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**ICT Development and Social Justice in India:  
Theoretical and Conceptual Perspectives**

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## **Preface**

The Dept. of Sociology, Shivaji University, Kolhapur organized a National Seminar on "ICT Development and Social Justice in India" on 17-18 February 2012. The Seminar was organized under the UGC Special Assistance Programme - D.R.S. Phase II. Dr. Madhav Govind was invited to deliver Key-note address. The present monograph is based on his Key-note address.

Madhav Govind has indicated that in India ICTs have been roped in to address the question of development as well as the issues related to social justice and the idea of social justice is associated with the sense of participation and not only representation. The ICT have become important in addressing the issue of social justice because they enable participation and can bring transparency and accountability in dealing with institutions and governments.

He has explained that the bridging of digital divide will not bring the 'higher order effect' in society because digital technologies create their own kind of inequality, different from social, economic and political inequality. Unlike the digital divide, which is generally concerned with access to computing artifacts, digital inequality is concerned with equitable access to the benefits derived from internet and computer use. In order to have a significant effect of ICT on the poor and marginalized sections of the society. access, contents and ability and motivation to utilize have to be addressed simultaneously.

Madhav Govind observes that there is unanimity among scholars that the rapid diffusion of ICT into historically exploited and marginalized communities has been beneficial in many ways. There is emphasis on integration of ICT into poverty reduction, regeneration and creation of livelihood for poor, developing local entrepreneurship and in designing of programme for social inclusion. He also points out that most of the studies

evaluating these programmes have attributed failure to the design of project or the lack of responses from the users and very little attention has been paid to the structural barriers which have crippling effects on the ability of poor and marginalized classes to use ICT for their benefits. So in all these programmes the basic emphasis was on how to bridge the information gap without developing proper mechanism for how information is going to be converted into knowledge and how it is going to help learning and adaptation.

Madhav Govind concludes that unless the proper infrastructure and the political mechanism are evolved mere access to information will not bring equality and justice to the people. In the Indian context where there is a widespread social and digital exclusion, the rise of the network society may reinforce further the political and social exclusion in the society. Therefore he emphasizes that there is need to address the issue of digital inequality, not merely bridging the digital divide.

We are thankful to Dr. Madhav Govind for his valuable thoughts on "ICT and Social Justice in India". We would like to express our sincere thanks to the authorities of U.G.C. for extending financial support.

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14 March, 2013.

**R.B.Patil,**

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## **About the Author**

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# **ICT Development and Social Justice in India: Theoretical and Conceptual Perspectives**

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Honourable Vice Chancellor, Prof. N.J. Pawar, Head, Department of Sociology- Prof R.N. Salve, Coordinator of Seminar, Dr. Balaji Kendre, distinguished faculty, students and participants, it is my great privilege and honour to be invited for this conference at the Department of Sociology, Kolhapur University, Kolhapur, Maharashtra. I express my deep sense of gratitude to the organizers of the seminar for offering me the honour of delivering keynote address on theme of “ICT Development and Social Justice in India”. I must congratulate you for conceptualizing one of the most relevant themes of our time and bringing scholars from different fields to evolve an interdisciplinary perspective on the role of ICT. The rapid development of ICT has thrown up many opportunities as well as many challenges therefore, it is right time for academic community to deliberate, discuss and come out with appropriate conceptual and theoretical framework to understand and analyze the emerging new social order brought forth by information technology. The ICTs have generally been seen as the synonym of development as they are considered effective and efficient tool to deliver the fruits of development at the doors of marginalized sections of the society. I am sure that scholars coming from different parts of the country will discuss and debate various opportunities and challenges coming up from ICTs. In this lecture I will elaborate some conceptual and theoretical frame works that we need to rethink while exploring the role of ICT in addressing the issue of development and social justice.

