents thought that the infrastructure facilities in these kiosks were not sufficient. Nevertheless 22.5 per cent of the respondents were very satisfied with the infrastructure facilities. About the assistance during the time of accessing, 10 per cent of the respondents mentioned that the kiosk operators did not allow access to computer. The majority of the responses (as to the problems related to usage of the kiosk) was constituted by the 'Not Aware' category, which again confirms the low level of awareness about kiosks and their function in their villages.

Graph 5: Problems of rural ICT programme



Findings and Conclusion of the Study

Factors behind Usage and Non-usage: This study has realised that the diffusion of information and communication technology in rural communities is not going to be an easy task if one were concentrating only on the technologies and other logistics. While implementing such technologies, one needs to look at all sides of the rural setting such as: geography of the village (including its special resources and physical limitations), the overall living conditions, education, infrastructure facilities, mobility from villages to towns, the economic, social, political and cultural conditions. The penetration of the ICT programme in rural areas depends on the broad acceptance and adoption of the technology by rural people. However, adoption is impossible without widespread initial usage of the facilities. The usage in turn depends on the promise of economic or social improvement or some new attraction.

For example, an interesting finding of the study is that, after the setting up of kiosks in the study area's villages, people chose to make invitation cards/pamphlets for ceremonies in their home (like funeral ceremony and house warming) for which they had not done so earlier. They took one copy (printout) from the kiosks and made photocopies of it. It took less money and time as they did not need to go to nearby towns. The practice of giving such invitations for more and more ceremonies by more and more families is a new cultural phenomenon induced by the kiosks in the rural areas. Thus, the kiosks can, and have to, create new demands to ensure their sustainability. However, again the predominance of such offline services can affect the intended information-oriented development schemes. It is also debatable whether such new cultural trends themselves can be seen as development or unwanted strain on existing resources.

As for the intended development-oriented content, the n-Logue package's focus is on six major areas such as: health, agriculture, education, e-governance, e-commerce and entertainments. However, in reality, in the kiosks in these villages, these were not much in use. The telemedicine programme, which was organised in the initial stages was stopped quite early due to connectivity problems during the video-conferencing between hospitals and kiosks. At present, the kiosks offer entertainment like games, and services like computer courses and online tutorial courses apart from DTP works and printouts.

The computer courses can be of much benefit to the rural youth. The youth possess very minimal educational qualifications and therefore, limited job prospects. The courses offered by the kiosks can enhance their skills and employability. However, such a beneficial process too has been very minimum.

One of the general problems noted in the study is that the proponents of this rural kiosk programme had not done adequate social homework. While the technological aspects had been taken care of, the focus on the actual recipients in their specific context has been deficient. Initial surveys had been done in the village but they were more in the nature of a demographic survey which could reflect some of the basic aspects of the particular village. But such a survey (that too only at the initial stages) would not capture the everyday socio-cultural dynamics of the village. The distinctiveness of this study is in fact in the nature of the questionnaire which delves into the varied facets of the rural life with probing and direct conversations with the stakeholders.

One of the important messages which came out during such in-depth probing is that the intended recipients have been at considerable distance in the initial processes of the framing and evolving of the whole programme. i.e., during the setting up of the kiosks in the villages, the public were not intimately involved in the planning. Through the initial survey, the village and the people were only studied *about*, but were not part of the framing process of the schemes. Therefore, it so happened that in spite of the initial surveys, there

was not much difference between the setting up of the kiosks and any other shop in a village – the only difference of course being that the shopkeeper would most certainly locate it in a strategic location and sell things which the people would most want (without having done any 'scientific' survey!). The major problem with regard to the kiosks is that there is no natural attraction for the villagers to go to the kiosk i.e *they* do not *perceive* the kiosk as having a natural role in their settings i,e directly addressing their day-to-day issues and needs. Quite ironically, within an ICT endeavour, there is a stark communication gap whereby the proponents have not been able to convey adequately that their offerings do in fact relate to the lives of the people. While this (natural correlation) is being believed on one side (the proponents' side), it is not perceived so by the other side. Unless this basic mismatch is resolved, not much headway can be ensured. Of course, there is an inherent disadvantage with regard to kiosks (as opposed to say a new fertiliser or even a public telephone booth) – it is that they have, and use technologies and devices (computer and internet) which are totally new to the immediate eco-system. Their nature is that the people cannot immediately relate to them or vice versa. The kiosk operator has the extra burden or responsibility of convincing the villagers of the relevance of the kiosk.

