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USE OF CONVERGENT MOBILE TECHNOLOGIES FOR SUSTAINABLE ECONOMIC TRANSFORMATION IN THE LIVES OF SMALL FARMERS IN RURAL INDIA

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ABSTRACT

The continuous rise in the number of suicides among Indian rural based farmers is not solely due to lack of funds or failure of crops or huge amount of interests on debts. Many a time the farmers are in daze triggered by the panic and fear both of which are due to lack of information backed by appropriate technologies. Lack of information about the appropriate crop patterns the farmers should choose depending on the market demands and remunerative prices, availability of water, supply of seeds for sowing, proper knowledge of the use of manures and ways to avoid over use of pesticides--did contribute to the ever increasing number of suicides in the regions of Vidharbha and Andhra Pradesh, Karnataka and Tamil Nadu. The Government machinery comprising Agricultural extension officers, backed by the Agricultural programs on Radio and TV could hardly meet the information required for these farmers affected with the compounding problems. Use of convergent mobile technologies with the internet and e-mail facilities is the need of the hour. The latest data drawn from the IMRB survey (The I-Cube 2007) indicated that internet usage in India has grown by more than 11 times over the last seven years.

The internet expansion is seen moving down from the metros to towns with population less than half a million with the number of users up by 69 times since 2007. In the last two years, 2005 and 2006, on an average 4.5 million new mobile subscribers were added every month.

Convergent mobile technologies with wide range of mobiles and packages being available now hold the promise of offering basic literacy and numeracy skills accessible to the small farmers in India, besides a lot of information concerning the availability of loans at lower interest through banks and self-help groups, crop patterns, remunerative prices for the produce, export norms for the crops, e-marketing and e-commerce, etc, The paper outlines a visualization of such an optimistic design of use of convergent mobile technologies.

Key words: Convergent Mobile Technologies, basic literacy skills and numeracy skills, self help groups, crop patterns, e-marketing, e-commerce, climatic factors, remunerative prices.

INTRODUCTION

The Indian agricultural scenario turned bad to worse in the last one decade. The number of suicides of small-scale farmers and marginal-scale farmers has been steadily rising over years, constantly hovering around 4000-5000 a year in certain States like Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu.

Nearly 29,000 farmers committed suicide in Maharashtra between 1997-2005, according to official sources.(Sainath,P: 2007). According to Sainath (a world renowned journalist, Raman Megasasay Award winner for 2007 and currently Editor for the Rural Affairs in The Hindu News daily published from Chennai, India), out of 150,000 farmers who killed themselves across the country during the period 1997-2005, almost every fifth one was from Vidharbha, the eastern region of Maharashtra State of India. "It is 105 per cent increase in farm suicides in those nine years. More than 19,000 of those farmer suicides occurred from 2001 onwards', added Sainath.

The data are based on the analysis done on farm suicides by K. Nagaraj of the Madras Institute of Development Studies (MIDS). Professor Nagaraj has carried out the above analysis using the data with the National Crime Records Bureau (NCRB), and Ministry of Home Affairs, from 1997 to 2005. 'Professor Nagaraj's study shows that of the almost 150,000 farm suicides in India between 1997 and 2005, over 89,000 occurred in just four States: Maharashtra, Andhra Pradesh, Karnataka, and Madhya Pradesh (including Chhattisgarh)', says Sainath (2007:p 13). Importantly, Maharashtra accounts for a third of all farm suicides within these Big Four States. "This State," says Professor Nagaraj, "could be called "the graveyard yard of the farmers" In terms of percentage; Andhra Pradesh saw more than 127 per cent of farmer suicides during the same period.

The above data show that there existed a high annual compound growth rate of suicides both for Andhra Pradesh (7.6%) and Maharashtra (13.7%). It also indicates that if current conditions continue to prevail next six years, these percentages might double.

Important Causes-Diagnosed

Four important reasons could be diagnosed for such high percentage of suicides.

- Debt –trap
- ii. Crop failure
- iii. Lack of support price from the Government, and
- iv. Government's apathy towards agricultural sector (Sainath, 2007).

As a result of these four major causes, many side effects of distress flowed in: the health of the farmers and their families got affected, farmers couldn't discharge their family responsibilities like performing the marriages of their children, massive migrations started from their villages to urban centers to work as construction workers, the overnight turned into child-laborers throwing their education to winds at once.

According to National Sample Survey's situational report on farmer households, the average expenditure of farm households is rupees 17 a month (less than half the exchange value of a dollar in Indian currency. A USD is equal to nearly 39 rupees currently). The wages of the agricultural laborer had not gone up beyond a US dollar (rupees 39-40) in a decade which led to a situation where India had fallen from the 124th to 128th position in the world human development index in the last 15 years (http://en.wikipedia.org/wiki/List_of_countries_by_Human_Development_Index).