## **Introduction:**

The ICTs have become part and parcel of our everyday life. However, they have not entered in our society like a neutral tool to make desired changes; rather they are constructing their own social order and creating new forms of societies as Bijker and Law (1992:3) rightly argued: 'technologies mirror our societies'. As society shapes technology it also gets shaped in turn by technology. Sometimes it is also presumed that a society's technology drives the development of its social structure and cultural values. As Marx emphatically said: "The windmill gives you society with the feudal lord: the steam-mill, society with the industrial capitalist". Technology shaped not only the class structure but also the class culture of the society. In fact, technology changes the way people think and interact. Without development of printing press, mass literacy would not have been possible. Marshall McLuhan(2001)has even linked the role of print media in the development of the nation -state as it has moved society on 'from an oral culture to a literate culture' but has also introduced a capitalist society where there was clear class distinction and individualism. Postman brilliantly articulated the implication of new technology in the following words:

"The printing press, the computer, and television are not therefore simply machines which convey information. They are metaphors through which we conceptualize reality in one way or another. They will classify the world for us, sequence it, frame it, enlarge it, reduce it, argue a case for what it is like."(Postman, 1979:39).

This shows the power of not only the contents but also the form of information. The unprecedented expansion of ICTs has heralded a new era that has been described variously as post-industrial society(Bell,1974), Network society(Castells,1996),Surveillance Society (Lyon,2001),Risk society (Ulrich Beck,1992);and excessive emphasis on transparency, accountability in effective governance is leading toward what Michael Power(1997) called Audit society. The ICTs have made possible of all these variations by enabling the 'transcending of physical boundaries, capital fixity and representation of self and effacing of identity and the creation of virtual community in cyberspace' (Saskia,2002).

Can we use any of these forms of society to understand the Indian society? Have we entered into a 'post-industrial society' or do we have created 'network society? or are we living in a surveillance society where our privacy is infringed or are we exposed to risk society without sufficient knowledge and protection? When we talk about post industrial society

which is characterized by knowledge based industry and dominance of service sector, we find that India as a whole has bypassed the industrialization stage and it has acquired the characteristics of post industrial society as its 55.2 percent of GDP comes from tertiary sectors, and only 18.5percent from primary and 26.3 percent from secondary or manufacturing sectors. But when we compare the participation of people in production of GDP, it is estimated that 52percent labour force is still employed in agriculture and allied sectors, 14 percent in industrial sector and 34 percent in service sector.<sup>1</sup> It showed that agriculture sector is overcrowded and its productivity is very low in comparison to many other countries and there is an urgent need to shift the population to manufacturing and service sectors and for remaining to increase the productivity in agriculture and allied sectors like fisheries and forestry. Therefore, it is more plausible to say that India has a post-industrial economy with agrarian society.

In the last one decade India's economy has grown impressively but the gap between rich and poor has not declined rather it has increased. The ICTs have been roped in to address the question of development as well as the issues related to social justice, poverty, unemployment, illiteracy, exploitation and oppression of weaker sections of the society. However, in the present time the pace of development is in doldrums and the idea of social justice seems to remain an elusive goal. In the West, industrial revolution changed the agrarian structure and created new social order. The ICTs have led to what Alvin Toffler (1989) called 'the third wave of revolution' which brought many disruptive technologies. Although India has bypassed the industrial revolution, it is making efforts to catch up with the third wave of revolution-IT revolution. In this context, it becomes important to examine the role of ICTs to tackle the issues of development and social justice in India. Like Industrial revolution, ICT revolution is also throwing up variations in its outcome. In this paper an attempt has been made to critically evaluate the conceptual and theoretical frameworks to address the following questions:

1. How does the access to ICT facilitate the development and social justice?
2. What are the reasons for variations in the outcome of ICT in different societies?

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<sup>1</sup> In Kolhapur district 64 % population is engaged in primary sector,17 percent in secondary sector and 19%in service sector( District website).The SC population of the district is 12.75 percent and ST population is only 0.49 percent.

3. How does information available through ICT facilitate the transformation of livelihood opportunities for marginalized section of the society?

The paper is divided into five sections including the first section of introduction. The second section deals with the concept of social justice in the context of ICT-generated exclusion and inclusion. The third part, in order to address the question of variations, explores the different meanings and usage of ICT and its effects. It discusses the basic premises for expanding the accessibility to ICT and their role in transformation of livelihood of people. The fourth section critically evaluates some of the ICT based projects started by the government and the non-government agencies to address the issues of development of rural and marginalized sections of the society. The conclusion section provides some emerging issues and challenges from the application of ICT.