The kiosk operators are highly challenged in this matter in spite of the fact that except one operator, all others hail from the same villages where the centre is located and all the centres have good infrastructure facilities and are located in the heart of the village or on prominent roads. Among the five centres, all except one have two computer systems. The kiosk operators' families also involve themselves closely with the kiosk and help in its running when the operator is away. But in spite of such apparent domesticity there is a gap between the kiosk and the potential users. The operators are unable to convince or motivate the fellow villagers to visit and use the kiosk in large numbers. This also highlights the importance of identifying the information needs of specific localities more sensitively in order to offer more context-specific solutions which will positively influence public opinion and understanding. This will also help the operators to run the kiosks both profitably as well as in tune with the larger idea of ICT for Development.

With regard to the former, i.e., running the kiosk profitably, the operators can try other strategies like having a photocopying machine and PCO (Public Call Office) as already seen in Veppampet village. All the operators need income generation training to improve their business through various income generating activities, so as to balance the expenses which they spend for internet connectivity, rent and other expenses. Some subsidies from the government side can also help - as for example in the case of electricity charges where they can be given the benefit of domestic tariff instead of the commercial rates that they are now paying.

Apart from the technical alienness attached to the kiosk, there is also another dimension introduced by caste equations in a given village. If the kiosk operator belongs to a particular caste, that fact acts as a barrier for the entry/use of people of other castes even though there are no explicit entry restrictions. Also if the users of a kiosk are of a particular caste, members of other castes hesitate to use the same kiosk. It is an unspoken but generally followed 'norm' in these rural settings that people of the scheduled castes (SCs, also referred to as Dalits) have a general hesitation to visit places frequented by other castes and vice versa. This study has found that this 'norm' is also playing a considerable part in the usage/non-usage of particular kiosks by people of particular castes.

Out of five kiosks studied, three are run by Dalits. It was noted that the majority of the users in these kiosks are from the Dalit community eventhough these are not Dalit majority villages. From the discussions with the respondents it was also evident that respondents belonging to the same caste as the operators have good working relation with them. In these kiosks, most of the time their own caste children occupied the

computers for playing games and others hesitated to use the facilities.

The caste problem (with regard to kiosk usage) was particularly pronounced in the case of Alingivakkam village where the kiosk initially was located in the Dalit locality of the village and was run by a woman belonging to one of the Dalit Self-Help Groups (SHG). Hence people of other castes did not use the kiosk. At the same time the Dalits of the village also did not use the kiosk, as most of them are working as labourers in companies around the villages and they did not have time to use these facilities. Thus, the kiosk could not be run profitably. It was closed for some time and then shifted to the main village (place of upper caste) in a rented building. However, this also did not help as it was in any case run by a Dalit, irrespective of the potential user profile in the new locality. Thus, in general, caste seemed to be a very important factor in determining the access to the rural ICT facilities.

Once the users are in, then there are a set of other - functional - problems, which further limit the usage. The use of these kiosks is limited by the general literacy requirements and technical attributes of the kiosks. In this way, even if the gap from the first and basic problem (i.e non-perception of need) is somewhat reduced or solved, a new gap can arise (due to the literacy and technical aspects) after people have started visiting the kiosk. Here the challenge is to make the facility as less alien as possible in terms of content (e.g. more and more of vernacular language and local content) and technology (e.g touch screen, voice database/ recorded contents, etc.). This challenge will also ensure that the providers of the technology are in a constant and dynamic relationship with the perceived and actual needs and problems of the villagers. The resolution of these challenges with regard to the nature of the content and the modes of the delivery will also take the kiosk project closer to the broad ideal of ICT for D.

Conclusion

In conclusion, it has to be said that the rural IC initiatives, even as they hold much promise, are also beset with many ground level problems and challenges–much of which are beyond the realm of technology. There is a need for a more wholistic approach to the initiatives by considering the totality of the rural settings. Caste and gender issues have to be given more attentions and sensitivity. The efforts should also be marked by a more dialogic approach rather than unilateral prescriptiveness which marks many other rural initiatives. The kiosks should also look beyond promoting one entrepreneur i.e the kiosk operator and aim to use its facilities for the creation of many local entrepreneurs, of greater job opportunities, greater agricultural and other production leading to an overall improvement in the local economy of the village as such (as originally intended). Most of all, the irony of a stark communication gap within a communication related endeavour should be pro-actively redressed. All these together highlight the need for greater focus on the human dimensions of technology use– an issue which has dogged all technological break-throughs and will continue to do, with hopefully good results for both.

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