According to Sainath (2008), in the post globalization, about 82% farm households landed in the debt trap. The state is withdrawing from its investment into agriculture, which was earlier 14.5 per cent of the Gross Domestic Product (GDP) to 5.9% in the recent years. As a result the farming sector's contribution to nation's real GDP has gone down from an estimated 3.6 % to 1.5% which result had even horrified the Government presently headed by a noted economist and the Prime Minister Manmohan Singh.

Recently, the UNDP representative to India, Maxine Olson, (2007) releasing the UNDP Report on Climate Change, warned India that, " terms of trade and changing rainfall patterns on account of climate change could result in drops in agricultural productivity, directly affecting 60 per cent of the population, which relied on the farm sector". Lack of support price for the farmers' produce for major crops like rice or paddy, wheat, sugar cane, cotton, corms, Red chilies, Oils, etc or lack of appropriate e-marketing strategies is another issue of concern and a major force for committing the suicides. Amrita Chaudhry's report (Indian Express, Nov 19, 2007: <http://www.indianexpress.com/printerFriendly/240746.html>) brings out live the force behind such suicides more vividly than ever.

Government's Flawed Approach To Agricultural Sector

Further. Government's apathy, both at the center and at the States, towards the agricultural sector left the entire farming community in the lurch and perennial depravation. The United Progressive Alliance (UPA) which came into power in 2004 announced a package –Vidharbha package-- two years later in 2006 (July) for the farmers who committed suicide in Vidharbha, Andhra Pradesh and Karnataka. (http://pmindia.nic.in/press_rel_01jul2k6-1.pdf). It was first ever attempt by any government to address the problems of the farmers at national level. Nevertheless, the Government's bureaucratic definitions of suicides and the causes of suicides for granting relief under the package played foul with the ground realities. Further, the government has not yet implemented the Swaminathan (a noted agricultural scientist and formerly Director of International Rice Research Institute, Philippines, Manila) Committee's Report on Minimum Support Prices (2006).

The perennial grievance of the farmers is that they are not getting minimum support price from the government itself. The knowledge of e-marketing and e-commerce in the wider context of globalization is still elusive to the small Indian farmers and short term vegetable growers (Murthy, 2008a). Murthy (2008a, b) suggested a number of e-marketing strategies with the expanding infrastructure, telecommunications and mobile technologies in keeping with the concepts of Singhal and Rogers (2003) and the World Congress on Communication for Development (2006).

The World Congress on Communication for Development (held at Italy between Oct 25-27, 2006) identified 13 important projects, which can be executed with distinct development communication approaches and means within the organization working at distinct societal and geographic levels (2006: p7).

While dealing with "How to reduce India's rural distress", Daniel J Gustafson, Representative of India for Food and Agricultural Organization, wrote that, '....The third emerging area is promotion of experience and knowledge sharing particularly by those who historically have not participated in UN-sponsored forums. An example is the UN's Solution Exchange initiative that connects for problem solving through e-mail groups and periodic meetings. Another example is the interaction between farmer groups in India and Kenya. Each side has complementary strengths and experience in micro-credit and in taking on agricultural improvement through group learning experiences. Putting them together opens up technical cooperation in an exciting new way. This approach also applies to work by NGOs on dry land agriculture in the Deccan Plateau and a new South Asian partnership with National Dairy Development Board for pro-poor livestock development" (Daniel J Gustafson: 2006).

The present study, aims at exploring some alternative designs and strategies at low cost through convergent mobile technologies that go a long way in supporting the farmers to address some of their problems—crop failures, debt traps, efficient planning and marketing, etc. The present paper thus aligns itself with the participatory model (Freire, P: 1983, Mefalopulos P, 2005) which otherwise broadens the diffusion model (Rogers, E.M, 1962, 1976) and encompasses all the four laterals of the Communication for development.

DEFINITIONS OF MAIN TERMS IN THE DISCOURSE: **Media, Convergence and Mobile Technologies**

In the present paper, the term, 'media' extends beyond the meaning of 'traditional media' (like print media or electronic media like Radio and TV). In fact today the term 'media' became extensive and pervasive in its connotation with new media or alternate media emerging as main competitors to the traditional media (Flew, T: 2002). Here in this paper the term 'media' covers even telecommunications including satellite technology which is the bottom line of support for all new media such as internet (e-learning) and cable television, teleconferencing and videoconferencing (Murthy 2008a).

The term 'convergence' defined as the one 'technologically coming together of two or more distinct entities or phenomena'. Convergence is increasingly prevalent in the IT world; in this context the term refers to the combination of two or more different technologies in a single device. Taking pictures with a cell phone and surfing the Web on a television are two of the most common examples of this trend. Convergence may influence consumers to accept new technologies. Computer- television convergence is already underway with WebTV, which pipes the World Wide Web to a slightly-modified TV set with a set- top box from an ordinary phone line and provides a degree of interactivity new media rely on digital technologies, allowing for previously separate media to converge. Media convergence is defined as a phenomenon of new media and this can be explained as a digital media.