## **2. Social Justice and Development: Conceptual framework**

In the era of ICT-led development we require new conceptual and theoretical approaches to address the chronic problems of our society. The ICT revolution has created a new division called 'digital divide' across all the primordial divisions like caste, class, gender, region and ethnicity. This divide has disrupted the boundary between individual and society, economy and polity and as a result it has become unhelpful to view the issue of poverty, unemployment, illiteracy as a group or region embedded concept; rather it has become more serious question whether one is included in the developmental activities, political process and social networks or excluded from them. The empowerment or marginalization will result from the process of inclusion and exclusion (Martin, 1996). The patronizing and welfare-oriented approaches have come under severe criticism. Before evaluating the role of ICTs in addressing the issue of social justice it would be pertinent to discuss the concept of social justice.

### **2.1 Concept of Social Justice:**

The idea of social justice is associated with the sense of participation and not only representation. Our perception of justice, according to Tyler (2000:121), is generally based on four elements: 'participation, neutrality, trustworthiness and treatment with dignity and respect'. We feel more fairly treated if we are allowed to participate in the resolution of our problems or conflicts by presenting our suggestions about what should be done. We

have a sense of participation when we feel that the things we say are shaping the outcomes of policies or programmes. It has also been found that people value the opportunity to express their views to decision-makers even in situations in which they believe that what they are saying has little or no influence upon the decisions being made (Lind, Kanfer & Ealery,1990). The sense of justice also arises when we feel that while dealing with authorities, our dignity as people and as members of society is recognized and acknowledged. This type of confidence comes when we perceive that the authorities are not biased in dealing with us. That is why the ICT and the right to information when joined together become powerful tools in our hand. The ICT have become important in addressing the issue of social justice because they enable participation and can bring transparency and accountability in dealing with institutions and governments. Therefore, unequal access to ICT technologies becomes social justice issue.

Social exclusion, even if it is perceived, is the denial of social justice. That is why in the present time, the issues of 'social exclusion' and 'inclusive development' have become the core of academic and political debates throughout the world. Therefore, before entering into debate on whether the ICT would exacerbate or alleviate social exclusion, it would be pertinent to have a general idea about the concept of 'social exclusion'. The idea of social exclusion was first propounded by French scholars who were exploring the consequences of breakdown of the relationship between the individual and the society (Bhalla& Lapeyre,1997).

The concept of 'social exclusion' is distinct in being seen as a dynamic process rather than a static outcome. As Giddens (1998:104) pointed out: 'exclusion is not about graduation of inequality, but about the mechanism that act to detach group of people from the social main stream'. In this sense, social exclusion is seen as being a far 'wider concept' than poverty and therefore it is more complex to have a precise definition. Burchardt, Le Grand and Piachaud (1999:230) defined an individual as socially excluded if, (1) s/he is geographically resident in a society and (2) s/he does not participate in the 'normal activities' of citizens in that society.

Here, the term 'normal activities' is very complex but important. The constituents of normal activities could vary from society to society. The priority and importance may also vary from group to group even with in a society. Nonetheless there is a consensus among scholars on five dimensions of participation in normal activities of society which may be seen as constituting inclusion (Bergham,1995; Oppenheim,1998). These

five dimensions are: (1) Consumption activity-being able to consume at least a minimum level of goods and services which are considered normal for the society;(2) Saving activity- accumulating savings, pensions, entitlements and owning of property;(3) Production activity-engaging in an economically or socially valued activity, such as paid work, education, training, retirement and looking after a family;(4) Political activity-engaging in some collective efforts to improve or protect the social and physical environment. It also includes protection from exploitation and oppression; (5) social activity- engaging in significant social interaction with family or friends and identifying with cultural groups or communities.

The above definition conceptualizes a very comprehensive idea of social exclusion and seems to be very useful than many other concepts generally used to describe the situation of marginality and injustice. In simple words, the social exclusion can be defined as 'the process through which individuals or groups are wholly or partially excluded from full participation in the society within which they live (Hann, 1997). However, in the Indian context, the concept of social exclusion has an additional dimension of 'intentionality. That is the process of social exclusion is an intentional process. It is the denial of opportunities imposed by certain groups of society upon others, which led to inability of an individual to participate in the basic political, economic and social functioning of the society. Thorat and Newman,(2007) quoted Amartya Sen who pointed out towards various dimensions of social exclusion. Sen made the distinction between the situations where some people are being kept out (deliberately) and where some people are being included (generally forced to be included)- in deeply unfavourable terms and described the two situations as 'unfavourable exclusion' and 'unfavourable inclusion'. The unfavourable inclusion with unequal treatment may carry the same adverse effects as 'unfavourable exclusion. In India, exclusion revolves around the societal interrelations and institutions that exclude, discriminate, isolate and deprive some groups on the basis of group identities like caste and ethnicity. The practice of caste-based exclusion and discrimination involves failure of access and entitlement, not only of economic rights, but also to civil, cultural and political rights. In this context the introduction of ICTs has added a new dimension of exclusion.

