INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) FOR POVERTY ALLEVIATION

A SOCIOLOGICAL ANALYSIS

Dissertation submitted to
JAWAHARLAL NEHRU UNIVERSITY
in partial fulfillment of requirements
For the award of degree of

MASTER OF PHILOSOPHY
In
SOCIOLOGY

BY
T.KABILAN

CENTRE FOR THE STUDY OF SOCIAL SYSTEMS
SCHOOL OF SOCIAL SCIENCES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI- 110067
2005

Centre for the Study of Social Systems
School of Social Sciences

27th July 2005

CERTIFICATE

I hereby declare that the Dissertation entitled, *Information and Communication Technologies (ICTs) for Poverty Alleviation*: A Sociological Analysis, being submitted to the Centre for the Study of Social Systems, Jawaharlal Nehru University, in partial fulfillment of the requirements for the award of the degree of **Master of Philosophy**, is my own work, and has not been previously submitted for any degree of this or any other university.

T.KABILAN

We recommend that this Dissertation be placed before the examiners for evaluation.

Prof. Anand Kumar

(Chairperson)

Prof. Anand Kumar

(Supervisor)

DEDICATED TO

AMMA,

APPA AND

DUDU.

ACKNOWLEDGEMENTS

CONTENTS

ACKNOWLEDGEMENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AIDS   Acquire Immuno deficiency Syndrome

ASEAN   Association of South East Asian Nations

BPL   Below Poverty Line

B2C   Business to Citizen

BSNL   Bharat Sanchar Nigam Limited

C.I.C   Community Information Centres

ESCAP   Economic and Social Commission for Asia and Pacific

FRIENDS   Fast, Reliable, Efficient, Network for Disbursement of Services

G2C   Government to Citizen

G2B   Government to Business

GNP   Gross National Product

HIV   Human Immuno Deficiency Virus

ICT   Information and Communication Technology

ICTPR   Information Communication Technology for Poverty Reduction

ICT4 D   Information Communication Technology for Development

IIT   Indian Institute of Technology

IIT – B   Indian Institute of Technology –Bangalore

IIHT   Indian Institute of Hardware Technology

ITU   International Telecommunication Union.

IMF   International Monetary Fund

ISD   International Subscriber Dialing

ISRO	Indian Space Research Organization
MAIT	Manufacturer's Association
MEDINET	Medical Network
MDG	Millineum Development Goals
M.S.S.R.F	M.S.Swaminathan Research Foundation.
NASSCOM	National Association of Software Services Companies.
NICNET	National Informatics Network
NCAER	National Council For Applied Economic Research.
NGO	Non Government Organization.
PCO	Public Call Office.
STD	Subscriber Trunk Dialing
UN	United Nations
UNDP	United Nations Development Programme
VPT	Village Public Telephones
WLL	Wireless in Local Loop

Chapter I

1.1 Introduction

The world is in a state of flux. With the coming of the radio and the television, boundaries have been blurred and the flow of ideas has been rapid making the global village[1] a true phenomenon. Though there are rapid advancements in science and technology there has been a spectre of gloom in the third world economies which have been plagued by poverty. The use of information and communication technologies for the reduction of poverty has been in vogue during the post 90s.The forefathers of this information syndrome being Daniel Bell,Manuell Castells et al.

With the opening of the economy as a continuation of the liberalization policy of the government came the forces of globalization which has altered the knowledge topography of the country. The Census of 2001 puts the number of people under the poverty line is almost close to 260 million people which is predominantly in the rural areas. Though the government has time and again initiated several poverty alleviation as well as reduction strategies in the form of food for work programmes and midday meal schemes, 260 million people out of a billion plus is a staggering number.

Poverty is a multi dimensional phenomenon and is a multi dimensional problem as well so it needs a multi dimensional solution. The government so far has been indulging in a uni - dimensional solution,i.e a traditional mode of approaching poverty (like the food for work programme) . Poverty alleviation needs a multi dimensional approach which is going to work and which has been working in select parts of our country as well as abroad. The

---

[1] According to Marshall Mcluhan, global village is a virtual network , where information is transmitted form a variety of sources , places and times in which everyone is involved with everyone else.

idea is that to use these technologies for the creation of employment which allows the persons involving in using such technologies live a life with a minimum level of sustenance.

Going back to the origins of both ICT's and poverty in India, ICT's is a recent phenomenon though its origins can be traced to the starting of mankind itself because the underlying theme of ICT's is the message[2] which is an integral part of communication.

Information is a bunch of data which has the potential to be disseminated and when this information is used in day to day problem solving activities it evolves into knowledge. Manuell Castells has written about the information age, Alvin Toffler in his "Third Wave"[3] has leapfrogged into the future about the techno-informational presence overarching the society. Information becomes sterile if not communicated .Information becomes knowledge only when it is communicated and applied. There is a difference between information society and knowledge society.

Technology involves those devices which store and transmit information. In this research emphasis would be laid on a 'dual way knowledge disseminating mechanism', like internet and telephone where both the transmitter and the recipient can interact unlike radio and television. The study of using ICT's for poverty annihilation comes under the ambit of ICT4D (ICT's for Development).Though the two ICT's and poverty alleviation seem to be poles apart there seems to be some congruence between these two poles. The points of congruence are the important areas in this research.

---

[2] Mcluhan, Marshall (1964), Understanding Media, The Extensions of Man. MIT Press ,New York and London.
[3] According to Alvin Toffler, the first wave was the agricultural revolution, the second wave was the industrial revolution and the third wave being the information revolution.

2

The question which comes to anyone's mind is that when there is a dire lack of basic amenities in our country which is still under the third world tag, how can ICT's deliver as far the poor are concerned? .We have to look at the policy of the government regarding poverty alleviation since independence . The policies which are supposed to reduce poverty were used by the middlemen or the creamy layer .There was no monitoring mechanism for the disbursement of funds/food grains or to check whether every rupee is spent on keeping a check on poverty.

My point is that we have to learn from the neighboring economies like Srilanka, Singapore and China which have invested a lot in social capital and have fared better than us in human development. The money which is spent for defense and modernization of the armed forces should be reduced and put in social capital/human capital initiatives. This is what the Asian tigers have been doing to reduce unemployment, poverty and disease in their countries. The immediate need at this time is to freeze the expenditure on defense for a year, spend the money on human development initiatives for a year only and then get back to the old path. Any government would definitely see a sea change in the country as half of the work is done by the five year plans and rest would come from this initiative.

The idea behind using ICT's for poverty alleviation is that they have been tested in few areas of our country and the results are encouraging. The post liberalization phase has seen a upsurge in software development as well as a downward trend in human development by which I mean India's stagnating position at the same rank similar to that of the previous year ranking in the Human Development Index. Can ICT's do the trick, in helping to alleviate poverty? This research aims at finding an answer for this question. The world

over there are several instances where innovative interventions of Information and Communication Technologies have helped in alleviating poverty.

Coming back to the Indian situation, in all the programmes the government used there was no knowledge component this might be the missing link between success and failure in a programme as massive as this. Permanent solution is where people take care of themselves with the knowledge they have attained and live a reasonably dignified life. The flaw in the governments policy is been it ha been trying the same idea which gives the same result. Poverty has to be approached from several possible angles to find a viable and sustainable solution.

1.2 Objectives of the study:

1. To find out how Information and Communication Technologies (ICT) act as tools for alleviating poverty in India.

2. To study E- Governance, and how use of E- governance methods have benefited the people especially in the backward pockets of the country.

3. To explore the disparities of digital divide and to study the transition from digital divide to digital development.

4. To analyze how ICT's act as mechanisms of employment generation and empowerment.

1.3 Research Questions:

1. How will ICT deliver in a country which has lack of basic infrastructure facilities like electricity, sanitation ,roads and low levels of literacy?

4

2. When English is the lingua franca of the internet ,how will the man in a village access the internet and gain benefit out of it?

1.4 Area of study:

India is a country of contradictions. One the one hand we have one of the biggest exporters of software in the worlds and on the other hand we have a large population reeling under acute poverty. According the Economic Survey 2005 the absolute numbers of poor in India are close to 260.3 million. The Tenth plan 2002-2007 has set a target reduction in poverty ratio by five percent points to 19.3 percent by 2007 and by 15 percent points by 2012. The role of Information and communication technologies in alleviating poverty is a novel way as a technology induced change could be experimented in attacking poverty.

The NASSCOM Report of 2004 says that India is one of the leading software exporters after China and one of the best known sites of out sourcing . The need of the hour is to use the excess computing facilities apart from the existing media networks to empower the poor which has been done successfully in several countries of South Asia. Empowering the poor here implies providing an adequate source of livelihood apart from providing them basic needs which are nutritious food, shelter , literacy, electricity ,and proper sanitation facilities.

1.5 Key Concepts:

The main concepts involved in this research are information, communication, technology and poverty. It will be simple if we take each concept by its value.

1.5.1 Information:

According to the Oxford Dictionary the word information has two meanings – i) facts or knowledge provided or learned and ,ii) computer data. Both these meanings are important

for this study. We link information for its relationship with poverty. According to Michel Foucault knowledge is power, people are deprived of access to information, so they remain illiterate and their probability of social mobility is miniscule.

And even if one succeeds in gaining information and lands into a job there is further shelling of information by the power elite[4] who maintain a false consciousness of a pseudo information society. Information society is one in which low cost information technology and telecommunications are widely used to facilitate communication nationally and internationally, and to promote access to libraries, data archives .and other stores of information held by private organizations or in the public domain. The question arises who controls the access points of information both in the private and public domains.

Information has the potential to release as well as realize the potential in every sector of the economy, but simultaneously there is a poverty of information itself. Dissemination of information is itself through a dissipative mechanism similar to the trickle down effect. The need of the hour is a bottom up approach rather that a top down approach.

1.5.2 Communication:

It is the process of establishing meaning found in all social situations and hence a very wide ranging concern of social scientists generally. Communication is the process of sharing and exchange of information. Reality is shaped by the flow of communication which in turn is the exchange and the interchange of meanings. Communication is basically a

---

[4] Mills,Wright, (1959),The Power Elite, New York, Oxford University Press.

catalogue of codes, which is exploding and imploding at the same time. Exploding at the global level and imploding at the local level, what Appadurai calls 'glocalization'.[5]

The process of communication goes to the beginnings of human being itself. Whatever we do we handle information or data in one form or another and we are always in the process of communicating our selves to others .Animals have their own ways of communicating amongst themselves with shrieks, howls and roars. Humans used sign languages and the relevance of symbol and signs in communication have undergone a revolution of sorts.

1.5.3 Poverty:

Poverty is a condition of deprivation. The Oxford Dictionary of Sociology defines poverty as a state in which usually material but sometimes cultural, are lacking. Poverty defined in absolute terms refers to a state in which the individual lacks the resources necessary for subsistence. The concept of 'Poverty line' was coined by Charles Booth during his study of 'Life and Labour of the people of London'.

The World Development Report defines poor as those living in households below a particular threshold of this measure of consumption, such as below $1 or $2 a day or below a nationally defined level.

1.6 Theoretical orientations on ICT's:

There are multiple theoretical orientations as far as the impact of ICT on society is concerned.The forerunners of this school of thought are Daniel Bell, Manuell Castells

---

[5] Appadurai,Arjun , (1996), Modernity at Large: Cultural Dimensions of Globalization , Minneapolis, University of Minnesota Press.

7

,J.Habermas, and Anthony Giddens. All the above mentioned theorists have dealt with 'informatisation of social life' in one form or other. Amongst the aforesaid, there is a line of demarcation as far as the temporal aspect of theorizing is concerned. While Daniel Bell and Manuell Castells argue that 'information societies' emerge from the old, whereas Giddens and Habermas emphasize that 'information societies' are rather continuities from the old forms of society. Let us examine the above mentioned theories and how their perspectives differ.

Daniel Bell's 'The Coming of Post Industrial Society' (1973) argues that the post industrial society emerged from changes in the social structure. He sees the economy and occupational structure as influential here, but does not see politics and culture as significant factors in the change. Bell suggests that the following changes from industrial to post industrial societies through, a) Reduction in industrial labour b) Increase in industrial output despite reduction in labour due to increased mechanization, c) Increase in wealth due to higher productivity, inducing newer needs of leisure and other services, d) New opportunities in the service industry.

According to Bell the distinguishing feature of the post industrial society is the heightened presence and significance of information. Bell has a neo-evolutionist approach wherein he says that the post industrial society is characterized by 'radically disjunctive' separate realms of social structure, polity and culture. The predominance of the service sector has been the undercurrent in his writings.

With the shift from factory – industrial to service industry, the battle (or the game as Bell terms it) is between people and nature in the pre industrial and between people and fabricated nature in the industrial. What is involved in this game between people is information. Service work whether banking, travel or tourism is based on information about

the clientele, its needs, paying capacity and demands. In such a society professionals in research, health and education become the new intelligentsia because the information needs of the post industrial society are considerably increased.

Manuel Castells focuses on the informational flows and the formation of 'global cities'. In a series of works on the information society. Castells identifies an informational mode of development. This is a new socio–technical paradigm with information processing as the main activity. Information processing influences all the processes of production, distribution, consumption and management.

A restructuring of capitalism occurred after the 1970's. The 1945-70's period was characterized by state regulated, welfarist and corporate–oriented capitalism. The same period saw the rise of the information mode of development and capitalism was quick to utilize these technologies for its own purposes. As Castells states explicitly, the restructuring' of capitalism could never have been accomplished without the unleashing of the technological and organizational potential of informationalism. Castells argues that in the informational order the flow of information are paramount for import.

The development of ICT networks promotes the importance of information flows for economic and social organization. It also reduces the significance of territory and geography. Thus the management of these information flows is the major feature of contemporary society and corporate business organizations. One effect of this restructuring has been that corporate bodies now have worldwide production – distribution strategies. The informational city of Castells is a major contribution to the techno–deterministic perspective in sociology. The central theme of Castells writing is the combination of capitalist restructuring and technological innovation transforming society.

One of the most influential thinkers of the twentieth century, Habermas work on the 'public sphere' has influenced several critiques of the information society. Habermas begins his 'Structural Transformation of the Public Sphere (English translation in 1989) by arguing that the public sphere is more or less autonomous even if funded by the state. It is in this space where rational debates i.e debates which are not interested or manipulated can occur and public opinion is formed. Thus full reportage, increased accessibility, open debate and independence of actors from economic concerns characterize an ideal Habermassian public sphere.

Information is therefore at the heart of the public sphere. Pure, reliable and adequate information enables sound discussion, while tainted or manipulated information effects prejudiced or flawed discussions and decisions. Habermas points out that libraries, museums and art galleries and radio broadcasting were originally intended to provide neutral and pure information to the widest possible population. This kind of public service of information is what makes a true public sphere.

Jurgen Habermas was rather of a sympathizer, where he sees the decline of the 'public sphere' due to the assaults on public service institutions such as TV, radio and the internet. If public institutions such as radio or libraries are turned into profit minded organizations, then the quality of information they provide will suffer significantly. Today with the commodification and corporate capitalist control over information, the quality of information has eroded. Habermas believes that the public sphere is being increasingly contaminated and, with its take over by corporate house and capitalist communication organizations, is rapidly shrinking . Information in the public sphere is more market oriented, seeking to sell products.

Anthony Giddens in his book "The Nation State and Violence" concedes that information today in societies of 'high modernity' has a special significance. Central to Giddens concern is the critical engagement with classical social theorists like Karl Marx, Emile Durkheim, and Max Weber. However he finds Marx's dynamics of capitalism and Durkheimian and Weberian notions of 'industrialism and 'rationalization' inadequate. Giddens emphasizes on the associated features of modernity, these are the significance of heightened surveillance and the import of violence, war and the nation state in the contemporary society. Giddens sees surveillance as the democratic means of governance.

1.7 Theoretical orientations on poverty:

Poverty in India has been relative, in this case the Theory of Relative deprivation of Samuel Stouffer, and Robert Merton et al applies in the Indian context. As the comparisons is made on per capita income and expenditure which is different amongst different classes because of access to social capital and to opportunities. According to the theory of relative deprivation, deprivations are expressed when individuals compare themselves with others, that is individuals who lack something compare themselves with those who have it, and in doing so feel a sense of deprivation.

W.G.Runciman focuses on the institutionalized inequalities and peoples awareness of them and on the question of which inequalities ought to be perceived and resented by standards of social justice. Rutter and Madge in their work "Cycles of Disadvantage" give a theoretical explanation for the problem of chronic poverty in general which can be applied to the Indian context. According to Madge and Rutter 'cycles of deprivation' refers to the intergenerational transmission of deprivation primarily through family behaviour, values and practices.

11

Oscar Lewis was an American anthropologist who did his fieldwork among the urban poor of Mexico and Puerto Rico. He coined the term 'culture of poverty' as a result of his observations based on his field study, Lewis argues that the culture of poverty is a design for living which is transmitted from one generation to the next. According to Lewis ,it is a reaction of the poor to their marginal position in a class stratified and highly individualistic society. Lewis argues that once established, the culture of poverty tends to perpetuate itself from generations because of its effect on children.

The classical Marxian theory divides the society into two divisions, one who owns the means of production namely Bourgeoisie and two, persons who sell their labour power, the Proletariat. This analysis is applicable in the Indian context especially in the Food for work programme where the people below poverty line sell their labour power to get food.

Jean Dreze and Amartya Sen have dealt in detail the core issues of development like social dimensions of health and education as well as the role of a market in a country like our and what a market can do in the process of development. They have took a comparative analysis of India and China with select indicators and also they have took an extensive research on Kerala which has been taken as a model state for its development initiatives and its achievements in human development goals.