"The idea of 'new media' captures both the development of unique forms of digital media, and the remaking of more traditional media forms to adopt and adapt to the new media technologies." Convergence captures development futures from old media to new media. The most prominent example of media convergence is the Internet, whereby the technology for video and audio streaming is rapidly evolving. The term convergence is disputed, with critics such as Lev Manovich (2001) pointing out that the 'old' medium of 'film' could be seen as the convergence of written text (titles and credits), photography, animation and audio recording. Mobile technologies are satellite and cable based. Cell phones and internet connected telecommunications fall under mobile technologies.

TWIN TECHNOLOGICAL DEVELOPMENTS—A PREREQUISITE

In order for achieving the sustainable economic transformation in rural India a combination of telecommunications (including satellite services) with electrification of Indian villages (with appropriate power supply) is an important pre-requisite (MSERVE INDIA, Aug 1-2, 2007)

Complete Rural Electrification by 2012

As of now India is still a power deficit country. Recently Government of India (<http://www.i4donline.net/nov07/content.asp>) under 11th plan, tried to push forward the electrification of rural India under Rajiv Gandhi Grammeena Vidutikaran Yojana (RGGVY). The plan envisaged complete rural electrification of India by 2012 in order to provide power on demand in any village of India. However, out of the 120,000 villages so far 40,000 villages were provided with the power. Under the new scheme habitations with a population of 100 even would be provided with the power. (Sujay M, 2008) Earlier this limit was 300 people per hamlet. It is also mandated that all such villages, which are brought under RGGVY scheme, would be provided an uninterrupted power supply for minimum 6-8 hours a day. Further free connection would be provided for the families under the Below Poverty Line (BPL) with an income limit of Rs 2,200/- per month (apply 50USD). The earlier limit was Rs. 1,500 (35-40 USD apply). If the Government of India could go in for the Nuclear Deal which is hanging fire due to the hurdles posed by the Leftist groups of the United Progressive Alliance (UPA) the realization of above target is not impossible. However, even if the nuclear deal does not get through the possibility of country achieving this cannot be ruled out at the current economic growth with 8.5 to 9 GDP each quarter, averaging to 7.5 to 8 GDP annually. (<http://www.thehindu.com/2008/02/13/stories/2008021355021500.htm>).

Widening Internet And Telecommunications

According to a latest report published in Times of India (Oct 22, 2007), 'the Internet usage in India has grown more than 11 times over the last seven years. The boom is being driven not by metros, but by smaller and non-metro towns, where the number of users has risen by a whopping 69 times and 33 times respectively since 2000'. The report further says that the number of users has grown in all socio-economic categories, as well as in all metros and non-metro towns. The report further added that the number of users as grown in all social categories in all metros and non-metros. Though the 8 metros still stand out highest in figures, the growth has been the fastest in the smaller and non-metro towns.

According to the report the small towns have the second largest number of total users. The findings published in the Times of India are the results of the survey conducted by e-technology group of IMRB International. The I –cube 2007 survey conducted across 30 cities and towns covering 35,000 people. The IMRB survey noted that the highest number of people use net for e-mail and information search. More than 7.5 million people in India use the e-mail as their basic mode of communication (Rangaswami, N; 2007).

The above study has taken into consideration of internet users through cybercafés only. However, the boom in telecommunications coupled with mobile phones based on satellite communication net work today has made it possible to access internet, e-mail and chat or conferencing right one one's mobile or personal computer cum television. In fact, as one can read into the analysis of suicidal cases being recorded by the Government, there are many suicides which fall into the category other than debt traps. Crop related failures, remunerative prices and financial inputs (such as loans—both long term and short term) are the ones which the information technologies could efficiently address. In this context mobile technologies could be very handy at the rural level.

According to a study of Keval J Kumar and Amos O Thomas (2006), mobile telephone services have become so cheap now that mobile subscriptions have outpaced fixed line connections; in 2005 and 2006. On an average 4.5 million new mobile subscribers were added every month. The rapid spurt in tele-density has been exceeded only by China. Cellular communication technology is the fastest growing one in the continent of Africa.

UNIQUE FEATURES OF MOBILE PHONES

Its light weight, portability, user-friendly and fairly inexpensive features would make it accessible to every category of society, rich and poor alike. It combines the characteristics of the traditional and the new media. It can comprise traditional media such as recorded music, photography, cinema, radio, television and the press and uses the new media to extend its storage, processing and distribution capacities (as quoted by Van Dyke, 2005 in Kumar and Thomas, 2006). According to Kumar and Thomas, 'the boundary between the cellular phone as a medium of interpersonal communication and as a mass medium for the distribution of Short Message Service (SMS), web pages, videos and games is dissolving". Mobile telephony is gradually merging with mobile computing. In fact mobile telephony has the power of empowering individuals and groups; it is interpersonal, immediate and extremely convenient. It has the potential to contribute to the new public sphere. (Kumar and Thomas 2006) .