## **2.2 New dimension of Exclusion: Digital technology**

In the recent years with the massive diffusion of ICT in society, the broad notion of social exclusion is also being refined in terms of 'digital exclusion' (Selwyn, 2002:4), which create social barriers that restrict access to ICTs, by certain members of society. Some members of society may not have access to the technologies, or they may not be able to afford the technologies or they may not have the skills to use the technologies or the motivation or means to learn how to use them. Young people are more likely to adopt new technologies than older people. With the increased use of ICTs, citizens without access are unable to enhance their freedom of action. This requires massive improvement of technological skills of people. This type of gap has been depicted as 'digital divide' (NTIA, 1999).

Different scholars have defined the concept of 'digital divide' differently by emphasizing the different aspects of ICTs. For instance, scholars who viewed ICTs as the crucial resource (tool) defined the term digital divide as the gap between those who have access to ICTs and ability to use them effectively and those who do not have (Cambell,2001; James,2008). According to Norris (2001) digital divide could be understood along three dimensions: global, social and democratic. The global divide is the difference in Internet access among industrialized and non industrialized nations; the social divide is the gap between those with and those without information access within a country; and the democratic divide refers to the gap between individuals who do and individuals who do not utilize digital resources to engage and mobilize in the public life. Fuchs (2009) criticized the approaches to define digital divide in economic terms rather he advocated for taking many other aspects such as motivational access, skill access, usage access, the degree to which users benefit from usage and the degree to which technologies enable political participation.

Thus, it seems that there is no consensus among scholars and practitioners about the definition of digital divide. It is an evolving concept, which is shifting from policy on mere access to technological resources to a multidimensional understanding of inequality. This lack of access to ICTs produces a form of social exclusion that reproduces or even exacerbates the social inequality as those without access are increasingly denied new opportunities for political engagement, social networking and consumption. In this sense ICT has become a synonym of development and therefore it would be pertinent to analyze the role of ICT for development.

### **3.Role of ICT in Development:**

In developing countries ICTs can be used to leapfrog development stages or technological barriers to achieve both economic growth and broad-based development (Singh,1999).It could be a powerful tool for empowerment and income generation of people and also for increasing access to education and other social services.(Kenny,2002; Flor,2001; Marker, McNamara, and Wallace,2002).Jensen(2007) reported that mobile phone usage among fisherman in Kerala has benefitted both producers and consumers through improved information and better functioning of market. Mobile phones have also been found helpful in attraction of additional business in the informal economy(Van Dijk & Hacker,2003).Some studies have also pointed out that the role of ICTs is not limited to only promoting growth, but also includes non-income dimensions of development, such as empowerment and security.

In the coming years most of the jobs would be technical in nature. For instance, in the US, it is estimated that 60% of current jobs require technological skills. Many scholars have envisaged that in the present time computer literacy has become a key to membership of emerging “virtual class”, because only the technologically competent would be able to convert their intellectual capital into both economic and cultural capital (Kroker and Weinstein,1996:163). As the use of ICT becomes more wide spread, with more activities such as shopping, banking and voting (may be) available online, the disadvantage of lacking technological skills will stretch beyond the labour markets. The disadvantages of not having the requisite ICT skills are nicely explained in the following words:

“The information poor will become more impoverished because government bodies, community organizations and corporations are displacing resources from their ordinary channels of communication on the Internet. To the extent that any demographic group becomes excluded from and underrepresented on the Internet, it will also be excluded from the economic fruits that such participation promises”.(Benton Foundation,1998).