1.8 Methodology:

The methodology of this research will include data collection from both primary as well as secondary sources. Primary sources including reports from various field studies conducted by the Government of India and Census data. Census data has been used to

ascertain the number of people under the poverty line, literacy rate, occupation, and so forth. Apart from these primary sources data from organizations such as UN and the UNDP have been used. The secondary sources include books, journals, newspaper cuttings and the internet.

1.9 Chapterisation:

The first chapter consists of the general introduction to the research area which includes the area of study and a brief description of the statement of the problem, followed by the objectives of the study which set forth the goals of this dissertation. This is followed by the conceptual discussion of some important concepts pertaining to this research area. This will be followed by theoretical orientation and a review of literature.

The second chapter focuses on the problem of poverty in India, and what role does information technologies play in an Information society. This chapter deals with the various dimensions of poverty in India, including gender, Dalits, unemployment problem as well as basic problems such as education and health and its relation with poverty.

The third chapter focuses on the phenomenon of digital divide and the transition from digital divide to digital development. This chapter focuses on the concept of digital divide and its prevalence in India and how e – governance plays a major role in inducing social change in both urban and rural areas of India. This chapter will lay emphasis on how digital development will give way to human development and poverty reduction in India.

The fourth chapter consists of Information and Communication Technologies as a component in alleviating poverty by providing employment opportunities. The fourth chapter exclusively deals with ICT's and poverty reduction in India. This chapter would be followed by the concluding chapter and bibliography.

Chapter II

POVERTY IN AN INFORMATION SOCIETY: TWO CO-EXISTING REALITIES

Poverty is a multi-dimensional phenomenon. Poverty has eluded all the development initiatives taken so far. In this manner poverty has shown its resilient character. Poverty is a mass based phenomena. Normally poverty is considered in an economic sense, be it GNP growth of a country or purchasing power parity (PPP) of the people. But this economic definition of poverty has not given the complete picture.

The World development Report 2004[6] states that the two main problems faced by the poor of the world are illness and illiteracy. Human development initiatives throughout the world should include these two components. Service delivery to the poor is an essential prerequisite for poverty alleviation in any country. The areas where service delivery is required are education, health, water, sanitation and electricity.

Haq[7] opines that institutional reforms are often more decisive for a developing country than marginal changes in the price system. There are several mechanisms of service delivery to the poor. They are the governmental provisions, the non-governmental organizations, decentralization to local governments, community participation and direct transfers to households.Table 1 shows the expenditure o health and education worldwide.

---

[6] World Development Report, (2004), World Bank Report Publications.

[7] Haq, Mahbub-ul, ,(1963), The Strategy of Economic Planning ,New York, Oxford University Press
Source: World Development Indicators Database.

Table-1

Public Expenditure on Health and Education World Wide.

	Share of Public Expenditures			Share of GDP		
	Average	Minimum	Maximum	Average	Minimum	Maximum
East Asia & Pacific	27	12	53	6	2	11
Europe&Central Asia	31	18	59	10	4	17
LatinAmerica Caribbean	33	14	52	8	4	13
Middle East & North Africa	23	13	39	7	4	12
South Asia	21	16	25	5	4	8
Sub Saharan Africa	25	13	34	7	2	12

Source: World Development Indicators Database.

The market has taken a central role in this era of globalization and it plays a considerable role in the developmental scheme of things in a country. With the opening up of the economy in 1991 and the slew of economic reforms that were associated with it. There were many positive attributes as well as negative consequences.

The positive attributes being the flow of foreign capital into the economy infusing life into certain sectors like banking and infrastructure. The negative consequences being the poor getting still poorer, pollution, environmental degradation and so forth. Studies show that rate of growth is higher amongst the rich than the poor in developing economies[8].

---

[8] Hollis B. Chenery, (1974), Redistribution with Growth New York and London, Oxford University Press.

The problem faced by a third world economy like India, is that the failure of trickle-down approach. It is because of institutional bottlenecks, lack of mobility of labor, wide disparities in income levels, poor levels of literacy, nutrition and health.

The Universal Declaration of Human Rights asserts than an individual has a right for standard living, which is adequate for the health and well being of himself and of his family. Public spending on health and education is very less and even when public spending can be reallocated towards poor people, the money does not always reach those who are in need of these services.

2.1 Poverty in India:

Poverty alleviation has been one of the main prerogatives of our planners. This is visible from the Five Year Plans and the concept of "Welfare State" which is mentioned in the Directive Principles of State Policy of our constitution.

The proportion of people below the poverty line (BPL) remained above 50 percent with no declining trend till the mid-1970s and 1980 from 51 percent in 1977-8 to 3 percent in 1987-8. The intensity of poverty has also declined considerably in both rural and urban areas. Poverty in India has changed over time and it is predominantly in few underdeveloped pockets of India. This geographical divide can be illustrated by the increased relative share of the underdeveloped states such as Bihar, Orissa, Madhya Pradesh and Uttar Pradesh in the all India rural poor from 53 percent in 1993-4 to 61 percent in 1999-2000 and a reduced share of the developed North-Western states (Punjab, Haryana and Himachal Pradesh) from 3 to 1 percent.

Poverty in India is more of a social phenomenon than of an economic one. This is because of the prevailing caste system which keeps the scheduled castes at the lower reign of the economic hierarchy with a forced occupational immobility[9].

The following table, Table 2 shows the proportion of workers by occupation groups.

Table-2

1961-1991

Year	Scheduled Caste		Scheduled Tribes		Others	
	Cult	A.L	Cult	A.L	Cult	A.L
1961	42.90	32.83	69.69	18.59	63.74	12.12
1971	84.94	50.24	64.67	27.51	59.27	19.19
1981	36.70	46.82	62.52	66.72	58.44	18.30
1991	33.11	49.27	61.97	27.20	59.74	20.14

Note: Cult: Cultivators, A.L: Agricultural Labour.
Source: India Population Census Reports for respective Years.

The case of Scheduled Tribes is also not encouraging on the poverty front. The shares of the Scheduled Tribes who are facing poverty have gone up during the 1990's and that of the Scheduled Castes remained more or less the same[10]. The National Council of Applied Economic Research (NCAER) survey of human development in India reveal a picture saying that 50% of the rural population suffer from 'capability poverty', 43 percent of rural households have domestic lighting, only 25 percent have access to tap water and a mere 33 percent utilize the public distribution facilities[11].

---

[9] Throat, S.K., and Deshpande R.S, (1999), Caste and Labour Market Discrimination", The Indian Journal of Labour Economics, Vol. 42, No.4.

[10] Radhakrishna, R., K. Hanumantha Rao, C. Ravi and B. Sambi Reddy (2003), "Food Security and Malnutrition", Indian Institute of Public Administration-Chronic Poverty Research Centre Seminar on Chronic Poverty and Development Policy in India.

[11] Shariff, A,(1999), India: Human Development Report, New Delhi , Oxford University Press.

The role of self-help groups and the NGO's apart from the donor agencies is worth mentioning here. They have of late mobilized the poor through corrective interventions for collective action. The reasons for the rise in poverty after the "Green Revolution" is because of the reducing expenditure on agriculture and the role of a technology indeed change being not revived. This was the main plank on which the success of the Green Revolution revolved

2.2 The Composition of Poor in India:

The composition of poor has been changing and rural poverty is concentrated in agricultural labourers and urban poverty in the causal labour households.

Table-3

Incidence of Poverty- Social and Occupational Group (RURAL)

Category	Incidence%			
	Very Poor		Poor	
	1993-4	1999-00	1993-4	1999-00
ST	22.1	17.0	50.2	44.2
SC	21.7	11.5	48.3	35.3
OBC	N.A.	7.0	N.A	25.5
Occupation in Rural areas				
Agricultural labour	26.2	14.1	54.4	39.7
Non-agriculture labour	15.2	8.7	42.2	27.2
Caste				
ST	24.0	17.5	43.0	37.5
SC	26.1	16.4	50.4	39.1
OBC	----	10.7	-----	30.2
Occupation in Urban areas				
Casual labour	36.6	26.0	64.5	53.0

Source: NSS 50th and 55th Round data on Household consumer Expenditure.

The occupational composition of the rural poor varied across states. In general the developed states poverty was highly concentrated among agricultural labour households and in contrast in the backward states poverty extended to other occupational groups including the self employed in agriculture.

Among the SC's and ST's and backward castes accounted for 81 percent of the rural poor in 1999-2000 whereas they were considerably less among the rural population. Another aspect of poverty is the gender dimension. While all members in a poor household may suffer, it is possible that women and girls in the family suffer disproportionately more.

Fifty years of independence has made a little progress even in terms of availability of amenities to the rural areas especially to the women of Scheduled Castes and the Scheduled Tribes. It can also be noted that only 5 percent of the Scheduled Caste and Scheduled Tribe households have proper toilet facilities. The state should invest more towards development of infrastructure especially covering the weaker sections with at most priority (see table 4).

Table -4

Availability of Amenities by Social Groups.

(Proportion of Households to the total)

Sl.No.	Amenities	SC's	ST's	Others
1	Safe Drinking Water	59..84	41.11	55.92
2	Electricity	21.84	19.70	31.10
3	Toilets	5.15	9.10	8.84
4	Safe Drinking Water/ Electricity	14.71	10.00	21.07
5	Electricity/ Toilet	2.76	2.10	8.26
6	Safe Drinking water/ Toilet	3.35	2.02	6.73
7	Safe Drinking Water/ Electricity/ Toilet	1.86	1.14	4.88
8	None of these facilities	32.14	48.06	28.65

Source: Census of India, 1991, series I India, Housing and Amenities:
Analysis of Housing Tables 1991.

2.3 India: An Evolving Information Society:

The idea of an information society is gaining currency amongst social planners and development thinkers alike. The reason behind this optimism is that the Renaissance during the 18th

century was driven by technological innovations on Europe. The role of these electronic agents of change cannot be ignored in this information era.

Let us take the case of India's information revolution in this context. The software boom of the 1990's saw entire batches of IIT students immigrating to United States in search of higher salary and privileges. Information society incorporates all the instruments which transmit information, viz, radio, telephone television, and internet. Information societies are those which have workers in the information sector. Information society is one which has information workers[12] more numerous than occupational categories like farmers and industrial workers.

In India only 25 percent are working in the service sector and 60 percent are farmers and the rest 15 percent work in factories. India has more number of information workers than Japan and United States. The role of these information workers in the development of our country is the point of debate. Because these million of information workers are mostly urban, educated and their lifestyles are at par with those living in Singapore, New York or London.

India aspires to become a software superpower by 2008, with software exports at 50 billion dollars as compared to the current level of exports at 45 billion dollars it will be one very soon. India is a developing nation with an 'informatization strategy' at the backdrop and at the same time using it as a means for socio-economic development. Development has been the encompassing paradigm for our planners which includes literacy, sanitation, health, nutrition, electricity and other facilities which help an individual to realize his potential.

Despite huge claims on the communication front the poor remain poor. The State should involve in policies which focus on bridging the social divide and foster social change[13]. Information

---

[12] Information workers are individuals whose main job responsibilities are to gather, process, or distribute information, or to produce information technologies like computers or telecommunications equipment that are used by other information workers.

[13] Prasad Kiran, (2004), Information and Communication Technology for Development in India: Rethinking Media Policy and Research, New Delhi. B.R. Publishing Company.

is patterned matter of energy that affects the choices available to an individual in making a decision. Thus, information and communication technologies can greatly increase business activity by connecting individuals and organizations into the global economy.

The role of informatization in development is an inescapable strategy with problems as massive we have now. India is an evolving information society because the television audiences have multiplied four-fold; the number of telephones has increased six-fold, cable television has reached 35 million homes and the software exports have reached fifty fold.

When we see the future of India as an information society, we have to see our neighbor China, and how they have perceived the demand of information based industries in the global economy. With the coming of new communication technologies we tend to leapfrog into the information society .Like any other nation, We have to pass through the agricultural industrial and the post-industrial[14] stages which is a slow gradual process of development.

Information is communicated at blistering speeds that few could only imagine of with the advent of internet and broadband[15] technologies. But these technologies are not distributed equally on a global scale. There are few information hot spots[16] and few "information black holes"[17], this digital disparity which is popularly known as the "digital divide" is the latest manifestation of inequality in this e-world.

Informatization is the process through which new communication technologies are used as strategies for furthering socio-economic development. The rise of these technologies and their

---

[14] Daniel Bell, saw the information factor as the centre of the concept of the post-industrial society.

[15] Broadband is a technology where audio, video and data are communicated through cable with speed of 256 kilobits per second and above.

[16] Information hotspots are those places where there is access to all kinds of communication devices and the recent technologies which support it. Ex: Tokyo.

[17] Information black holes are those areas where there is lack of basic infrastructure like good roads and electricity which inhibit access to newer technologies. Ex: Several backward pockets of India.

potential should be properly channelized for development, especially for the poor. Until then no development is development. Development should embrace all sections of the society, and help alleviate poverty which has become a disease, a malaise on the Indian social fabric.

India's challenge now is to use information technology to boost productivity of the poor people, alleviating poverty, hunger, malnutrition and illiteracy[18]. Jawaharlal Nehru was the founding father of "Industrial India" and his grandson Rajiv Gandhi was the pioneer in India's information revolution.

The real challenge now lies, as to how these technologies are going to bring equality amongst a multi-lingual, multi-ethnic and multi-cultural melting pot that is India.

2.4 Telecom scenario in India :

India has barely 30 million telephone connections and less than 4.5 million Internet connections for its 1000 million people. Most of these connections are confined to large cities (around 100 cities) (See Figure 1). 'Bharat Sanchar Nigam' Ltd., the largest basic telephone operator (BSNL), loses money or just about breaks even in providing connections beyond these 100 cities. No private operators have ventured or have any significant plan to venture much beyond these 100 cities. Small towns and rural areas thus have very little connectivity. India has a large number of rural villages that do not have telephone connectivity. Within India the digital divide between rural and urban India is rather large. Bridging the digital gap requires considerable investments. A new technology that uses Wireless in the Local Loop has the potential to reduce the cost and thereby increasing the number of villages that are linked. Digital Convergence is emerging as an opportunity and this concept could be used for reducing the digital divide. Telecommunication infrastructure has been weak in India:

---

[18] Yunus,M (1998), Alleviating poverty through technology, Science, 282, 409-10.

- Nearly 60% of Indian homes in cities have cable TV

- Telephone and Internet in only around 2-3% of Households

- Communication technology with significantly lower per-line cost required.

With the cost of providing telephone and Internet connections being around Rs.35,000 per line, a revenue of about Rs.1000 per month is required for an operator to break even. This is affordable to hardly 2-3% of Indian households and mostly in the large cities. In contrast to this, cable television connections have increased from zero barely a decade ago to about 50 million today. The key to this has been the following:

- Affordable cable charges (Rs.60-150 per month)

- Low cost second hand color TVs or new black and white

- Small-scale cable TV entrepreneurs whose overheads are far lower than that of the corporate sector.

Figure-1

Growth in the Number of Telephones in India
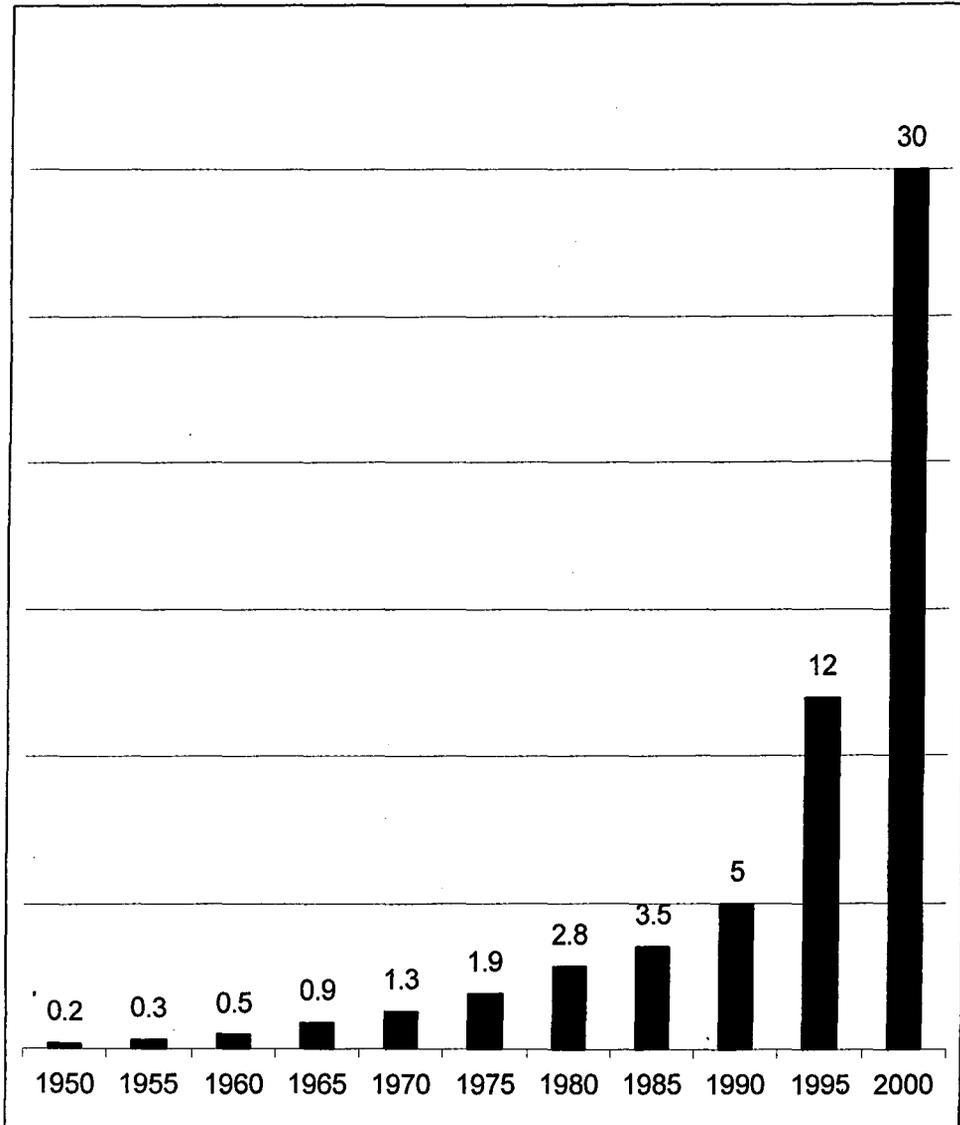
(Figure in millions)

Source: Singhal and Rogers (1989); Bahadur (1999)

This has made cable TV affordable to nearly 60% of the Indian homes, including large cities, small towns and rural areas. However, there is a broad middle class of 150 million people. The per-capita income of this group of people falls between Rs.35,000 to Rs.50,000 in 2002. Therefore, the amount that the middle-class household would be willing

24

to spend on a telephone is small. The only way the middle class and the people in rural areas can be provided telephones and Internet connection in India, without large scale subsidy, is by reducing the telecom infrastructure cost. If the per-line cost can be brought down somehow to Rs.15,000 (from Rs.30,000 today), rapid expansion of the telecom network can take place.