Use of Mobile Technologies for Sustainable Economic Transformation in the lives of rural farmers

Use of mobile technologies for the empowerment of deprived social groups is not something new phenomenon. Recently the IIT Bombay had developed a farmer friendly soft ware where registered farmers can have their queries answered on a mobile phone without having to go to a kiosk or cyber-café. Earlier, the IIT Bombay developed a multilingual portal called AQUA (All Questions Answered).

Farmers can now ask questions on crops or livestock in SMS either in Marathi or Hindi or English. They can also seek information in advance and across it later in the offline mode. As a pilot project, the IIT Bombay has also installed three dozen weather – cum-disease forecasting stations in and around Nashik and farmers are alerted via SMS about a probable crop diseases or rainfall likely to hit the crops with the implications and possible precautions. (Mihika B, 2007) Mauren and Da Silva (2007) developed a pedagogical design for digital inclusion in the rural areas for farmers and the construction network of cognitive development and social capital (Learning Projects of Lea Fagundes). Galit and Michal (2007) carried out a pilot case study which aims to examine how socio-cultural and situated learning aspects are reflected in learning experiences within a novel mobile learning environment, Math4Mobile, a cellular application for mathematics learning. The study obviously laid foundation for imparting basic mathematical skills to the illiterate farmers of rural areas through mobile technology. In another study Renee et al studied the social and political challenges related to the implementation of ICT-Kiosk projects for rural development in India. In fact, the widening of telephone net work and lowering of telephone rates way back in 1999-2004 during the National Democratic Alliance (NDA) governance itself revolutionized the rural economy.

Many unemployed youth, physically challenged and senior citizens got telephone connections in the rural India under self-employment schemes. In another study of far reaching consequences, Paul and Tapan (2007) showed that use of mobile technologies and information systems on the rural front reduced the inefficiency and enhanced the supply chains. Indrani et al (2007) offered a design that would enable even illiterate farmers and rural artisans, besides vocational groups, to use the interface which is a text free one. Reuben (2007) conclusively showed how mobile phones and economic development are interlinked in one of the most important industries—fishing industry—in India. Hengyuan et al (2007) proved that though innovations stem from the developed world, they are fast embraced in developing countries. Sudip Aryal (2007) developed a comprehensive pilot project for rural transformation of Nepal by establishing community information centers.

Types of Mobile Services available in India

As mentioned earlier that India has undergone a wonderful technological advancement in satellite communications and telecommunications is beyond any dispute. The existing mobile technologies and mobile services, besides mobile phones themselves, became quite cheaper. A mobile is available at a cost of 20-30 USD or 750-800 rupees. The two types of Mobiles—both Groupe special Mobil (GSM) and Code Division Multiple Access system (CDMA) –are available in India. Where as Nokia garners about 40% of total mobile sector consumption in GSM mobile technology, it too offers a mobile phone with SMS and phone book, chat, conferencing, calculator facilities, etc at a cost of 25 USD. Nokia offers mobiles with radio, MP 3 player and camera at the price of 100 USD with color screen also.

In CDMA category, TATA Telecom and Reliance Telecom offer localized mobile handsets with roaming facility entire country. They are much cheaper than the GSM version of Noakia, Samsung and Erickson. All these mobiles are having single sim card facility only and the mobile number has restricted use in terms of tariff and roaming services.

Of late mobiles with GSM and CDMA with twin sim cards are also coming up quite handy with multimedia in puts such as internet, radio, television, scanner and camera too. Yet, they are not very costly (150-200 USD). There are many cellular services like IDEA, AIRTEL, BSNL, VODAFONE etc which are offering very low packages as low as free life long incoming call facility. They are also offering the services at costs as low as 10-1000 and above also. There are top up and recharge facilities.

CONCLUSIONS

In spite of rapid advancement in technology and a spectrum of satellite services coupled with booming economy, the Indian farmers and weavers are committing suicides due to lack of appropriate technologies to integrate the Indian farming sector with the wider global marketing and planning systems. Firstly there is an immediate need to address the financial indebtedness of the small farmers and marginal farmers on realistic terms quite free from the jargon of complicated bureaucratic mind set with human face. To avoid recurrence of farming sector landing into crisis, an appropriate technological approach coupled with infrastructural facilities is the need of hour. The available convergent mobile technologies as described above would go a long way in alleviating the distress of the Indian farmers and help them compete with the global markets.

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