In the present time ICTs are seen as tied to political vision of social inclusion and cohesiveness and are also seen as potentially facilitating high participation level and thus producing democracy that is more informed and inclusive. In fact, the ability to use ICT is seen as the indispensable grammar of modern life and a fundamental aspects of citizenships in the emerging social order (Will,1999).The INSINC (1997) in its report underlined the role of ICT in the following words:

“Whereas full citizenship hitherto has been associated with having a job and some where to live, it may be the case that in the future an additional badge of citizenship will be access to the information high way. Just as in today’s society, those who do not have home and jobs are at risk of social and political exclusion, so in the future those who are unable to make effective use of information resources will also risk exclusion unless social, economic and educational policies are introduced to maximize opportunities for participation and contribution” (INSINC, 1997:7).

To describe such situation Barrantes (2007:30) has coined a new term, “digital poverty” which is defined as ‘the lack of goods and services based on ICTs’, due to lack of connectivity to and functionality of ICTs. Thus, digital poverty incorporates a demand dimension (the ICT services can not be afforded), a capability dimension (the skills to use ICTs).

Political activists for interaction at local as well as global level can use digital networks. Through Internet, local initiatives become part of a global network of activism without losing the focus on specific local struggles (Mele,1999). In the present time digital space has emerged not only as a means for communicating, but also as a new ground for different types of civil societies to pursue their activities. It is a far more concrete space, argued Sassen (2002:382), for social struggle than that of the national political system.’ In cyberspace non-formal political actors can be part of the political scene in a way that is much more difficult in national institutional channels. National politics needs to run through existing formal systems, whether the electoral political system or the judiciary. Non-formal political actors are rendered invisible in the space of national politics. Cyberspace can accommodate a broad range of social struggle and facilitate the emergence of new type of political subjects that do not have to go through the formal political system. The recent political changes in West Asia and Anna Hazare movement against corruption in India showed the potential of cyberspace. This is one of the key forms of critical politics that the Internet can make possible.

Thus, the individuals and the groups which have historically been excluded from formal political systems and whose struggles can be partly enacted outside those systems can find in ‘cyberspace an enabling environment both for their emergence as non –formal political actors and for their struggles.’ Thus, it seems that the centrality of ICT in modern society is such that if access for all is not provided to this technology, it will emerge economically, socially and politically more divisive. Thus, bridging the digital divide becomes important.

### 3.1 Bridging the Digital Divide:

In recent years government has taken several steps to bridge the digital divide in the society. As a result of these policies the rapid expansion of ICT technology has taken place. According to India Internet Usage Stats and Telecommunications Market Report, the number of people using the Internet has increased from 14 lakh (0.1% of total population) in 1998 to 1.5 Million (0.5%) in 2000 and 100 millions(8.5% of total population) in 2010. According to Internet and Mobile Association of India, there are around 121 millions (12.1 Crores) Internet user at the end of 2011. Maharashtra has the largest number of Internet users followed by Tamil Nadu in India. The top five states in Internet users are: Maharashtra (38.02 million), Tamil Nadu(21.67 million, Delhi(19.30 Million),Karnataka(16.87million), Andhra Pradesh(15.67 millions).The share of broadband connection(<256kbps) has also increased to 60.4 percent among all Internet users.

Similarly the mobile sector has grown from around 0.03 million in 1995-96 to 10 million subscribers in 2002 to cross the 865.71 million mark by August 2011.The over all tele-density which was less than 9% in 2005 has shot up to 74.96% with urban density of 164.87% and rural density of 36.19 percent. The rapid expansion of tele-density has been possible due to rapid growth in the mobile phone facilities, which is much cheaper, and technologically convenient.<sup>2</sup> There are variations in rural tele-density among different states. According to Bharat Nirman Phase II Report (Feb,2011) the top five states in rural tele-density were: Himachal Pradesh(68.68%),Punjab(55.45%),Kerala(52.61%),Haryana(51.36%),Tamil Nadu(47.58%), Gujarat (45.81%) and Maharashtra(45.25%). Among the lowest rural tele-density states are: Chhatisgrah (2.77%), Jharkhand(2.35%) North-East(7.78%), Uttarakhand (9.46%).One of the goals of the U.N. sponsored World Summit on the Information Society, was to see that half of the world's population has access to the Internet and telecommunications by 2015. Currently there are around 845 million people globally linked through Face book.