2.5 ICT's and Poverty Alleviation in India:

Swaminathan[19] sees this millennium marked by a paradoxical beginning of the co-existence of surplus grains and extensive endemic hunger, particularly in South Asia. It is widely reported that agricultural production is on an all time high and India has food stocks of 62 million needed for ensuring food security for all.

The analysis of development patterns in the 1990's, a decade which saw a sharp rise in economic inequalities leading to a slow down in the progress of social indicators despite accelerated economic growth, reveals no significant reduction in poverty, increasing regional disparities, inequitable income distribution, low agricultural wages and a marked slow down in mortality decline[20]. The role of information and communication technologies for social development was started with NICNET[21] in 1990.

Namma Dhwani (Our Voices) is an innovative community radio programme where VOICES, a NGO based in Bangalore tied up with All India Radio to broadcast their own radio programmes. This project focuses on health, farming, and schooling and about status of women.

---

[19] Swaminathan, M.S., (2001), "Eliminating Hunger A Challenge", The Hindu, October 7.

[20] Dreze, Jean, (2002), "Poverty beyond headcount ratios". The Hindu, September 9.

[21] NICNET is a nationwide network of computers formed under the ambit of National Informatics Centre, with the district computer at the bottom and the state computer at the middle level with the national computer at the apex level. It was modeled for effective public administration.

The Training and Development Communication channel (TDCC) provides a one way video and two way audio teleconferencing networks, supported by a fax machine. The TDCC has been primarily used for distance education, rural development and industrial training.

The International Telecommunication Union (ITU) has estimated that one percent investment in telecommunications results in 3 percent increase in gross domestic product (GDP) which confirms the linkages between tele-density and GDP. The tele-density is very low in India. Telecommunication can save transport costs, fuel and time. The Village Public Telephones (VPT's) provide several benefits especially during disaster relief and rescue operations[22].

The Grameen mobile project in Bangladesh is an example where ICT has intervened and created profits and empowered women. Thus closing the digital as well as gender divides. The women were given small loans by the Grameen Bank to buy mobile phones and through the telephone services provided by the phone they earned good income. Thus, it had helped them to access agricultural market prices, access agricultural trade information, facilitation of remittances from foreign workers, and this information on work opportunities using the phone has reduce substantial travel costs[23].

ICT can be used to create employment to cater to an ever growing population which has vast unemployed workforce. The establishing of local information centers at rural as well as urban areas will create employment opportunities for this massive workforce. Communication as a profession must be utilized to the maximum by engaging tele-centre managers, subject matter specialists,

[22] Gupta, Raj, (2000), "Inmarsat Experience in Village Telephony" in S. Bhatnagar and R. Schware (eds) Information and Communication Technology in Development, New Delhi, Sage.

[23] Richardson, D. (1999), The Internet and Rural Development. FAO, Rome, Italy.

information managers, translators and information technology technicians. These centers can also provide training and those trained can become small scale entrepreneurs[24].

ICT intervention in agriculture is considered as one of the promising areas in poverty alleviation. The transfer-of-technology in agriculture is the in thing now. The Warana Wired Village project is a collaborative effort of National Informatics Centre, Maharashatra Government and Warana Co-operative Society. It serves the information needs of the farmers for cultivation practices, pest and disease control, marketing information, information on processing, bill payment etc. A website Kisan.com caters to the information needs of the farmers[25].

2.6 Role of the state in Poverty alleviation:

The state is the single largest provider of services to the poor. But services to poor in India are plagued by problems like red tapism, corruption, apart from institutional bottlenecks. The main focus of the state policy is on population containment and poverty alleviation. The problems like poverty alleviation strategies are multi-dimensional, inter-disciplinary monetary, as also non-monetary and physical as well as socio-cultural[26]. Taking the multi-dimensional and multi-causative character of poverty, our planners had set long term goals for poverty alleviation.

The first was the Community Development Programme based on Gandhian idea of village swaraj[27]. This was followed by the area development programmes which brought the lagging

---

[24] Munyua H. (2000), Information and Communication Technologies for Rural Development and Food Security. Lessons from field experiences in developing countries. ICT workshop report. CAB International, Africa Regional Centre.

[25] Chattopadhaya, B.N. (2003), Information and Communication Technology (ICT) in rural development. In National Seminar on extension strategy for promoting development initiatives among farming communities. G.B.Pant University of Agriculture and Technology, Pantnagar, June 18-20

[26] Soberbaum, Peter (1987), Environmental Management: A Non-traditional Approach, Journal of Economic Issues, vol.21, March.

[27] The ideological thinking ascribed to Mahatma Gandhi, wherein he perceived a village as a closed economy and initial emphasis needs to be placed an attaining self sufficiency at the village level.

regions of the country into mainstream development. The third phase was the direct onslaught of poverty by the Integrated Rural Development Programme. The fourth and current phase began with the commitment to the World Bank and I.M.F's structural adjustment plan due to the economic crisis of the early nineties.

The multitude of amendments made to the constitution was towards retaining the image of India as a 'welfare state'. But the need for redefining the role of the state in the context of failure of implementation was strongly felt[28]. The Indian constitution provides with clear and certain goals but the political as well the bureaucratic framework associated with implementing the ideals of the planners dissociated themselves from it.

The role of the state is to make citizens aware of the programmes for poverty alleviation and employment guarantee through Doordarshan and All India Radio. Speaking of the role of the State, one has to look into the federal character of the Indian state and the several states which represent heterogeneous situations.

The technological and institutional interventions which were present during the 'Green Revolution' are lacking in the 1990's. The resurgence of a technology induced change for rural development has come to the forefront. Ahluwalia[29] relates the declining trends in poverty to the better agricultural performance in India.

The other factors which determine poverty are irrigation, landlessness, agricultural output per hectare, non-farm product per person. State development expenditure, female literacy and urban-rural consumption ratio. Fun, Hazel and Thorat hypothesized that government spending is an important determinant of poverty variation across states in India.[30]

---

[28]Jalan, B (ed), (1992), The Indian Economy: Problems and Prospects, Delhi: Penguin.

[29] Ahluwalia Montek. S, (1997), "Rural Poverty and Agricultural Performance in India", Journal of Development Studies. Vol.14, no.3. April.

[30] Fan, Shenggen, Peter Hazell, and Sukhadev Thorat. (1999), Linkages between Government spending, Growth and Poverty in Rural India, Research Report, No.1100, International Food policy Institute, Washington D.C.

The poor on India have been described and studied only on the 'calorie based norm'. There are after the non-food requirements which do not allow the poor for participation in larger decision making process. The poor have been always at the receiving end. Poverty should be viewed as a wider concept incorporating food and non-food basic requirements[31].

Ravllion and Dutt have analyzed the data for the past three decades and found that average farm yield, expenditure on development non-farm output and lower, inflation to have inverse relationship with poverty across states. The generation of indirect employment has helped to reduce poverty. White connecting growth with powerful long term impact on the prospects of escaping absolute poverty in India through economic growth"[32].

The experience of five decades of planning shows interesting results. The bright phase corresponding with the introduction of new technology along with institutional changes in agricultural sector and the direct poverty alleviation programmes. The poverty ratio dropped from 65 percent to about 35 percent in two decades. The focus on providing incremental employment seems to have worked well on the past the twin progressed strategy of technological innovation along with employment generation in agriculture as well as in the other sectors would reduce further the poverty ratio and bring as closer to the Millennium Development Goals.

Right from the Community Development Programme of rural transformation till the recent poverty alleviation programmes the focus was on:

❑ Agriculture and related matters,

❑ Irrigation,

❑ Communication,

❑ Education,

---

[31] Rao, V.M (1999), Poor in a Hostile Society: Glimpses of Changing Poverty Scenario in India, New Delhi, Vikas Publication.

[32] Ravallion, Martin and Gaurav Dutt, (2000). "When is Growth Pro-Poor? Evidence from the Diverse Experiences of India's States", World Bank Discuss in Paper, World Bank, Washington, D.C.

- ❑ Health,

- ❑ Supplementary employment, housing,

- ❑ Housing,

- ❑ Training and

- ❑ Social welfare.

The poverty alleviation programmes from the first five year plan to the tenth plan focused on the widespread problem of unemployment especially in the rural areas.

The Poverty Alleviation Schemes of the Tenth Five Year Plan are as follows:

- ❑ Swarnajayanthi Gram Swarozgar Yojana,

- ❑ Sampoorna Grameen Rozgar Yojana,

- ❑ Indira Awas Yojana,

- ❑ National Food for Work Programme,

- ❑ Pradhan Mantri Gramodaya Yojana,

- ❑ Rural Employment Generation Programme,

- ❑ Prime Ministers Rozgar Yojana,

- ❑ Pradhan Mantri Gram Sadak Yojana,

- ❑ Drought Prone Areas Programme, Desert Development Programme, Integrated Wasteland Development Programme,

- ❑ Antyodaya Anna Yojana,

- ❑ Swarnajanthi Shahri Rozgar Yojana,

- ❑ Valmiki Ambedker Awas Yojana[33].

The subsequent plans focused on area-specific needs apart from direct poverty alleviation. The new four areas were rural infrastructure development, habitat development area development, social assistance and provision of basic amenities.

---

[33] Economic Survey- 2004-2005, Government of India Publications.

The following table illustrates the central plan out lay for rural development programmes.

Table -5

Central plan outlay for rural development programmes

Plan	Amount (Rs.Crores)
6th Plan (1980-85)	5363.00
7th Plan (1985-90)	10149.00
8th Plan (1992-97)	30254.00
9th Plan (1997-2002)	42873.80
10th Plan (2002-07)	76774.00

Source: Ministry of Rural Development.

The Tenth Plan focuses on monitorable targets which includes poverty reduction, employment creation and improvement in quality of life. The Tenth Plans aims to generate 30 million work opportunities as against 35 million additions to the work force.

The monitorable targets for the Tenth Plan includes reduction of poverty ratio by 5 percentage points by 2007 and by 15 percentage points by 2012, and providing gainful and high quality employment to the additional labour force. The other targets being increasing literacy role, reduction of infant mortality rate, maternal mortality ratio and gender gaps in literacy role.

To conclude, the formidable challenge confronted by India at the time of independence was in the form of a large proportion of its population being poor. This was an institutional outcome as well as the colonial legacy. During the last five decades, India's tryst with poverty was met only with checkered responses. It is quite obvious that the institutional interface dictated the performance. Most of the poverty alleviating interventions were designed at the bureaucratic level having specific situation in mind. These could therefore be

categorized as 'fire fighting' in nature and probably just tinkered the problem. The lessons and evaluations of some of these programs hardly found any translation in any of the subsequently drafted schemes overlooking of course the institutional response. Looking back, it is very clear that the polity, bureaucracy and the interest groups did not depict any well-meditated view about the problem of poverty.

In the Indian constitution the subject is dealt by the central government and hence most of the policy interventions are of very general nature. In all the interventions the concept of poverty was taken as 'homogenous' across the length and breadth of the country. Therefore, operating similar schemes across different states was an easy and obvious policy choice. Region or province specific institutional issues could not be focussed due to two reasons.

First, during the early years of independence the federal government as well as the central leadership was politically stronger and institutionally powerful than their counterparts at provincial levels. Second, the provincial level bureaucracy was only given the task of implementation of the programs and rarely the society participated in formulating the schemes. As a result no long term policy dealing with the problem of poverty ever existed either at provincial or at the central level.

The experience of the five decades on this background shows quite interesting results. The bright period corresponds the phase marked with the introduction of the new technology along with institutional changes in agricultural sector and the direct poverty alleviation programs. The poverty ratio dropped down from about 65 per cent to about 35 per cent, truly a formidable task achieved in a span of two decades.

But the results are asymmetric across groups, regions and sectors. Therefore, the inter-regional differences persisted and the lagging regions as well as depressed social groups continued with their marked presence among the poor. Achievements on the count of human development indicators are not neither impressive nor focused. A large ground needs to be covered under this. The experience of the last decade is not very encouraging. The downward trends in the poverty ratios seem to have changed in fluctuating series in the range of 30 to 45 per cent. The intriguing part of the analysis is that the depressed groups have not gained much in relative terms and it will not be wrong if we say that they have not even got their due share.

In the context of the new liberalized economic policy adopted by Government of India, it will be necessary to formulate a medium term policy intervention dealing with poverty alleviation. Understanding the changes in the institutional structure is a prerequisite of such policy formulation. Among the immediate steps that need to be taken towards such policy is to constitute a task force to have a look at the heterogeneous and institutional nature of poverty across regions in India. The state specific problems as well as the policies for the depressed groups must be on the top of the agenda. The focus on providing incremental employment and institutional seems to have worked well in the past. This can be the major policy plank but the agricultural laborers belonging to the Scheduled Castes and Scheduled Tribes need specific safety net programmes and a well-directed alternative.

CHAPTER III

FROM DIGITAL DIVIDE TO DIGITAL DEVELOPMENT

3.1 Digital Divide

Digital divide refers to the gap between those who can effectively benefit from information and communication technologies and those who cannot.[34] The digital divide can be seen in consonance with the prevailing social divide in India. Digital divide is prominent in status where there is less investment in education, social divide and in turn with digital divide.

In a country where several divides prevail be it on the social or economic front, the term digital divides seems to be just an addition .Though the forces of modernization and globalization have had a substantial impact on our society. The gap between the rich and the poor seems to be ever widening. The reasons behind this 'class polarization' is that the rich are cornering all the benefits of the programmes of development.

When we analyze a social disparity of any kind, the historical forces which had been operating also account for the current happenings. Information is a vital component in a democracy. When there is equal access to information in a democracy these disparities would be closed. Since this information is controlled by a privileged few who are rich and powerful and such a 'monopoly of information' would always lead to a lopsided development.

In this era of communication and networks, capital is fleeting ,ideas are just a call away and work is outsourced. The traditional media which held sway during the 70's and the 80's were the TV and the Radio. Even this traditional media bombards us with so much of information that

---

[34] Ryder, Martin ,(2004), Science and Technology and Ethics.

we have a kind of 'information indigestion'[35]. The relevance of this traditional media in disseminating relevant ideas is the need of the hour as far as development is concerned. Another aspect of these electronic forces is the blurring of boundaries and the 'death of distance'(See : Cairncross,2001). These technologies have also stretched time and space. But digital skeptics call this unbounded growth of information networks as 'information invasion'. This invasion is driven by motives of profit rather than development or redistribution of wealth.

But there is other side of the coin too. The proliferation of these information networks has also led to the market forces to operate and when there is an open market there is high competition, which gives high quality of services. But in a country where 26% of the population is reeling under poverty, how can this information capitalism (See :Manuel Castells ,1996,1997,1998) work for the development of the weaker sections?

One of the main factors which divide the rich and poor is information. The rich have access to schools, library, media internet and a whole dearth of knowledge. This is an era where cultures are commodified, where the forces of globalization seem to be overarching. Whether we can find a telephone or a T.V, in a village there is a shop selling coke and pepsi. When we can allow these transnational corporations to go this deep into villages, why not allow their technology?

The cultural capital (See Bourdieu and Passeron, 1970/1990) of information and communication technologies and their know- how should reach our society which is characterized by a culture of poverty[36]. Here the role of an individual as well as the community is important, as

---

[35] An idea similar to Marshall Mcluhan's 'cerebral indigestion' , which occurs due to bombardment of all our senses by different kinds of media.
[36] Op.cit Page no.13. Chapter I.

they are the ones who perceive technologies as inclusivist or exclusivist. Digital divide thus has social, economic and political connotations.

The presence of digital networks is only in the urban areas and it has a direct relationship with prevailing teledensity[37] percentage in India. The reasons for a poor improvement in the telecom sector are because of tight bureaucratic control, poor policies and inadequate investment by private companies and lack of funds on the government side.

3.2 The Causes of Digital Divide

The underdeveloped districts of India primarily in Orissa, Bihar, Jharkhand, Madhya Pradesh and Uttar Pradesh lack in physical infrastructure (roads, electricity, transport, and telephones) as well as in social infrastructure (schools, hospitals, government offices).This is primarily due to the political apathy and bureaucratic inefficiency. Another reason for this digital divide is that the rich in the urban areas or the upper caste people in villages corner the benefits as they hold seats of power especially in the zilla parishad and in the village panchayats. Thus power plays an integral part in the phenomenon of digital divide in India.

For a person who has never got an electricity connection at home, who toils in the soil for twelve to fourteen hours a day, what roles can these machines from the west play? The role played by ICT's is to bring villages close to the government, make them aware of the things happening around the world, increase their profits and their livelihood levels ,by replicating ICT success stories in other parts of the country.

In this epoch of globalization there is both accumulation of capital and information. Information is of late synonymous with capital now, one who controls information, controls

---

[37] Teledensity refers to the number of telephone connections per people in a given area.

capital, this can go vice versa too. The decentralization of information and capital would bridge this digital divide.

Another reason for the causes of digital divide in India is over dependency on the agency. This agency can be the government as well as the funding agencies be it local or global. An economically self sustaining model of an info – centre or an info - kiosk should be promoted, for example use and pay facilities. Information has an inherent value in itself, this is not promoted. At least to promote this inherent value of information, it has to be given an affordable price tag.

The main cause for the digital divide in India is because of a techno phobic attitude which does not allow new technologies to percolate to the masses. Another side of the coin is that when necessities like adequate food clothing and shelter are not satisfied the question of ICT's raises eyebrows But we have to understand that we have been assimilating newer technologies for making our lives, easier, comfortable and efficient. The emphasis should be now on 'rural connectivity' which is the by product of increased teledensity in rural areas.

Kensiton[38] observes four types of digital divides in India. The first being the divide between those who have access to ICT's and those who have not. The second being linguistic and cultural divides. The third being the growing digital gap between the rich and the poor nations, and the fourth being the emergence of a class called as the 'digerati', by which he means the beneficiaries of the ICT boom.

3.3 Prevalence of digital divide in India

India has seen a multitude of changes right from the Indus valley civilization to the Information revolution of today. But there has been a gap between highly developed areas and underdeveloped areas even in the ancient times as of now. The reason behind such developmental

---

[38] Kenistion , Kenneth,(2004) IT Experience in India , Sage Publications , New Delhi,

differences is because the places which were developed thrived on information be it ports, pilgrimage centres, or ancient centres of learning.

The cultural content which is the sum total of all accumulated knowledge over a period was used innovatively for business pursuits. The Brahmans made a living out of the accumulated knowledge of the Vedas .This entrepreneurial spirit is the basis of the Chaturvarna scheme. This was a closed economic model based on reciprocity. The problems like poverty, illiteracy and health has to be viewed within this social milieu.

On the one hand we have this otherworldliness which focuses on the concept of dharma and moksha and on the other hand ,we have risk societies which are societies where wealth abound, for example the South Indian states of Andhra Pradesh, Karnataka, Kerala and Tamilnadu. he reason behind this optimism is that ICT developments in a state is itself a development indicator. This is an indicator of good governance, which focuses on technologically induced development for the masses.

Table No : 6

Variation in diffusion of Technologies Across Indian States

		Electricity connection	Telephone mainlines (per 1000 people) 2003			Internet subscribers
			urban	rural	total	
1	Andhra Pradesh	74.4	164.5	20.3	55.6	3.4
2	Assam	26.4	115.4	5	19.4	0.6
3	Bihar	18.2	93	4.8	13.2	0.1
4	Delhi	97.7	301.8	-	268.5	59.1
5	Gujarat	84.3	178.1	24.8	74.4	3.4
6	Haryana	89.1	164.6	23.2	60.6	0.8
7	Himachal Pradesh	97.2	396.3	54.3	84	0.6
8	Jammu & Kashmir	90.1	83.4	5.2	24.8	0.4
9	Karnataka	80.9	158.4	23.7	64.5	5.6
10	Kerala	71.8	237	78.5	111.3	3.6
11	Madhya Pradesh	68.1	101.5	5.6	28.8	0.9

38

12	Maharashtra	82.1	192.7	21.6	89.9	10.8
13	Orissa	33.8	113.3	8.7	22.2	0.5
14	Punjab	95.5	256.6	46	116	3.3
15	Rajasthan	64.4	113.4	12.5	34	2.2
16	Tamil Nadu	78.8	152	21.2	78.2	6
17	Uttar Pradesh	36.6	88.2	5.6	21.3	0.6
18	West Bengal	36.7	115.3	8.9	37.2	2
19	north-East	-	97.7	8.8	27	0.9
	India	60.1	151.6	14.9	50	3.8

Source: www.indiastat.com

There is a clear cut digital disparity between the nations of the north (industrialized and wealthy nations like the US and Japan) and the south (all the developing nations). In 2004, there were approximately 9 million computers in India.[39] (MAIT estimates). The prevalence of computers is predominantly in the urban areas. This disparity leaves a huge chunk of the Indian populous at bay as far as access to newer technologies is concerned. In India in mid 2002 with a population of 1 billion, only one percent of them had access to personal computers and 0.5 percent of them had an internet connection.

As larger problems like illiteracy, poverty, lack of proper medical facilities, lack of proper sanitation facilities, a highly underdeveloped public health management system ICT s in India are relegated to the back stage. The silver lining in the cloud is that we have a software boom which has to be properly channelised for meeting these basic needs for those reeling under acute lack of opportunities.

Another big obstacle in the pathway of ICT for rural development and poverty alleviation is that the increase in the connectivity costs. Rural connectivity as compared to our neighboring

---

[39] Report of Manufacturers Association, (2005) ,New Delhi.

country China is not appreciable. Jhunjhunwala[40] notes that not more than 3 percent of the population can afford a phone line. Connecting the 700,000 villages is a big project in itself. There are villages in India where people have not made a phone call till date.

English as the most used language on the internet is another hurdle in a country which has 18 officially recognized languages and five hundred odd dialects. The so called 'cream' which speak English belong to the towns and cities of India who do not consist a proper representative sample of the whole population.

According to Hall,[41] the Anglo –Saxon hegemony of the internet is one of the causes of the phenomena of digital divide. Now we can have local language to operate the internet. This will help a large part of the population of the country as the classes are taught in the local language of the state. This linguistic intervention will take a positive turn like Japan where everything is taught in Japanese.

An estimated 60 -80% of the websites are in English and the rest of the sites are in Spanish, Japanese and French. There is a dire need to inculcate local language software on a mass base so that it will effectively increase rural connectivity .These local knowledge tools can be used as a resource base for the farmers and local tradesman to know about the market rates .For example a farmer in a info kiosk in Gujarat is checking the price of cotton in the Chicago market and when he sees a fall of prices in the Chicago market there is a fall in the Indian market .So he keeps a tab of things as far as the price of cotton is concerned in the local market by using the internet as a source of valuable data.

---

[40] Jhunjhunwala, Ashok ,(2000), Looking Beyond NTP 1999.

[41]Hall, Pat and Ray Hudson (eds.), (1997), Software Without Frontiers, Wiley Publications , New York.

Before undertaking ICT intervention for human development initiatives a survey of the area has to be done to know about the local needs of the villagers and then the technology should be used appropriately. An Information Impact Assessment done Dr.Balaji[42] of the M.S.Swaminathan Research Foundation(M.S.S.R.F) ,Chennai in the villages of Pondicherry had found out that women in the villages wanted information about childcare, health child rearing ,education and reproductive control. Whereas the men were interested in information on crop prices and economic life. Thus, as the survey was done a strategy was framed keeping the local needs in mind. The role of the digerati[43] especially in the southern states should be taken note of. They have a six figure salary reside in posh residences and enjoy the best facilities when their poor counterparts find it difficult to make both ends meet. This 'digital elite 'should do something for the 'digitally deprived' of our country.

The hi-tech agglomerations of India being Bangalore, Hyderabad and Chennai and now the satellite towns of Gurgaon are the areas where this digital elite thrive. This is because of a favorable working environment and an equally attractive salary. The point is whether the digital elite phenomenon spreads to the rest of the masses or whether it is making an explicit cleavage of the society on the basis of information have and have nots.

3.4 From Digital Divide to Digital Development

Development is a process of empowerment. The weaker sections of our country mainly the SC's, ST's who are the intended beneficiaries of development should be empowered. For a poor man development would mean three meals a day, for a Dalit girl development would mean

---

[42] Presentation at Chennai Declaration of the World Science Academics Summit on Food Security, (1996) , Chennai.

[43] Professor Kensiton defines digerati as those benefited by the IT boom especially software programmers and graduates of IIT's.

equal treatment with boys at her school. Thus development is highly contextual which is based on regional and local needs.

The phenomenon of poverty which is prevalent in India since time immemorial is engulfed with spiritual backing. With such notions of religious predestinations legitimizing poverty, the role of science is to dispel these myths and create an environment where everybody has access to nutrition, healthcare and education.

Digital development here means a process where the ICT's are used in helping the mainstream projects of the government to reach to the masses as well acts as an enabling mechanism to create awareness amongst the poor about their rights. Information and communication technologies should help to create job opportunities in the rural areas so that the teledensity in the rural area increases and in this manner they get employed too. By this process of digital empowerment, the poor can come above the poverty line and in the same way they can have access to information and communication technologies. Thus ICT's can make a positive dent in the vicious cycle of poverty.

India lacks in the fundamental needs like nutrition, healthcare and education. At this point how investment in ICTs are justified? Whether they could make any change so that it would be both self sustaining and employment generating. There is a general school of thought which feels that there is dire lack of basic needs and so ICT's can come later. But the point here is that poor in India especially in the rural areas are not aware of the programmes that are for them which is because of a lack of a communication infrastructure.

This can be seen clearly between the North Indian states and the South Indian states where people have access to a communication mechanism and tend to be more aware of the

programmes regarding poverty alleviation and employment generation than in North India. The 2001 census reveals that 260 million people are below the poverty line. The role of ICT's should be to target this 260 million and help them to come out of the poverty trap by an efficient employment generating strategy which involves ICTs .

The needs of the rural populous are local needs which they want and which they are entitled as citizens of our country. The problem comes due to the institutional bottlenecks and official hurdles that delay the process of delivery of services. The idea here is to use global technology for local needs.

The crux of the matter is that ICT projects should assess local needs for the delivery of services. There is a predominant tendency amongst our planners to apply an uniform model of development for all the districts. A need based district specific programme should be formed as each of them is geographically, culturally and economically different. The public service institutions like the T.V , radio should also be used along with internet to meet the unmet needs of the people. Most of the rural Indians do not know about their basic rights ,privileges and opportunities. The need of the hour is to use the software tools in the regional language so that literacy, agriculture, and health needs can be addressed. Access to information is one of the prerogatives to increase economic prosperity as well as to improve one's health condition.

Patrick Hall[44] sees India as a giant in the field of software localization. Unless an accessible software which is equally affordable is available any intervention would be ineffective .Local content and local language should be given more importance as they have a mass reach.

---

[44] Hall, Patrick, (2004) ,Information Technology to Support Diversity in a Global Economy, in IT Experience in India by Kenneth Keniston and Deepak Kumar, New Delhi, Sage Publications.

3.5 Success Stories

a) The Anand milk project in Gujarat is an example where ICTs are used effectively in transparency in the village markets. Previously the use of imported equipment for assessing the butterfat content of milk created irregularities in measurement and large scale discontent amongst the farmers. The use of locally designed computer equipment for assessing butterfat content was a novel and practical idea. Thus with its installation the procedure was made transparent and the milkmen were contented with the operation of the system.

b) Another successful ICT venture was amongst the fishermen of Kerala and Andhra Pradesh. The project was coordinated by Indian Space research organization (ISRO). ISRO facility at Sriharikota downloads information from its satellites about prevailing ocean temperatures. Ocean temperatures reveal the amount of sea weed growth which act as food for the fish by this process they come to know where bulk of the fish is located. This data is mapped and transmitted to the fishermen who are about to venture into the sea. This helps the fishermen to locate schools of fish with ease and have a good catch. By this process time, fuel, uncertainties are solved and profits are guaranteed.

3.6 Infrastructure: The road to digital development

Whenever we speak of an information society ,we should also compare prevalent models of the West and the lack of it in India. Not necessarily that we should follow the western model of an information society which provides all kinds of services inside one's living room with the help of internet as well as providing knowledge to the worlds richest database.

A critical part of development and poverty alleviation is infrastructure. The inadequate public expenditure is one of the reasons for India's debacle on the development front. To build an 'informational infrastructure', we need to have physical infrastructure like roads ,electricity ,telephones ,schools and access to basic goods which would allow a person to live with a

minimum standard of life. The physical quality of life index is an indicator which measures well being of citizens with reference to indices such as i) housing, ii) sanitation, iii)literacy level and iv) life expectancy.

For the internet to penetrate into rural areas there has to be adequate road facilities which would pave way for electricity to come. The Pradhan Mantri Gram Sadak Yojana and Bharat Jodo Yojana are measures by the government to connect the unconnected villages of India. Another dire which acts as a hurdle component is the lack of electricity in many pockets of the country. This can be solved with the road building process. Thus road building has a direct relationship with the nation building process. Roads give access to people, places and ideas. When persons living in isolated areas hear that changes are happening around them, they feel that they are lagging behind. This awareness about the need to know about things is what is called the 'right to information'.

The vastness of our country does not allow the schemes for the poor to reach them. In many villages the poor are not aware of the schemes for them by the government[45]. There is a communication gap between the poor and the government. On top of it there is large scale corruption in the public distribution system and there are siphoning of resources and funds by middlemen.

The role of ICT's in the realm of public services is of utmost importance in a democracy of our stature. A proper 'informational infrastructure' is the need of the hour. There are villages in India where people have to walk 8 kms away from the village centre. The Bangladesh 'Grameen Mobile' project is a success where access to a mobile phone has changed the economic condition of women.

---

[45] Gaiha ,R.., P.D.Kaushik and V.Kulkarni, (1998), "Jawahar Rozgar Yojana and Panchayat's and Rural por in India, Asian Survey, Vol . XXXVIII.

3.7 Social divide versus the digital divide

Like any other society Indian society is a highly stratified society. The caste system in India is a typical feature of our society. Keeping the acute social differentiation on caste and class lines on the background the following paragraphs evaluate digital divide in India. Whenever we talk of the social divide ,there are communities which are 'marginalized' from the mainstream society. Who are these marginalized people? The marginalized people are the SC and the ST s amongst the rural folk whose per capita income is lesser than the minimum standard level. Apart from the caste tribe differentiations, Indian society can be divided on the basis of Levis Straussian binary oppositions into rich/poor, rural/urban, educated/uneducated, upper castes/lower caste, male/female, young/old and so forth. Technology should be for the masses unlike the classes. But in India the technology is predominantly in the urban areas than remote villages. To bridge this social divide of rural and urban access to technology a company called n – Logue communications has been started by IIT ,Chennai which focuses on rural internet and telephone connectivity. This firm specializes in rural connectivity and through access to its technology it aims to bring a social transformation through an knowledge revolution in the villages of India thereby bridging the digital divide.

The following table illustrates the digital divide between different countries of the world's and India' s position in it. Though when compared with our western counterparts we do have a long way to go but we have take a head start in bridging the digital divide.

Table 7:

Digital Divide in select countries

Country	Infodensity		Infouse		Infostate	
	1995	2000	1995	2000	1995	2000
Canada	61.4	112.4	64.9	107.8	63.1	110.1
China	2.6	11.0	4.1	11.5	3.3	11.3
Columbia	8.0	24.7	10.3	21.4	9.1	23.0
Finland	89.1	132.8	58.7	75.5	72.3	100.1
India	1.1	4.9	2.7	5.1	1.7	5.0
Malaysia	15.2	37.2	16.5	35.0	15.9	36.1
Mexico	10.7	40.2	10.5	23.0	10.6	30.4
Senegal	1.0	7.4	3.4	8.3	1.8	7.8
South Africa	19.7	37.2	13.1	24.6	16.1	31.1

Source: Sciadas(2002),Monitoring the digital divide,ORBICOM,Canada.

3.8 Digital divide and the Dalits:

According to the 1991 census the population of Scheduled Castes was 13.82 crores constituting 16.48% of the population of 84.63 crore. this part of the population faces social stigma on the basis of caste. There is another way of seeing it 13.82 percentage of them can be benefited through ICT's so that this can be an opportunity of mobility in the social ladder. The unemployed amongst the SC and the ST can be given adequate hardware training in computer technology . India is a big importer of hardware from China ,USA and Japan. If we have our own

hardware companies we can save precious amounts of money which has been put into buying alien hardware year after year.

For this project to materialize there should be an Indian Institute of Hardware Technology (IIHT) especially to tap the rural youth who have passed their plus two exams. This should be done with the existing Industrial Technical Institutes which are spread all over India or else these new institutes can be merged with it.If this project is implemented the scheduled caste youth in the rural areas can form their own small scale units of manufacturing hardware components. With proper training from the Government as well the NGOs who are working in this area this would be a profit making venture and it will bring large amounts of foreign exchange along with what we are earning through our software exports. The Ministry of Information technology has already implemented a employment generation scheme for the SC and ST students of the North east to fill up the shortage of trained personnel.

The students of SC and ST are taught computer courses and after their completion of their course they are given loans to buy computers and teach others. High technologies should cater to low income and deprived communities so that they can be absorbed in the mainstream society.

3.9: Microsoft Vs Linux : Open source software and Digital Divide

Another important area is the Free Software project which is gaining currency in India. The free software or open source software's a movement so that knowledge is available free to all the citizens of the planet. The difference between free software and the normal software we are using say Microsoft or Apple's software is that the source code which runs the program has to be bought belongs to a firm. but in the open source realm like Linux, the source code lies in the public domain.