However, given the huge population size, diverse geographical terrains and highly stratified social structure in India, it would be a big challenge for the ICT to bring the real change in the society or what .The expansion of

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<sup>2</sup> According to a study it costs only Rs.6000 in added infrastructure to serve a new mobile subscriber whereas the corresponding costs for a new landline connection were Rs. 24000 (Jayaram, Anup 2004, fixed Lines-changing lanes. *Business world*, May 3,2004 (available at [www.businessworldindia.com/may0304/coverstory05.asp](http://www.businessworldindia.com/may0304/coverstory05.asp))

tele-density and Internet connection suggests that access to ICT infrastructure and hardware could be getting easier even for those on the underside of the digital divide due to the rapid decline in prices for hardware and telephone charges, cheaper and quicker connection due to availability of wireless satellite technology providing connectivity in remote areas and use of solar energy, availability of cheap and free software on net. But the prospect of addressing the real question of poverty and social justice to millions of Indians will remain elusive due to the limited scope of the concept of digital divide to address these issues.

### **3.2 Limitation of Digital Divide:**

The bridging of digital divide will not bring the 'higher order effect' in society because digital technologies create their own kind of inequality, which is totally different from social, economic and political inequality. There are many scholars who have cautioned on the causal relationship between ICT and development. For instance, Arunachalam (2002) argued that ICTs are a necessary but insufficient condition for development and recommended that the focus should be shifted from bridging the digital divide to poverty alleviation. Kirkman (1999) also noted that to be useful, any technology must be placed within the local context of capabilities and needs. Torero and von Braun (2006) in their comprehensive review of literature on ICTs concluded that the ICTs offer an opportunity for poverty alleviation, but not a panacea. It has been found that access per se does not confer equal advantages to the users of ICT (Warschauer, 2004; Hargittai, 2008). Thus, ICTs rather than being an unqualified benefit to poor, it seems probable that there are inequalities in returns from gaining access to ICT (DiMaggio & Hargittai, 2001) and the impact of ICTs is determined by the particular contexts in which these technologies are deployed, the preparedness of the users, and the opportunities that exist for their application.

Thus, it is not only the questions of accessibility or possession of ICTs but also access to the additional resources that allow people to use technology effectively (Warschauer, 2002). Moreover, the digital divide framework does not provide a good roadmap for using technology to promote social development since it emphasizes the importance of the physical presence of computers and connectivity to the exclusion of other factors that allows people to use ICT for meaningful ends.

That is why many scholars have raised doubts over the equity and the effectiveness of ICT use (DiMaggio et al. 2001; Patterson & Wilson 2002;

Gurstein 2003). Unlike the digital divide, which is generally concerned with access to computing artifacts, digital inequality is concerned with equitable access to the benefits derived from Internet and computer use. Digital inequality does not only reflect disparities in access to ICT; it also reflects ongoing social inequities in the society. The vicious cycles of poverty, illiteracy, unemployment, ethnic and caste based discrimination and exploitation by dominant groups in society also shape diffusion rates and patterns of ICT use that can mirror and reinforce social inequities rather than mitigate them. Moreover, differential benefits that result from ICT use may unwittingly exploit and intensify pre-existing disparities as well as create new inequities. Norris (2001) argued that social inequities in the quality of education, work, consumption opportunities and democratic participation are at the heart of the digital inequality.

The issue of 'digital divide' is linked to the concept of digital skills, which is a complex concept. Some-times the notion of digital skill is equated with 'information literacy' or 'digital literacy' or 'media literacy' (Van Dijk,2005) but it is much more than either of it. Digital skills could be broadly understood which include not only technical skills of Internet users but also issues of understanding the retrieved information and being able to deal with information overload. For Van Dijk (2005:74) digital skill refers to 'a set of skills that users need to operate computers and their networks, to search and select information , and the abilities to use them for the fulfillment of one's goal'. Thus, the broader concept of digital skill is divided into three sub skills: operational skills, informational skills and strategic skills. The operational skills are related to the capability of individuals to operate computers and different hardware and software to access information from Internet. Information skills are related to the skill needed for searching, selecting and processing information from various digital storages. Strategic skill refers to an individual's capabilities to use different sources of information as a means to achieve one's goals. These goals could be improvement of one's positions in the society such as improvement of one's position in the labour market, educational standard, position in the household and position in the social relationship(ibid).