In the case of digital divide Microsoft has almost an 'Invisible hand' in India, and all the computers in the world who are using Microsoft as the operating platform. The Microsoft is used by the government, private and domestic use be it Windows 2000 or an Windows Xp operating system. The need for a 'indigenous software' in our own language is the need of the hour. Very few of the users of the Microsoft operating system know that the moment they connect to the internet their movements are, monitored by Microsoft in the USA .Thus Microsoft Corporation has its hold over all the data transfers communicated through its software.

Unlike in Linux which is a free software where the source code is updated from time to time and is dynamic. The government or the private organizations do not have to depend on Microsoft for updates as it is an additional cost. To bridge the digital divide in India or any other country, the working platform should be open source software supported by a distributed computing framework with localized content and in a local language.

3.10:The Role of ICT in Poverty Alleviation and Rural Development

There is imbalance as far as human capital (education, skill, good health) and physical capital(roads ,telephone, hospitals, electricity, transport).This gap has to be filled .This can be filled by using ICT effectively. ICT by themselves cannot alleviate poverty, they infuse efficiency into an already existing system and make it more transparent as well as highly functional. The case of the online railway reservation system and the computerization of banks in India are examples of how ICT has maximized the efficiency of an already existing system. We live in an era of information. This is an age where information is considered as an economic ,social and political force, the developing countries lag behind the advanced countries in the enterprise of knowledge production.

In India there are several types of poverty. For the purpose of this study they are narrowed down into two forms, a) Nutritional poverty ,and b)Informational poverty. Development thinkers have been trying to pit the biggest promise against the biggest affliction

49

poverty with interesting results as well s important lessons. The nutritional poverty in India is chronic in nature. the following table illustrates the incidence of poverty in India.

Though this table shows a declining trend in the number of people under chronic nutritional poverty, 260 million is a substantial population in a billion of us and has to be reduced further. A civilization as old as the Roman, Greek and the Chinese and out of these only we have lagged behind in terms of development. We have 26% of our population under poverty , large proportion of AIDS cases, a huge child labour market. We have to ponder upon this issues and try to find a viable solution. Lack of government spending on social capital is one of the prime reasons for this poor show on the development front.

The following table, Table 8 shows the number of people who are under poverty from the 70's to early 2000. Though the percentage of poverty has substantially come down but inter state variations are still high.

Table 8

The percentage of population below poverty line from 1970 – 2000

Year	below the poverty line (%)	Number of poor (in millions)
1973-74	54.9	321.3
1977-78	51.3	328.9
1983	44.5	322.9
1987-88	38.9	307.1
1993-94	36	320.3
1999-2000	26.1	260.2

Source: Planning Commission draft on the Ninth five Year plan (1997 -2002) and Government of India Poverty estimates for 1999 – 2000, Press Information Bureau, 22nd February 2001.

Gaiha (1989) found that the chronically poor tend to rely on casual agricultural labour for a substantial proportion of their income. The need for agricultural loans and the role of IT for better credit delivery is worth, mentioning here. Credit delivery for the poor in the rural areas is axiomatic for development. The Indian institute of Information Technology ,Bangalore has come up with a novel way to use ICT for credit delivery. An analysis of villages by IIT – B found that the flow of credit to agriculture is getting constricted .They also found that the institutional

delivery system distancing itself from the disadvantaged sections of the farming community. Thus the moneylenders continue to operate as one of the key purveyors of credit at exorbitant rates. This makes the landless labourers to ell their lands to repay their debts and end up in lifelong poverty.

Devarajan and Shah[46] (2004) in their article on 'Services for India's Poor focus on the framework of relationships. Devarajan and Shah feel that this is a 'long route of accountability' of services. When the relationship along this long route breaks down the service delivery also fails. The rise of the public broadcasting revolution in India can make this route of accountability shorter, transparent and effective. Convergence is the key especially in government run media organizations like Doordarshan and All India Radio. Thus these public service institutions can be used as part of the 'Accountability Framework' in such a manner that a two way communication is established between the user and the service provider. This is illustrated in the following figure : 2

Figure 2: The Framework of Accountability Relationships

Poor people   **Policy Makers**

Providers

---
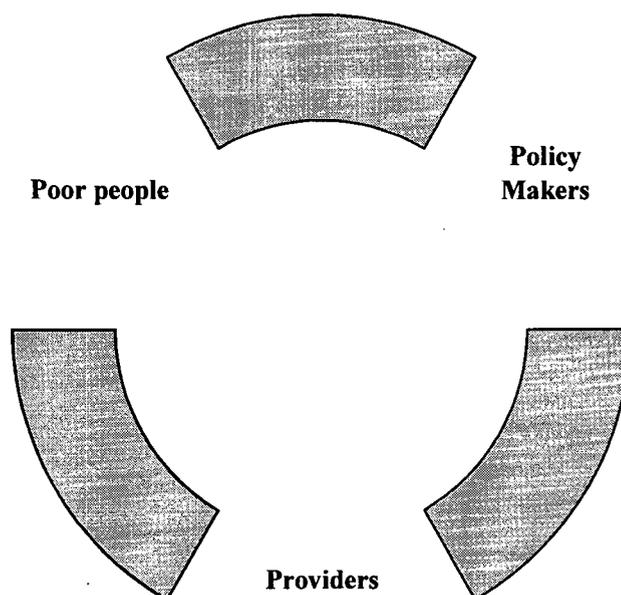
[46] Devarajan, Shantayan and Shekar Shah , Services for India's poor , Economic and Political weekly, February 28, 2004.

Convergence is the amalgamation of T.V, video, telephone and the internet on a single platform for effective delivery of services. The rise of the cable television network in both the rural and urban area is a mind boggling phenomena. In 2000, there were 35 million homes connected with the cable television facility and it is estimated that by 2010, it would be reaching 60 million homes. This convergence of computers with the television is similar with the railway reservation system where an already existing framework has been infused with efficiency due to the positive intervention of a new technology.

With convergence facilities at our doorstep we can have access to video-conferencing, telemedicine services through the local cable wallah. The added advantage of this system is that it is 500 times faster that the normal telephone based internet connection . Thus convergence would address the poor population who have access to cable connections by having distant learning programmes beamed through the Edusat. A political consensus is the need of the hour for implementing these grass root services on an All India scale.

Poverty alleviation is a political objective and cannot be achieved by purely technocratic means. The existing framework of wage employment schemes should have an ICT component and the public distribution system should be computerized so that the cases of corruption are reduced. The poor should be provided with employment generating opportunities by assisting them in creating a small 'info-kiosk' consisting of an PCO/STD/ISD phone booth, a fax machine a computer with an internet connection and a printer. These kind of rural info kiosks should be spread over large rural areas in such a manner that a local area network is created amongst them. Thus the creation of rural infrastructure for rural data collection and rural information management would help he villagers in having a rich database about their traditional knowledge apart from providing employment opportunities.

Another function of these 'info- kiosks ' would be creating knowledge assets for the community and to the future generations. By having a telephone and an internet connection in a isolated part people in far off people will come closer in the digital space and in this way rural connectivity will show an increasing trend. The digital divide is the latest manifestation of poverty on the digital front. To reduce poverty with the help of technology, NGOs ,in various part of our country have undertook research and have come up with sound results.

The M.S.Swaminathan Research foundation (MSSRF), Chennai under the guidance of its founder Dr.M.S.Swaminathan is a pioneer in the field of technology related change They have brought technology right at the doorstep of the poor .

M.S.Swaminathan sees the following divides and its relevance to the contemporary situation :

- ❑ Demographic divide
- ❑ Digital divide
- ❑ Technological divide and
- ❑ Economic divide.

These divides stand on the way of the Millennium Development Goals (MDG's) of the UN. They are

- Eradicate extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health

- Combat HIV/AIDS, malaria and other diseases

- Ensure environmental sustainability and

- Develop a global partnership for development.

Keeping the eight MDG's in mind the MSSRF in Pondicherry have created a 'Biovillage movement'. The biovillage model of rural and agricultural framework ios based on rural, agricultural and human development. The focus areas of the bio village movement are:

a)Natural resources conservation and enhancement

b)Poverty eradication and

c)Women empowerment.

Another success story at the MSSRF facility is the computer aided rural knowledge centres (RKC's). RKC's have bridge the social and the digital divide between the Dalits and the upper caste in a village called Thirukanchipet near Pondicherry where the RKC is located in a Dalit locality where upper caste men and women have access to information. Knowledge does not discriminate and one that discriminates is not knowledge. The model put up by the MSSRF can be utilized on a large scale basis with modifications according to the local taste.

3.11: E – Governance in India

The use of Information and Communication technologies for the process of governance is called e- governance. With the passing of the Information Technology Act, 2000 the citizens of India can conduct business with the government without leaving the comfort of their homes. This is known as G2C services (Government to citizen services), apart from this there are G2G (government to Government) as well as B2B (Business to Business services).

Table 9

E- governance initiatives in India

Sl. no	State/Urban Territory	Initiatives covering departmental automation, user charge collection, delivery of policy/programme information and delivery of entitlements
1.	Andhra Pradesh	e-Seva, CARD, VOICE, MPHS, FAST, e-Cops, AP online-One-stop-shop on the Internet, Saukaryam, Online Transaction processing
2.	Bihar	Sales Tax Administration Management Information
3.	Chattisgarh	Chattisgarh Infotech Promotion Society, Treasury office, e-linking project
4.	Delhi	Automatic Vehicle Tracking System, Computerization of website of RCS office, Electronic Clearance System, Management Information System for Education etc
5.	Goa	Dharani Project
6.	Gujarat	Mahiti Shakti, request for Government documents online, Form book online, G R book online, census online, tender notice
7.	Haryana	Nai Disha
8.	Himachal Pradesh	Lok Mitra
9.	Karnataka	Bhoomi, Khajane, Kaveri
10.	Kerala	e-Srinkhala, RDNet, Fast, Reliable, Instant, Efficient Network for the Disbursement of Services (FRIENDS)
11.	Madhya Pradesh	Gyandoot, Gram Sampark, Smart Card in Transport Department, Computerization MP State Agricultural Marketing Board (Mandi Board),etc
12.	Maharashtra	SETU, Online Complaint Management System-Mumbai
13.	Rajasthan	Jan Mitra, RajSWIFT, Lokmitra, RajNIDHI
14.	Tamil Nadu	Rasi Maiyams – Kanchipuram; Application forms related to public utility, tender notices and display
15.	North-East	Community Information Center. Forms available on the Meghalaya website under schemes related to social welfare, food civil supplies and consumer affairs, housing transport etc.

Source : Planning commission of India, Report on IT for the masses.2004

3.11 a) The case of the Gyandoot Project: A replicable model of E – Governance.

The Gyandoot project has been recognized as a breakthrough in e-government, winning the Stockholm Challenge IT Award 2000 in the area of public service and democracy. The project gives marginalized tribal people in central India their first-ever chance to access knowledge electronically. Dhar district in Madhya Pradesh tate has a population of approximately 1.7 million people, most of whom are poor and marginalized. About 60 per cent of the people live below the poverty line and most are illiterate. They depend on small farm production and are often subject to exploitation by middlemen, local money lenders and corrupt officials.

The Gyandoot project installed a computer network connecting 31 village centres and made use of ICT to provide various online services, including (a) land revenue-related transactions, (b) public grievance redressal, (c) village auction, (d) a matrimonial site, (e) government services and entitlements, (f) expert consultation, (g) a free e-mail facility on social issues, (h) employment news and (i) a village newspaper. The benefits of the project reached over a half million people.

The improved citizen-government interface has enabled interaction and dialogue, the formation of new alliances, the development of interpersonal networks and the establishment of cross-sectoral links. Greater access and control over information have empowered the community and resulted in better governance as well as provided citizens with faster and more transparent access to government services. For example, for the equivalent of $0.10, farmers can now obtain copies of land titles for which they had previously been charged exorbitant sums by the officials concerned. While the potential opportunities offered by e-government are numerous, central Governments should be cautious. Before allocating large sums for investments or undertaking large-scale projects, they should ensure that lower-level government organizations and citizens are ready to accept change and are capable of financially supporting the required infrastructure.

According to the 'Working Group of the Indian Ministry of Information Technology, the present level of facilities in the country of one million is really insufficient. The predominant mode of connectivity to the internet remains the telephone infrastructure, but the tele-density in India is not encouraging either.The recent innovation of a low cost computer at Rs. 10,000 which was unveiled by Mr. Kapil Sibal , Minister of State for Science and Technology would bridge the cost aspect of the computer and cater to a vast rural population. The common man in the country continues to be largely unaware of the potential of ICT in daily life. This calls for a mass campaign for creating awareness of ICT benefits. At times with over- enthusiasm, ICT is projected as a panacea for every problem. The virtual world can at best strive for the betterment of the real world by spreading information and creating awareness, but to convert awareness into action, an active intervention in the real world is needed.[47]

E- governance being to buzzword in both academic as well as in the government circles, the use of these technologies in bringing transparency and prompt delivery of services has made tem more people friendly. These technologies has narrowed the digital divide in select pockets of our country. The following paragraphs elucidate some of the successful e –governance projects in India.

b) **eNRICH:** It is a web based solution where local content is available in local languages. The empowering aspect of this initiative is that it puts local users in the driver's seat. It provides easy access to relevant and authenticated information resources allowing local communities to effectively expand and manage their knowledge. eNRICH has been used to develop the block community portals in the North eastern states of India as a part of UNESCO's ICT for poverty reduction (ICTPR) Project. This portal enables the local

---

[47] Aram , Arul ,I, E- governance : Ushering a In an Era of E- Democracy, in Information and Communication Technologies for Development edited by Kiran Prasad, B.R. Publishing Corporation, New Delhi , 2004.

communities to share information within and among communities and acts as a platform for delivering e –Governance services.

c) **Community Information Centres (CIC's)** :The need for these CIC's arose in the remote areas of the North east of our country because of the hilly terrain and a lack of a strong communication infrastructure.C.I.C's have been setup in 487 blocks of the eight North eastern states mainly Arunachal Pradesh, Asam, Manipur, Meghalaya and Mizoram. Each C.I.C has two operators for managing the centres and providing services to the public.

The main objectives of this project are ICT infrastructure at the block ,market access and e- commerce, e – medicine, weather information, e-employment notification and computer training programmes. The project will charge nominal charge for providing the services to sustain it as a viable business model.

d) **Public grievance redressal through video conferencing:** The tribal population of Chhattisgarh lives in the underdeveloped districts of Bastar, Jashpur,Kanker and Dantewara.These tribes have been exploited because of their low literacy level and they are generally hesitant to approach the Government for grievance. Incase of timely medical help also vested interests take advantage of the situation and take the tribals for a ride. Taking these things into notice the Government of Chhattisgarh implemented a cost effective solution to bride the divide between the administration and the people. Now with the coming of the video conferencing facility in these districts the tribals can speak with the Secretary of the General Administration, and the officer in turn sets a time limit for the junior officers to complete the work.

This has been possible with the help of National Informatics Centre(NIC) . Now the Government has started a mobile videoconferencing van to address the grievances of people in interior areas.

e) **The Warana Wired Village Project**: India is a country of villages. Computerization of every village is a dream come true for every government. The concept of an e-village was conceptualized at the Prime Minister's Office and was implemented in the districts of Sangli and Kolhapur in Maharashtra. The main aims of the project was to utilize ICT efficiency in the cooperative societies, to infuse transparency in theses societies, provide agricultural, medical and educational information to villagers through facilitation booths and computerize land records. The idea behind this project was to make the Government services more citizen friendly and easier to access.

f) **Bhoomi project**: Land is the source of several disputes all over India. The maintenance of land records is done manually which is prone to tampering, manipulation and exploitation by vested interests. Thus the helpless farmer spends all his resources fighting for his land. The bhoomi project in Karnataka is a welcome move for all the farmers in Karnataka where 20 million land records were computerized and maintained.

By this process of computerization of land records, it has made the availability of land records quick to the public. Moreover the public can quickly lodge request for changes in land titles and get acknowledgement immediately. With the help of a touch screen all details pertaining to land records are available.

Chapter IV

ICT'S FOR POVERTY ALLEVIATION IN INDIA

4.1 Introduction

"There is an on-going view that IT is totally irrelevant for the poor who are generally illiterate; IT is too expensive for them to reach out to; the poor don't need fancy IT, they need food. These are the voices of the sceptics. ... Now in three years there are more than 5000 Telephone Ladies in Bangladesh villages doing roaring business selling telephone service."

(Mohammed Yunus 2001)[48]

Information Communication and Technology (ICT) in simple term means, any product or system that communicates, stores and or processes information. ICT is playing a multi-faceted role for changing the model of business transactions. ICT is facilitating new forms of interactions. Internet reduces the transaction cost and increases the market access. These create new windows of opportunity. ICT has an enormous impact on shaping the mindsets and attitudes of the society for adopting the change process. The wider use of ICT will result in new social situations where the ICT applications will be applied.to the traditional needs of the society.

This chapter addresses the use of Information and Communication Technologies (ICTs) for the alleviation of poverty. Information and knowledge are critical components of

---

[48] **Yunus** Mohammed (2001): Key Note Speech for the Conference on "Making Globalisation Work for the Poor – the European Contribution", Kramfors, Sweden, 20-21 June .

poverty alleviation strategies, and ICTs offer the promise of easy access to huge amounts of information useful for the poor. However, the digital divide is the result rather than the cause of poverty, and efforts to bridge it must be embedded within effective strategies that address the causes of poverty. Earlier patterns of adoption and diffusion suggest that ICTs will not achieve their full potential without suitable attention being paid to the processes that they are intended to assist and the context within they are being implemented. However, there are many examples of successful implementations that allow for a synthesis of experience that can lead to an understanding of how to approach the use of ICTs for widespread alleviation of poverty.

Poor people will gain fruitful access to ICTs through shared facilities that are appropriately managed and properly constituted within sound development strategies. Implementation efforts have to take into account the wide variety of factors that are critical for success. A poverty alleviation framework is needed to facilitate the full consideration of all such factors. An outline of development tele-centres follows along with a consideration for project implementation. A framework for poverty alleviation is derived and it is used to analyze the outcomes and the factors that influence them.

A number of state governments have initiated e-governance projects and many of them have been successful. Most of these are essentially for improving the service delivery and improving the government services and development as a whole.

The use of ICTs for development has the following aims :

1. ICT can create new development platforms that increase access to information and resources resulting in better utilization of human capital.

2. ICT enhances the skill base thereby empowering the poorer communities.

3. ICT needs participative management practices to make the development platforms sustainable.

4. ICT platforms have resulted in significant increase in income, provided they are conceptualized to meet such on objective.

Poverty in India is concentrated in rural areas, as was noted in Chapter II. By their very nature, many rural areas are remote from industrial zones, port facilities, urban markets and urban employment opportunities, thus hampering their opportunities for economic growth. The major economic activity in most rural areas is agriculture, which is generally less productive than industry. Rural infrastructure lags far behind that in urban areas. In addition, rural areas are disadvantaged by less provision of education and health services. Aiding rural areas to overcome these disadvantages is a major policy challenge for government and civil society. This chapter suggests that ICT an be effectively used to overcome some of the obstacles to social development in rural areas and empower the rural poor.

The use of ICT is expanding rapidly Traditional ICT tools such as television, radio and the telephone have proven their effective-ness in promoting development in marginalized areas. The emergence of computers, the Internet and wireless communications technology, along with powerful software for processing and integrating text, sound and video into electronic media, comprise modern ICT. The realm of the global electronic network of computers, popularly referred to as the Internet, and wireless telephony has generated an unprecedented global flow of information, products, people, capital and ideas.

Information technology is changing the world rapidly and dramatically. If not used properly, the gap between rich and poor will increase. ICT is creating a distance-less world where communication is becoming instantaneous and has placed immense power into the hands of, so far, of the haves and elite. It is impacting on all dimensions of life: education, health, quality of family, culture, leisure and arts, scientific and technological world. The way people do business globally will change beyond imagination. It is helping economies expand at an unprecedented rate, and competitiveness has become the motto of the day. Rich countries will continue to become richer and rich people will become richer faster than ever before resulting into a gargantuan ocean of the world's poor. ICT can introduce new ways of participation by the poor man, women and young people in the global economy in cost-effective and poor-friendly ways thus creating opportunity to address the issue of poverty reduction. IT can offer the most exciting possibility for overcoming poverty this potential will vastly remain unexplored if we leave it to the market forces.

4.2 ICT's for development : Trends in India and World.

The ICT revolution is having an impact on economic and social conditions around the world, including India. With the costs of ICT being drastically reduced, the location of industrial activities has gradually shifted to low- cost developing countries. ICT enables services to be provided by developing countries and delivered to developed countries. These new outsourcing opportunities create employment, generate income and enable poorer countries to participate in the global market.

Developing economies have benefited from the rapid expansion of the ICT sector. In India, ICT revenues rose from $150 million in 1990 to $4 billion in 1999. The global outsourcing market is worth more than $100 billion, with over 185 Fortune 500 companies

outsourcing software requirements to India. India currently has 1,250 companies exporting software (UNDP 2001)[49]. In Malaysia, ICT has become the key driver of economic growth.

Despite the vast opportunities for economic growth and social development offered by ICT, there is a negative aspect. ICT may further widen the gap between developed and Developing countries, between the rich and the poor and between those who know how to make use of the new technologies and those who do not. A recent study on the issue of the "digital divide" observed that all countries, even the poorest, are increasing their access to ICT, but the rate of this increase is much faster among the developed than among the developing countries (Bridges.org 2001)[50]. Despite this increase, the global electronic network has so far reached only a tiny fraction of the population in developing countries of the region. Less than 0.1 per cent of the population in Bangladesh, India, Indonesia, Sri Lanka and Viet Nam had access to the Internet in 1999. Although a sharp increase in online users is expected by 2009, the proportion of users will remain very low. Because it is very likely that new users will come largely from the urban populations of these countries, appropriate pro-poor government policies and strong grass-roots programmes are necessary to change the direction of this development and spread the benefits of ICT equitably among the rural poor and disadvantaged groups in developing countries.

A digital divide also exists within countries, between economically more and less-developed regions, between urban and rural areas, between poor and the well to do, between the educated and the illiterates, between men and women, and between the young and the old.

---

[49] UNDP 2001: Human Development Report 2001. New York.

[50] Bridges.org (2001) "Comparison of E-Readiness Assessment Models" http://www.bridges.org/ereadiness/report.html; current April 26, 2001).

We can also expect a divide between a majority population and indigenous ethnic minorities, which have traditionally been excluded from almost all development. Digital divide is a result of socio-economic disparities, and thus it is little

different from other income, health and education divides, linked to poverty. The digital divide, therefore, is often just a symptom of a much more profound and longstanding economic and social division within and between societies, and which existed prior to the ICT revolution.

Table 10 shows the gap in Internet access between the industrialized and developing worlds. More than 85 per cent of the world's Internet users are in developed countries, which account for only about 22 per cent of the world's population.

Table 10

Online Users as of September 2002

Sl .No	Continents	in million
1.	Africa	6.31
2.	Asia /Pacific	187.24
3.	Europe	190.91
4.	Middle East	5.12
5.	Canada & USA	182.67
6.	Latin America	33.35
	Total	605.60

Source : International Telecommunications Union.

Drilling down into the access statistics reveals further levels of inequality within the developing countries that are least served. Typically, a high percentage of developing country residents live in rural areas. The proportion can rise to as much as 85 percent of the population in the least developed countries and is estimated at 75% overall in Asia.

It has been estimated that over 900 million of the world are poor, i.e., those who earn $1 a day. They live mostly in the Asia-Pacific region. Nearly one of three Asians is poor, although it appears that the incidence of poverty (proportion of people below the poverty line) is slightly declining. Others question this claim and argue that the term poor should cover all those who cannot cope with survival, security, and enabling needs. If one were to apply the comprehensive definition of poverty, the poor certainly account for more than 900 million on this planet. South Asia alone is one of the poorest sub regions in the world and it already has more than half billion poor people. The poor experience shortfalls in economic welfare; gaps in access to good quality education and health care; deficiencies in the provision of physical infrastructure; and political barriers that stifle personal initiative and self-development. They are unable to participate in governance, which is necessary for a healthy democracy and peaceful development.

Moreover, despite the vast advances that are being made in the spheres of science and technology, medicine, capital mobility, etc., income disparities are ever widening, both within countries and nations – world's rich and poor nations. The process of lop-sided wealth accumulation in the hands of a few at the level of individual countries is being repeated on a global scale. This lop sided development encourages corruption, anti-social activities like drugs, smuggling, prostitution, and all sorts of deviant behavior. Poverty is considered an

unacceptable human condition. The trends in poverty reduction have recently worsened. The population growth in the developing countries is also adding to absolute number of poor.

4.3 ICT's and Poverty alleviation :

The World Bank reports that of the world's 6 billion people, 2.8 billion, almost half, live on less than US$2 a day, and 1.2 billion, a fifth, live on less than US$1 a day, with 44 percent living in South Asia. Goals set for 2015 by the international development agencies include reducing by half the proportion of people living in extreme income poverty, those living on less than $1 a day. Figure 1 indicates the global distribution of poverty (World Bank, 2001/2002)[51].

Figure 3 : Global distribution of poverty

Middle East and North Africa 0.5%

Europe and Central Asia 2.0%

Latin America and the Caribbean 6.5%

South Asia 43.5%

East Asia and the Pacific 23.2%

Sub-Saharan Africa 24.3%
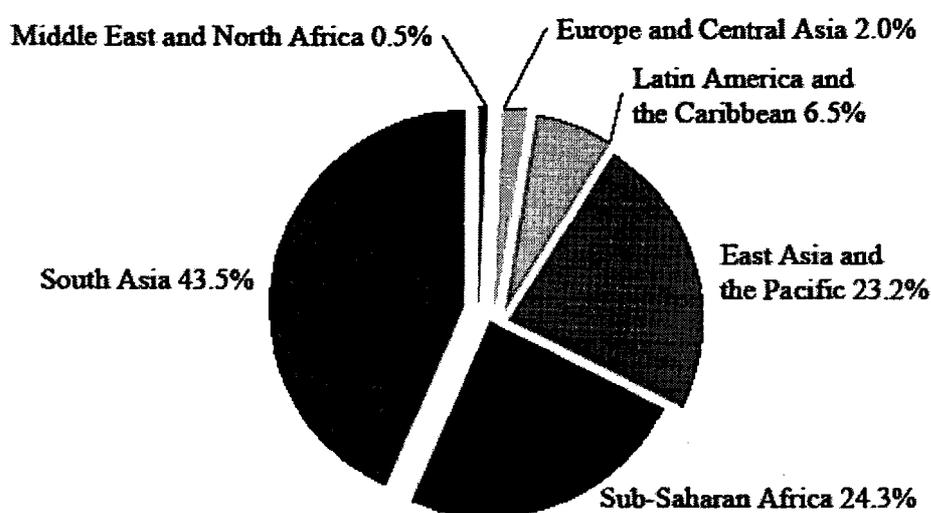
Source: World Bank Report 2001 -2002.

[51] World Bank. Using information and communications technology to reduce poverty in rural India, PREM Notes, Poverty Reduction and Economic Management Network, No.70, June 2002. http://www1.worldbank.org/prem/PREMNotes/premnote70.pdf .

The World Bank report goes beyond the view of income levels in its definition of poverty, suggesting that poverty includes powerlessness, voicelessness, vulnerability, and fear. Additionally, the European Commission suggests that poverty should not be defined merely as a lack of income and financial resources. It should also include the deprivation of basic capabilities and the lack of access to education, health, natural resources, employment, land and credit, political participation, services and infrastructure [52] . Another analysis adds an even broader definition of poverty to see it as being deprived of the information needed to participate in the wider society, at the local, national or global level [53] .

The assertion that a knowledge gap is an important determinant of persistent poverty, combined with the notion that developed countries already possess the knowledge required to assure a universally adequate standard of living, suggest the need for policies which encourage greater communication and information flows both within and between countries. One of the best possible ways to achieve this greater interaction is through the use of ICTs.

Poverty is seen as the opposite of well-being. Beyond a lack of income, the multidimensional concept of poverty also refers to disadvantages in access to land, credit and services (e.g. health and education), vulnerability (towards violence, external economic shocks, natural disasters), powerlessness and social exclusion. Information and Communication Technologies (ICTs) facilitate the creation, storage, management and dissemination of information by electronic means. This definition includes radio, television,

---

[52] European Commission, Communication from The Commission to The Council and the European Parliament. Information and Communication Technologies in Development. The role of ICTs in EC development policy, Brussels, 14.12.2001 COM (2001).

[53] Information and Communication Technologies for Development, ZEF, the Centre for Development Research, University of Bonn, 2002

telephone, fax, computer and the Internet. Four characteristics describe these modern ICTs: (1) Interactivity: for the first time ICTs are effective two-way communication technologies. (2) Permanent availability: the new ICTs are available 24 hours a day. (3) Global reach: geographic distances hardly matter any more. (4) Reduced costs for many: relative costs of communication have shrunk to a fraction of previous values.

"The debate regarding the effectiveness of using Information and Communication technology (ICT) to help achieve development goals arises not only around questions concerning the evidence in support of a relationship between ICT and development, but also more substantially from inherent doubts about the relevance of ICT to achieving sustainable development and fears that investment in ICT will draw resources away from traditional development goals .

Information and knowledge are critical components of poverty alleviation strategies, since ICTs now offer the promise of easy access to huge amounts of information useful for the poor. The most effective route to achieving substantial benefit with ICTs is to concentrate on rethinking development activities by analyzing current problems and associated contextual conditions and considering ICT as one ingredient of the solutions. The general rule being the application of ICTs to development should always begin with a development strategy leading to a technology plan i.e. to have clear development targets that are specific to the context before the form of use of ICTs is defined. It should be bottom up demand driven approach rather than the top-down supply driven. Finally a plan for the technology has to be drawn up that will be capable of delivering the information resources required for achievement of the strategy.

The poor lack adequate food and appropriate shelter, and seldom have a regular occupation. When ill, they do not have access to proper medical services. Many cannot read and write. They have little or no access to government services and often have no voice in decision-making processes. They live with day-to-day uncertainties and anxieties out their future. The realities surrounding the poor must be the first consideration. The challenge is to define clearly the role that ICT can be expected to play, where it could be cost effectively applied and what it can realistically be expected to achieve in terms of rural poverty alleviation.

ICT is currently recognized as a key to improving the resource allocation process and the efficient implementation of programmes. The experience of development agencies around the world provides ample evidence that ICT could play an important role in poverty alleviation. Modern ICT has much to offer in meeting the information-communication needs of rural communities. ICT can improve the access of the poor to health, micro credit and government services, create direct employment opportunities, provide training and education to people, and support the poor in the production, storage and marketing of farm and non-farm products.

ICT can also facilitate the generation and exchange of community-based information and stimulate the establishment of small and medium-sized enterprises. It can break barriers to knowledge by providing demand-driven information and services to the rural poor. Access to information is a key to building human capabilities. The real benefits of ICT are related to its ability to make critical information easily available and break down barriers to participation. The poor are often isolated and lack the means to take collective action but ICT can empower poor communities and enable them to voice their concern s publicly to the responsible groups.

The role of ICTs in poverty reduction is not limited to reducing income poverty, but also includes non-economic dimensions. Therefore, both the *quantitative and qualitative aspects of poverty* are highlighted again: On the one hand, the lack of ICT equipment itself presents another quantitative criterion for measuring poverty (e.g. number of mobile phones or telephone lines), even though such indicators do not say how the existing infrastructure is used. On the other hand, the consequences of this lack of physical assets (which in practice means being isolated both from receiving and giving information in a modernizing society) illustrate the qualitative sides of poverty. The lack of information is very prominent, due to its far-reaching implications: "poor people need among other things affordable access to information that is vital to their livelihoods.

Because poverty is a complex phenomenon, there cannot be a single dominant approach to alleviate it. Poverty alleviation strategies have been concerned with improvements in the provision of micro credit to enhance small and medium-scale businesses, effective livelihood and product-marketing training programmes, empowerment of women and disadvantaged groups, improving the management of government-run poverty alleviation programmes and encouraging the work of some NGOs in building self-help networks among the poor. Successful programmes are often those with strong grass-roots participation. However, it is widely acknowledged that there has been a great deal of waste in the way that resources have been utilized in the past.

The father of Green revolution in India, Dr.M.S.Swaminathan reiterates, "Many developing countries remain poor largely because they had let the Industrial revolution pass them by. They can ill afford to miss the information technology revolution.". He further adds that, Information is not a magic cure for hunger or poverty. However, the right information at the right time can help in finding a solution. ICT includes a whole range of technologies that

facilitate communication and the processing and transmission of information by electronic means from conventional radio and landline to computers, Internet and mobile phones. Most of the studies on tele-centres in Asia, Africa and Latin America acknowledge that people use the phone and the photocopier, but rarely the computer and Internet facilities. They also acknowledge that those who use the computer and internet facilities are generally the most educated and the well off and not those most in need.

4.4 ICTs and Gender :

Women in developing countries particularly, face difficulties in using ICTs as they tend to be poorer, face greater social constraints and are less likely to be educated or literate than men. They are likely to use ICTs in different ways and have different information requirements to men. Women are less likely to be able to pay for access to ICTs, either because of an absolute lack of funds or because they lack control of household expenditure. Constraints on Women's time or their movement outside the home can also reduce their ability to access technologies[54]. Such groups require special assistance and attention in order to benefit from programmes that are targeted at poor people.

All over the world, women bear the brunt of poverty disproportionately. This has been shown conclusively by various studies. As stated by Gustaror Speath in his forward to the Human Development Report-1995 *"The most persistent of these (disparities) has been gender disparity, despite a relentless struggle to equalize opportunities between women and men. The unfinished agenda for change is still considerable. Women still constitute 70% of*

---

[54] Marker, P., McNamara, K., and Wallace, L.(2002) The Significance of Information and Communication Technologies for Reducing Poverty, The Think! Programme, Development Policy Department, Department of International Development.

the world's poor and two-thirds of the world's illiterates. " In India, the adult literacy among women is 46.4% against 69% among men and earned income of females is only about 1/3rd of the earned income of the males. The statistics also indicate a significant difference in drop out rates between boys and girls. Obviously therefore at present the females have much less access to ICTs as compared to males. Some of the factors responsible for this are:

1. Limited funds available to the poor households for education of children are mostly allocated to the male children.

2. Social customs create a barrier for girls to go to schools which are located at some distance from their respective homes.

3. When the housewife is unwell it is the daughters and not the son who provides a helping hand in running the kitchen.

4. Early marriages results in disruption of studies.

To remedy this situations, special efforts need to be made to raise the literacy level among women. Secondly it would be useful to introduce ICT, education for a much lower class in the schools so that even the dropouts are introduced to this subject. Another thing which needs to be done is to have special computer literacy programme for the school dropouts. Thirdly the programmes for the women should be prepared keeping in mind the regional context and in the local languages.

Many of the positive aspects of the information and communications revolution had initially bypassed poor women. This issue was considered so important that the five-year review of the implementation of the Beijing Platform for Action mentioned that, traditionally, gender differences and disparities had been ignored in policies and

programmes dealing with the development and dissemination of improved technologies. As a result, women were benefiting less from, and being disadvantaged more by, technological advances. Women therefore need to be actively involved in the definition, design and development of new technologies. Otherwise, the information revolution might bypass women or produce adverse effects on their lives. The outcome of the five-year review recommended that further actions and initiatives be explored and implemented to avoid new forms of exclusion and ensure that women and girls have equal access and opportunities in respect of the development of science and technology.

In recent years, a number of ICT-related initiatives aimed at the social empowerment of women have emerged. Most of these initiatives are relevant to women across the rural-urban divide, but some specifically address the situation of rural women. The aforementioned Grameen Phone Programme in Bangladesh and the village herb-processing operations in India both involve women.

Tele-centres and fax booths have created 250,000 jobs in the last four years alone, and many of these have gone to women. Women-owned businesses such as these generate a higher rate of female patronage than male-owned businesses. Another initiative is the project entitled "HIV/AIDS Prevention and Women and Girls Empowerment through Access to Information and Education". Supported by the United Nations Foundation, the focus of this pilot project is HIV/AIDS prevention. As the project expands, it will cover other development topics important to women and the community. The pilot phase of the project entails establishing 800 sites in India, Indonesia, Malaysia and Nepal. At these sites, locally produced information content will be broadcast in local and national languages by using

satellite digital broadcast technology and inexpensive portable digital receivers, coupled with portable solar systems, to power receivers in areas that lack a reliable electricity supply.

Recognizing the advantage of ICT for women's networking for empowerment, a number of women's organizations have begun adapting ICT to support their information, communication and networking initiatives. ESCAP has been working with the Asian Women's e-source Exchange since 1998 in providing training in electronic networking for the promotion of cooperation among developing countries. The training targets female information officers in women's organizations, both governmental and non-governmental, and is aimed at building the capacities of women and their organizations to utilize new information and communications technologies in policy advocacy. The training is focused on running effective web-based information services, using online communications tools to advance their networking and advocacy work, and developing databases.

UNICEF has developed the Meena Communication Initiative in South Asia, which is supported by the Governments of Bangladesh, India, Nepal and Pakistan. This mass communication project is aimed at changing perceptions and behaviour that hamper the survival, protection and development of female children in the region. The Initiative involves the production of multimedia packages, including animated films, videos, radio series, comic books, posters, discussion guides, folk media, calendars, stickers and other materials. The package is aimed at disseminating gender, child rights and educational messages, using the medium of popular entertainment. Topics for the animated film episodes and other multimedia materials are identified through field research.

Currently prevailing social and cultural biases contribute to the perception that women have a limited ability to master emerging technologies. A basic constraint on women's access to extension in agriculture is due to a general perception that women are primarily homemakers rather than decision-making farmers, a perception that rationalizes focusing extension services on male"farmers" who are expected to direct the work of "female family labour" . Thus technology choices and the allocation of resources for technologies to serve women are considered political decisions. Rural women lack the political power to influence the choices of technology which are promoted for rural use and subsequently transferred to the rural communities. Increasing access to technology involves many complex issues regarding impact on women. The search for appropriate technology for women should lead to packages combining traditional and modern ideas. Simplicity in use is desirable in technology for poor rural women, but all techniques should be tapped properly. Lastly as far as possible the programmes should be conducted with the involvement of the community for better results.

4.5 Major ICT initiatives for poor in South Asia and India :

The poor in India mainly lag in the areas of education, health and unemployment. These ICT initiatives focus on these target areas so that the poor in India come to forefront of development. The main areas of ICT application are information services, e-commerce, job opportunities, education and training, health and medical information.

4.5. 1) Information service

Modern ICT makes it easy and cheap to provide customized information systems for

the poor. The Internet offers more flexibility in the collection, retrieval, updating and

presentation of information than traditional electronic media, such as radio and elevision.

Internet connections are so cheap to set up that even small, community-based organizations

with relatively low investment capital can become significant information providers. There are many pro-poor ICT initiatives in India aimed primarily at improving the availability of market and other information for livelihood improvement. One is the Centre for Research in Sustainable Agriculture and Rural Development of the M.S. Swaminathan Research Foundation in Chennai, Tamil Nadu, India. As a tele-centre, this facility provides public access to telecommunications (for example, telephone, facsimile and Internet) and information services (for example, health, education, market data, technology and livelihood)to a disadvantaged community. The Foundation's tele-centres provide rural farmers with data on agricultural practices, the cost and availability of farm inputs (pesticides, fertilizers and seeds), health and life insurance, welfare opportunities and other useful information.

Another pro-poor initiative is the Warana Wired Village in Maharashtra , which has set up information kiosks in 70 villages to enable villagers to access agricultural, medical and educational information through the Internet. About 20 farmers visit each kiosk daily to access information on crop cultivation practices and schedules, quantities harvested and sold, net income due to them, pest and disease control, and marketing, among other topics. All information is provided in the local language. Farmers consider the Internet a better source of information than traditional sources such as traders, field officers, television, radio and the print media. By providing neutral information, this ICT service also minimizes cheating by unscrupulous traders quoting the prices of farm products. A similar experiment was reported in Malaysia with the project called "Smart Community". Launched in August 1999, the project developed multimedia information and databases for village use. Interactive contents were developed based on the needs of the villagers and covered areas such as health, agriculture, tourism, environment, social development, livelihood, product marketing, local

administration and village activities. Access is through a village tele-centre or kiosk using touch-screen computers. An important feature of the project is the multimedia presentation (audio and video) of information, which enables even illiterate and uneducated villagers to benefit from the services. The location of the village kiosks is also an important consideration for targeted access. In this project, the kiosks are strategically located at rural community clinics so that they are easily accessible by rural women, at primary schools for the benefit of students, at mosques for access by adults and older people and at computer clubs for the benefit of youth. Access to local databases is provided free of charge to the villagers.

These examples show the power of ICT in providing customized information services for a particular community. However, the real power of ICT lies in its ability to provide customized information for a much larger group of users. A good example is Thailand's national agricultural information system, developed under the Government's ICT-based Rural Net project. The project provides computer links between the Office of Agricultural Economics and local administrative offices, agricultural cooperatives and communities in nine provinces. The network also connects with other government agencies and private agricultural trading companies.

The main services of Rural Net are the dissemination of agricultural news reports and the provision of two-way communications facilities that enable farmers to contact government officials. In 2000, the project established a web site integrating all agriculture related information from various government agencies and private companies. The site provides links to 870 other web sites related to agriculture, 620 of which are in the Thai language. There is a similar effort under way elsewhere in South-East Asia. The Philippine

Council for Agriculture, Forestry and Natural Resources Research and Development has launched the Farmers' Information and Technology Services or "Techno Pinoy" Programme.

The aim is to empower lowland and upland farmers, processors, entrepreneurs and traders through the efficient and effective provision of information and technology services to facilitate the clients' decision-making for the purpose of improved production, processing, trading and marketing. Fast and effective access to information and technology is intended to improve agricultural productivity and sustain development in the countryside. Techno Pinoy intends to link various organizations, networks and technology services and make the services easily accessible and user-friendly.

4.5.2). E-commerce

Electronic commerce, or e-commerce, involves the sale or purchase of goods or services over computer-mediated networks, particularly the Internet. Such goods and services may be ordered over the Internet, but payment for them and their ultimate delivery may be online or offline. Developing countries could benefit from e-commerce through easier access to markets in developed countries and higher incomes resulting from these new trading opportunities.

E-commerce has also found a niche in some rural areas. For example, one village in Tamil Nadu, India, which excels in making traditional cotton saris and other garments, sells its products to buyers all over the world through a web site operated by an NGO called PEOPLink. Another NGO, the Foundation of Occupational Development, has initiated a similar scheme to sell products made by rural women through the Internet. Similarly, a small NGO in Thailand sells handicrafts produced by poor villagers through its web site. This e-

commerce facility also provides information on the lifestyle of the village people and the methods for producing handicrafts, which could attract more sympathetic buyers. These types of innovations have the potential to reduce transaction costs substantially and eliminate layers of intermediaries who often absorb a large part of the profits. The facility also provides an unparalleled opportunity for people in rural areas to expand their businesses and activities beyond their local confines to a global audience.

However, e-commerce applications in developing countries face several serious barriers. Most e-commerce applications require expensive secure servers, which are very limited in developing countries. The majority (64 per cent) of the secure servers in the world are located in the United States; the vast majority of other countries have less than 0.1 per cent (Bridges.org 2001); A good transport system is necessary to deliver products at reasonable cost to the buyers, especially for developing countries exporting mainly tangible goods such as agricultural products, handicrafts and garments.

Lack of consumer confidence in e-commerce. Experience has shown that consumers are reluctant to buy products online because they cannot be sure of product quality, or online transactions were found to be too impersonal; Poor financial systems which hinder effective e-commerce applications. E-commerce requires significant upgrading of and regulatory changes to financial systems. In particular, national banking systems need to upgrade their infrastructure to accommodate electronic payments and settlements. Successful e-commerce applications require coordination and partnership at the regional level. The e-ASEAN Task Force exemplifies a regional initiative to remove banking and regulatory barriers for the development of e-commerce in countries that belong to the Association of Southeast Asian Nations (ASEAN). The Task Force has formulated plans to accelerate the development of e-

commerce throughout the region and has identified the following key factors in its ability to do so: cyber laws, secure messaging infrastructure, payment gateways and online services and products. It published a report in 2002 on the e-ASEAN reference framework for electronic commerce legal infrastructure, which provides guidelines or developing e-commerce laws and facilitating cross-border e-commerce applications. An aim of the Task Force is to enable all ASEAN members to develop e- commerce legislation by 2003.

4.5.3) Employment generation

As ICT gets progressively cheaper, many tasks can be done cost-effectively at different locations, creating a fast-growing market for outsourcing labour-intensive jobs from developed countries to developing countries. For example, software developers in Bangalore, India, can provide services to companies in the Western developed countries without needing to travel outside of India. Service industries involving labour-intensive tasks such as airlines and insurance can set up operations in lower-wage countries, when they are linked through the Internet. In this manner, a number of service-oriented companies are creating remote "back offices" in offshore locations, which carry out routine clerical support functions at much lower cost than in the home country. This has created ample job opportunities in developing   countries. The software industry in India has grown from almost nothing a decade ago into the most dynamic business in the country, employing 400,000 people and generating more than $8 billion in sales in 2000 (*The Economist,* Getting better all the time, 10 November 2001).

The emergence of ICT services in rural areas has also generated new business enterprises: selling ICT equipment and accessories; providing ICT services such as Internet access, word- processing and telephone operations; providing training and educational

support; and repairing and maintaining ICT equipment. Such enterprises provide direct job opportunities for traders, teachers, computer operators, technicians and administrative and secretarial support staff. For example, each tele-centre in the Loyola Joseph network in Tamil Nadu has created approximately 50 telecommunication jobs in areas such as writing, translating and data entry. Similarly, the All India Coordinated Programme has established about 420 multi-purpose ICT training and service centres in rural areas of the country. The programme has generated employment for over 2,000 people. While these opportunities tend to attract the educated, some efforts at targeting the poor and disadvantaged groups, particular women, have proven successful.

The Grameen Phone Programme in Bangladesh has been innovative in creating ICT-related job opportunities for rural women. The programme has enabled poor and illiterate women to sell telephone services to others. In 2000, there were about 2,200 "telephone ladies" in Bangladesh (Grameen Trust 2000). If the network coverage of the programme were extended, the number could easily reach over 100,000. An evaluation study concluded that the impact on poverty alleviation at the household level was significant, since the revenue from the telephone business was substantial. The success of the Grameen Phone Programme in Bangladesh has spurred the development of similar programmes in other Asian countries. ICT also offers innumerable indirect employment opportunities through improving the business prospects of rural-based enterprises by giving them better access to market information, improved production technology and more efficient marketing systems.

For example, tele-centre services in Pondicherry, have encouraged villagers to utilize their consider- able knowledge of local herbs for the establishment of a herb-processing centre. Using the services of the tele-centre, the villagers have learned how to package and

market the herbs. Around 300 village women are currently engaged in herb processing. ICT can also make information available to the rural poor and disadvantaged groups concerning employment opportunities for low-level jobs such as factory work, domestic help and farm labour. Rural workers normally have no direct access to information on jobs available in urban areas and have to depend on the services of private employment agencies, which often charge exorbitant fees or exploit them. ICT can create a direct link between workers and employers, thus avoiding costly intermediaries. The aforementioned tele-centre, which facilitates the recruitment of women workers for an agricultural processing factory, is a good example of such a function.

4.5.4) Education and training

Perhaps the most tangible benefit so far derived by developing countries from the ICT revolution is access to vast resources for enhancing education and training at minimal or no cost. The Internet currently hosts thousands of distance-learning and training programmes on virtually any conceivable subject. Distance learning has been particularly successful in the developing countries where affordability and geography are real barriers to access. The six largest distance-learning universities in the world are located in ESCAP developing countries (China, India, Indonesia, Republic of Korea, Thailand and Turkey). ICT has also created new opportunities for greater coordination and networking of educational institutions in developing countries for the purpose of exchanging learning materials, educational curricula and scholarship opportunities for students and teachers. Indonesia's web-based *Dikmenjur* (primary and secondary vocational education) information system is one example.

The system initially focused on connecting geographically dispersed institutions via the Internet to provide basic information and communications services. Gradually, the

83

network built a strong partnership among participating institutions in sharing training modules online and building up ICT capacities for teachers and students. The system enables students in remote areas to communicate with administrators in Jakarta. About 300 institutions located throughout the Indonesian archipelago are participating in the network. At the sub regional level, the e-ASEAN Task Force has established several pilot projects aimed at establishing cross-border electronic networking among educational and training institutions.

The intention is to link students, teachers, researchers and education administrators in the member countries and around the world in order to provide them with access to the wealth of educational and training resources available on the Internet. Three notable pilot projects are the ASEAN SchoolNet, ASEAN Educators Online and ASEAN Training Network. Efforts have been made in recent years to develop ICT-based education and training tools at the village level: one notable example of this trend is the development of a computer- based software learning system for Indian villagers to gain literacy and acquire basic computer skills.

Another, more sophisticated system was developed by the Indian Space Research Organization and is based on a satellite interactive video and audio teleconferencing network. This system is used for imparting training and continuing education to a diverse group of people, including agricultural extension workers, farmers, rural women, local government officials and students. The system broadcasts development-oriented programmes on topics such as livelihood, health, child development, agriculture, forestry and local governance.

It enables the simultaneous training of a large number of geographically dispersed people and access to highly-rated instructors and learning resources. It is a good example of the appropriate use of ICT to enhance the social and economic empowerment of the rural population. The Grameen Bank of Bangladesh and the Massachusetts Institute of Technology of the United States have jointly developed a voice-operated learning system to help illiterate villagers to learn to read and write. This speech technology transcribes the local spoken language onto the screen and reads it back to the computer user. Village-level tele-centres also provide learning opportunities through the information provided on the Internet and through training programmes conducted by tele-centre operators.

4.5.5) Health and medical information

The exchange of information constitutes a major aspect of medical care. Many web sites on medical topics are aimed at doctors and health workers and are venues for the exchange of professional information and experiences on illnesses and treatments. In India, particularly in Mumbai, hospitals are making use of such web sites to provide a link to medical information in other more developed countries. In addition, health workers in some developing countries are obtaining medical training through ICT-enabled delivery mechanisms.

Several new Internet sites include innovative "teach and test" self-assessment modules on malaria, among other subjects. Furthermore, centralized data repositories connected to ICT networks enable remote health-care professionals to keep abreast of the rapidly evolving stock of medical knowledge. In Bangladesh, for example, the local MEDINET system provides access to hundreds of medical journals via e-mail for a nominal

fee [55] . Although the web contains volumes of information on health and medical care, this information resource is of little use to the rural poor without the help of intermediaries who can simplify, translate, repackage and disseminate the information.

The probability of web-based medical and health services reaching the rural poor is very limited, since only those who can avail themselves of hospital services would indirectly benefit from well- informed doctors and health workers. If health information services are to have a direct impact on the rural poor, they must be both comprehensible and accessible to the target users. Instructions have to be simplified, well illustrated and adapted to local conditions. Advice on treatments should consider indigenous, inexpensive and locally available materials. "Telemedicine" also offers a new solution for bringing the benefits of medical services and training to remote areas. In this regard, digital still and video cameras have been used by doctors in urban areas to examine patients in remote areas.

Summary: This chapter tries to incorporate various possible uses of ICt for the common man. The role of Information and Communication Technologies is increasing day by day as the technologies are rapidly proliferating. With the coming of Right to Information Act 2005, the role of e – governance will be pivotal in allowing the common man to know about what is going on behind the screen of the Government. The President of India Dr. A.P.J.Abdul Kalam's idea, PURA (Providing Urban Amenities for Rural Areas) focuses on the same initiative as this research. That is to use these technologies to serve the poor and under developed masses of our country and to make India a 'knowledge superpower'.

---

[55] Accenture, Markle Foundation, UNDP: Creating a Development Dynamic, Final Report of the Digital Opportunity Initative,http://www.opt-init.org/framework/pages/ contents.html, 2001

Chapter V

CONCLUSION

New technologies if used innovatively can help in bridging technological, knowledge and income divides. Introduction of ICTs or any new technologies in a community should involve the active participation of the community. It involves community ownership and participation. Content creation should address the needs of the community and a bottom up approach must be followed. To be of use to rural families, the generic information should be rendered into locality-specific knowledge that the poor and marginalized rural women and men can act on.

There are a number of ways ICT is enhancing rural productivity. ICT enables solution sharing between local people and communities, providing access to practical information on small business accounting, weather trends and farming best practices . Timely access to market information via communications networks also helps farmers make astute decisions about what crops to plant and where to sell their produce and buy inputs

Initiatives that are properly conceived and implemented can have an impact that extends beyond the individual communities they are designed to serve. Model initiatives can be scaled nationally or even regionally, contributing to the critical mass and the threshold levels needed to ignite a virtuous cycle of development. In such circumstances, the increasing use and pervasive impact of ICT can substantially enhance the ability of developing countries to address the full range of development goals.

It has been argued here that ICT can contribute to poverty reduction, if it is tailored to the needs of the poor and if it is used in the right way and for the right purposes. It can also boost economic growth, but it is unlikely to lead to poverty reduction in countries where there are persisting and fundamental socio-economic inequalities. Like all technologies, ICT offers tools and applications but no solutions. The solutions to the problem of poverty are what they have always been: economic growth, enabling infrastructure, the creation of livelihoods, education and healthcare, and sufficiently democratic government to ensure that economic benefits are not cornered by the powerful elites. By providing cheap and efficient tools for the exchange of information, ideas and knowledge, ICT can become an enabling tool for wider socio-economic development. When properly used, it can greatly increase the ability of the poor to benefit from economic development and from development programs meant to help them.

The rapid expansion of ICT will continue in the foreseeable future. Regional growth forecasts estimate that by 2003 Asian users will surpass North American and European users. The base of Internet users could exceed the 1 billion mark by 2005, with 700 million users located outside North America [56]. Current estimates indicate that 78 per cent of all web sites and 96 per cent of all e-commerce applications are in English. By 2003, the majority of the web content is expected to be in languages other than English). Developing countries in the region are faced with the difficult task of developing a national policy framework that would enable the rural poor to benefit from ICT. Experience with pro-poor ICT initiatives has demonstrated that ICT has the potential to help the rural poor to leapfrog some of the traditional barriers to development, by improving access to information, expanding their

---

[56] Accenture, Markle Foundation, UNDP: Creating a Development Dynamic, Final Report of the Digital Opportunity Initiative, http://www.opt-init.org/framework/pages/ contents.html, 2001

market base, enhancing employment opportunities and making government services work more effectively. Although there is limited hard evaluation of grass-roots ICT initiatives, what is available offers valuable lessons on what works and what does not work. A national media strategy can help to ensure that ICT contributes to social development in rural areas. Such a strategy must determine the information and messages that it is important for rural persons to receive.

The strategy must take into account the most effective ways to provide that information, whether through private sector, government or NGO channels. It must also consider the appropriate medium to communicate each type of information to persons in rural areas, fully exploiting the comparative advantages of radio, television, newspapers, telephones, films or the Internet. ICT cannot be effectively used for development unless the crucial problem of the digital divide is addressed, not only between developed and developing countries, but also in terms of gender, class, age, ethnicity, language, geographical location and physical ability. A policy promoting competitive telecommunication sectors could attract investment in expanding ICT infrastructure and in lowering costs. However, market forces often ignore the poor and disadvantaged groups and cannot be relied upon to use ICT to alleviate poverty. The poor require targeted products and services, which may not yield a financial profit for the provider.

Ensuring that the rural poor obtain access to ICT requires coordination and the involvement of a broad range of stakeholders. This type of effort could take the form of formal task forces or more loosely connected public-private partnerships and should include local-level participation to ensure that initiatives are demand-driven and implementation incorporates bottom-up approaches. There is also evidence that national strategies are critical

to using ICT effectively for development goals, but there are significant limitations on what a single country can accomplish on its own, even if it takes advantage of all the opportunities within its control.

There has to be coordination and partnership, not only at the national level, but also at the regional and global levels in order to bring together developed and developing countries, multilateral institutions, civil society and the private sector for the purpose of assisting developing countries particularly the least developed in using the great potential of ICT for facilitating the achievement of development goals. Strategies for the use of ICT are not universal. Countries face different circumstances, priorities and financial means and therefore adopt different strategies.

There are no unique answers to finding the right ICT formula for a country; each has to determine its own approach. Implementing a framework for action involves creating processes to build consensus on national priorities and addressing barriers in different areas through advocacy, consultation, incentives and reforms. For developing countries, the challenge will be to align the interests and strengths of various constituents of society and find appropriate strategies to make ICT work for the poor.

The Government should ensure that national programmes for putting ICT at the service of poverty alleviation and the development of rural and disadvantaged areas are in place. These national programmes could include the following: (a) the establishment of a transparent and consistent legal and regulatory framework that fosters ICT development, including, as appropriate, removal of impediments to growth in the ICT sector, (b) the maintenance of an appropriate regulatory environment while promoting privatization to

facilitate ICT-related private sector investments, (c) the promotion of private investment for ICT infrastructure development through supportive activities and incentives such as build-own-operate and build- own-transfer, (d) the development of ICT applications with a rural poverty alleviation orientation in public institutions such as schools, libraries, hospitals and government departments and agencies, (e) the development of local ICT contents reflecting the knowledge level of target groups, (f) the promotion of access to ICT for all by supporting community-based ICT services, (g) the development of strategies to link established technologies, such as radio and television, with new ICT technologies and (h) the integration of ICT into general education and professional courses as well as into specific initiatives to raise ICT awareness and develop ICT skills.

From an international perspective, Governments of developing countries should become more fully involved in the negotiations on communications-related WTO agreements and play a greater role in other international organizations which have an impact on ICT policy.Poor countries are currently on the sidelines of the global information economy; thus, it is important that the international community agree on policies and standards that encourage rather than act as barriers to their entry. The Ministry of Information and Communication Technology, Government of India, plays a critical role in promoting human resources development, the regional exchange of country experiences on pro-poor ICT initiatives and the identification, review and dissemination of best practices or successful models in the application of ICT for rural poverty alleviation in the region. It does so through the organization of regional conferences or consultations and the development of regional ICT-based rural poverty initiatives and the use of its web site for the exchange of relevant information and documents.

The Ministry also provides a forum where members and associate members of the ICT initiative can consult and be given advice on key policies related to the expansion of ICT connectivity in rural areas and the promotion of universal access to knowledge and information for promoting development. The Ministry collaborates with other international development agencies to provide assistance to areas that promise returns in a particular state, especially with regard to identifying development strategies, implementing related pilot projects at the state level, building human resource capacity and disseminating information on the lessons learned at the national level.

Experience with the implementation of ICTs in developing countries suggest that the Internet and other new information technologies cannot provide an immediate solution to the lack of information in developing countries and that such technologies will not simply allow these countries to 'leapfrog' generations of technological change to move from an agrarian to an information society [57].

The prevailing contemporary vision of the power of communications [telephone, radio, TV, Internet] to propel the poor and marginalized into the mainstream of economic activity needs to be tempered by a sober and clear understanding of the socio-economic and environmental conditions that constrain development in rural areas[58]. A key lesson is that information by itself is not enough and communication on its own leads nowhere i.e. relevant information clearly communicated is a necessary but not sufficient condition for rural

---

[57] Kaniki AM (1996). Information for all: challenges for South African library information science education and training. Inaugural lecture, University of Natal, Pietermaritzburg.

[58] Munyua H (2000). Information and communication technologies (ICTs) for rural development and food security: lessons from field experiences in developing countries. Paper presented at a workshop on The Role of Information and Communication Technologies in Rural Development and Food Security, Rome, 5-6 June, 2000. <http://www.fao.org/coaim/ictws/munyua.htm>

development. Anderson et al encapsulate this by noting that "In the enthusiasm for [new] ICTs and their potential, we should not forget that the focus should be on [developing] people, organisations and processes rather than on the technologies themselves.[59]"

[59] Anderson J, van Crowder L, Dion D & Truelove W (1999). The first mile of connectivity: applying the lessons of participatory communication and training to rural telecentres. SD Dimensions: Development Communication: <http://www.fao.org/WAICENT/FAOINFO/SUSTDEV/Cddirect/Cdan001

BIBLIOGRAPHY

Primary sources

Documents

Census of India,2001 .

Ministry of Information Technology , Report on IT for the Masses, 2004.

UNCTAD Report on Information and Communication Development Indices ,Geneva, 2003.

Human Development Report 2001, UNDP Publications.

Human Development Report ,2004.UNDP Publications.

World Development Report 2004.

World Bank Report ,2004 -2005.

Secondary Sources

Books.

Appadurai,Arjun(1996) , Modernity at Large: Cultural Dimensions of Globalization , Minneapolis, University of Minnesota Press.

Bedi, K., Singh, P.J., & Srivastava, S. (2001) , Government @net : New Governance Opportunities for India, Thousand Oaks, Sage.

Bell, Daniel (1973), The Coming of Post Industrial Society: A Venture into Social Forecasting , London, Penguin.

Bhatnagar, S., & Schware, R (Eds.).(2000). Information and Communication Technology in rural Development, Thousand Oaks, Sage.

Bourdieu, Pierre, (1973) ,Cultural Reproduction and Social Reproduction ,in Richard Brown (ed.) ,Knowledge, Education and Cultural Change, London, Tavistock.

Chakravarthy, Sukhamoy, (1989), Development Planning : The Indian Experience , Oxford, Oxford University Press.

94

Colle, R. (2000.) Communication Shops and Telecentres in developing Countries, in Gurstein, M. ed. Community Informatics: Enabling Communities with Information and Communications Technologies, Idea Group Publishing, Hershey, USA,

Dandekar, V.M., and Rath , N.(1971) , Poverty in India, Bombay, Sameeksha Trust.

Dreze,Jean and Amartya Sen, (2003), India Development and Participation, New Delhi, Oxford University Press.

Easwaran , Mukesh and Kotwal , Ashok(1994), Why Poverty Persists in India? New Delhi, Oxford University Press.

Giddens, Anthony (1997) Sociology, Cambridge, Polity Press.

Gupta, Raj,(2000), "Inmarsat Experience in Village Telephony" in S. Bhatnagar and R. Schware (eds) Information and Communication Technology in Development, New Delhi, Sage.

Habermas ,Jurgen ,(1989) , The Structural Transformation of the Public Sphere, An Inquiry into the Category of Bourgeois Society , ,London. Blackwell publishers

Hall, Pat and Ray Hudson (eds.), (1997), Software Without Frontiers, , New York Wiley Publications

Hall, Patrick, (2004) ,Information technology to Support Diversity in a Global Economy, in IT Experience in India by Kenneth Keniston and Deepak Kumar, New Delhi. Sage Publications.

Ellul, J ,(1981),' Technological Society', in Albert H .Teich (ed.), Technology and Man's Future, New York, St. Martin's Press.

Haq, Mahbub-ul,. (1963) The Strategy of Economic Planning (New York Oxford University Press,

Hollis B. Chenery,(1974) Redistribution   with Growth (New York and London, Oxford University Press.

Innis, Harold, (1972), The Empire and Communication, Toronto, University of Toronto Press.

Jalan, B (ed), (1992), The Indian Economy: Problems and Prospects, Delhi: Penguin.

Jhunjhunwala,Ashok ,(2000), Looking Beyond NTP 1999.
Kenistion, Kenneth,(2004) IT Experience in India , Sage Publications , New Delhi.

Leyshon, Andrew and Nigel Thrift (1997) Money/Space: Geographies of Monetary Transformation., London and New York, Routledge.

Lyon ,David ,(1998), The Information Society : Issues and Illusions, Cambridge , Polity Press.

Manzar, Osama et al , (2001), The Internet economy of India, New Delhi, Inomy Media.

Marx, Karl (1857-8), Grundrisse : Foundations of the Critique of Political Economy, English translation , Nicolaus , M, Harmondsworth , Penguin.

Mcluhan, Marshall, (1964) Understanding Media, The Extensions of Man. New York and London,.MIT Press.

Mills,Wright, (1959) The Power Elite, New York, Oxford University Press.

Naisbitt,John ,(1999), High tech, High Touch Technology and our Search For Meaning, London, Nicholas.

Norris, Pippa,(2001), Digital divide Civic Engagement , Information Poverty and Internet Worldwide, Cambridge, Cambridge University Press.

Porat , Marc, (1978) ,Communication Policy in an Information Society , in G. Robinson's (ed) Communication for tomorrow : Policy Perspectives for the 1980's, New york , Praeger Publishers.

Prasad Kiran, (2004), Information and Communication Technology for Development in India. Rethinking Media Policy and Research,, New Delhi. B.R. Publishing Company.

Ravallion, Martin,(1987), Markets and Famine , Oxford , Clarendon Press.

Rao, V.M (1999), Poor in a Hostile Society: Glimpses of Changing Poverty Scenario in India, New Delhi, Vikas Publication.

Richardson, D. (1999), The Internet and Rural Development. FAO, Rome, Italy.

Rogers, Everett., (1986), Communication Technology : The New Media in Society , New York , Free Press.

Ryder, Martin ,(2004), Science and Technology and Ethics.

Sen, Amartya, and Jean Dreze (1999) *The Amartya Sen and Jean Dreze Omnibus*, New Delhi: OUP.

Sen Amartya (1981) , Poverty and Famines. An Essay on Entitlement and Deprivation. Oxford: Clarendon Press.

Singhal, Arvind and Everett M Rogers (2001), India's Communication Revolution From Bullock Carts to Cyber Marts, New Delhi, Sage Publications.

Srinivas, M .N(1962), Caste in Modern India and Other Essays , Mumbai, Allied Publishers.

Swaminathan, M.S.(ed.) (1993) Information Technology : A Dialogue , Madras, Macmillan.

Toffler, Alvin, (1971) , Future Shock , New York, Bantam Books.

Journals

Ahluwalia Montek. S, (1997), "Rural Poverty and Agricultural Performance in India", Journal of Development Studies. Vol.14, no.3. April.

Arunachalam Subbiah : (2002)   Reaching the unreached: How can we use the ICT to empower the rural poor in the developing world through enhanced access to relevant information? Paper presented at the IFLA General Conference, Glasgow, 18–24th August.

Chattopadhaya, B.N. (2003), Information and Communication Technology (ICT) in rural development. In National Seminar on extension strategy for promoting development initiatives among farming communities. G.B.Pant University of Agriculture and Technology, Pantnagar, June 18-20.

Devarajan, Shantayan and Shekar Shah(2004) , Services for India's poor , Employment and Political weekly, February 28.

Dreze ,Jean (2004), Democracy and Right to Food, Economic and Political Weekly, April 24.

European Commission, (2001) Communication from The Commission to The Council and the European Parliament. Information and Communication Technologies in Development. The role of ICTs in EC development policy, Brussels, 14.12.2001.

Gaiha ,R.., P.D.Kaushik and V.Kulkarni, (1998),   "Jawahar Rozgar Yojana and Panchayat's and Rural poor in India, Asian Survey, Vol . XXXVIII.

Jha Sailesh K. (2002) ICT and Economic Growth in Asia. In: WIDER Angle 1/2002. UNU, WIDER, Helsinki.

Keefer, Philip, Khemani Stuti, (2004), Why do the Poor Receive Poor Services? Economic and Political Weelky, February, 28.

Marker, P., McNamara, K., and Wallace, L.(2002) The Significance of Information and Communication Technologies for Reducing Poverty, The Think! Programme, Development Policy Department, Department of International Development.

Millar Jane and Mansell Robin (1999) Software Applications and Poverty Reduction. A Review of Experience. DFID, London

Munyua H (2000). Information and communication technologies (ICTs) for rural development and food security: lessons from field experiences in developing countries. Paper presented at a workshop on The Role of Information and Communication Technologies in Rural Development and Food Security, Rome, 5-6 June, 2000. http://www.fao.org/coaim/ictws/munyua.htm

Nandy, Ashis,(2004), The Beautiful Expanding Future of Poverty : Popular Economics as a Psychological Defence, Economic and Political Weekly, January 3.

Paul Samuel et al (2004), State of India's Public Services : Benchmarks for the States, Economic and Political Weekly, February 28.

Radhakrishna, R., K. Hanumantha Rao, C. Ravi and B. Sambi Reddy (2003), "Food Security and Malnutrition", Indian Institute of Public Administration-Chronic Poverty Research Centre Seminar on Chronic Poverty and Development Policy in India

Ravallion M. and Datt G. (1996) , How Important to India's Poor is the Sectoral Composition of Economic Growth?, World Bank Economic Review.

Sachs, Ignacy (2004) ,From Poverty Trap to Inclusive development in LDC's, Economic and Political Weekly, May 1.

Soberbaum, Peter (1987), Environmental Management: A Non-traditional Approach, Journal of Economic Issues, Vol.21, March.

Venkatasubramanian, K (2004) Poverty Alleviation : Greatest Challenge, Yojana , March.

Warschauer Mark (2002): Reconceptualizing the Digital Divide. . In: First Monday, vol. 7, number 7.

World Bank.(2002) Using information and communications technology to reduce poverty in rural India, PREM Notes, Poverty Reduction and Economic Management Network, No.70, June.
http://www1.worldbank.org/prem/PREMNotes/premnote70.pdf .

Yunus,M (1998), Alleviating poverty through technology, Science, 282, 409-10.

Yunus Mohammed (2001): Key Note Speech for the Conference on "Making Globalisation Work for the Poor – the European Contribution", Kramfors, Sweden, 20-21 June .

Newspaper Clippings.

Swaminathan, M.S., 2001, "Eliminating Hunger A Challenge", The Hindu, October 7.

Dreze, Jean, 2002, "Poverty beyond headcount ratios". The Hindu, September 9.

Internet Resources

www.globalknowledge.org

www.infopoverty.org

www.bytesforall.org

www.digitaldividend.org