Many studies have noted a positive correlation between digital skills and frequency of Internet use and their subsequent impact on the improvement of users' position in the society(Hargittai,2003;Zillien and Hargittai,2009). But the main question is how to increase the digital skills of people. There are two approaches: the most popular thinking is that digital skills can be learned through guided training in computer courses and classes (Torkzadeh, Chang, and Demirhan,2006). The other approach that has got

much support from the scholars is that much more important source of learning digital skills is 'learning by trial and error' methods or what Van Dijk(2005) called 'do it yourself approach to develop digital skills'. Most of our policies are guided by this presumption that making ICT accessible to all sections of the society will bridge the digital inequality, as people will acquire digital literacy through trial and error method. However, it has been found that inequality of skills will not disappear and disadvantaged users may find themselves in a vicious cycle of lack of skills leading to infrequent use of Internet. Self learning generally does not reduce inequality in digital skills (Matzart and Sadowski,2012:9). Higher frequency of Internet use increases the digital skills of people but not vice versa.

In recent times to measure the overall ability of individuals in a country to access and use ICT, the International Telecommunication Union (ITU) has developed a Digital Access Index(DAI) which was later merged with 'Infostate Index'<sup>3</sup> to create ICT Opportunity Index(ICOI).Both the indices (DOI and ICOI) were synthesized by ITU and a new index called "ICT Development Index"(IDI) was released in 2009. The frequent development of index to measure the accessibility to ICTs shows its conceptual complexity (Bruno, Esposito and Genovese, 2011).

Therefore, in order to understand the digital inequality, the ICT has to be placed into the system of social relations that define and sustain its cultural meanings and intended uses. ICT cannot come into existence, Kvasny (2006) argued, simply to fill a pre-existing role, such as bridging the digital divide, because the role itself is co-created with the ICT by the designers and the intended benefactors. Therefore, in order to explicate the full implication of ICTs in various socio-economic and cultural contexts, we also need to unpack the concept of ICTs.

### **3.3 Un-Packing of ICTs' Uses and Effects:**

The ICT like other technologies are generally seen or conceptualized in terms of technical properties particularly when relating them to the sociological world. Such approaches failed to account for variation in effect of technology in different societies and even among different groups within a society. Therefore, Sassen (2002:365) suggested the need for avoiding a

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<sup>3</sup> In 2003 a network of hundred of communication leaders from academia, the media, business and government circles developed a conceptual framework for digital divide measurement that formed the basis of the "Infostate Index-(Orbicom,2003 *Monitoring the digital divide and beyond* . Ottawa : National Research Council of Canada.)

purely technological interpretation and to recognize the embeddedness and different outcome of ICT technologies for different social orders. Moreover, digital networks like any other technology are embedded in both the technical features and standards of the hardware and software, and in the actual societal structures and power dynamics of the society (MacKenzie and Wajcman,1999).

The second point that we need to consider is that ICTs<sup>4</sup> are not the static technologies rather they have also evolved over a period of time, starting from the printing press, newspaper, radio, telephone and television to modern computer, internet and mobile phone. However, the new ICT technologies are different from the earlier technologies as they are also called Interactive Communication Technologies. The new Interactive Communication Technologies have the potential to connect disadvantaged people with societal decision-makers so that their voices may be heard in the agenda setting process. They also empower people and communities to determine their own futures through developing self-efficiency and collective efficacy.

Orlikowski and Iacono (2001) pointed out that ICT has many facets; it is fragmented and undergoes constant change and its use is contextual and its consequences are intended and unintended. It has found that the unintended consequences of ICTs are far more prevalent (e.g. Email on ARPANET was an afterthought and now is the killer application of the Internet) than intended consequences. Kling,(2000) also advocated for ICT to be seen as socio-technical networks that are in practice socially shaped. However, variation in the outcome of ICT does not emanate only from their embeddedness in socio-technical network, but also from the pattern of their use in different contexts.

### **3.4 Pattern of ICT Use:**

ICT could be used to provide access to information that can create earning opportunities, improve access to basic services and increase the impact of education and health interventions. However, the use of ICTs has been seen differently in different economic and political frameworks. Sein and Harindranath (2004) on the basis of comprehensive review of literature on the use of ICTs suggested that there are four patterns of use of ICT: (1) ICT as a commodity, (2) ICT supporting development activities (3) ICT as a driver of the economy (4) ICT directed at specific development activities

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<sup>4</sup>ICTs are defined as 'electronic means of capturing processing, storing and communicating information

Many scholars see ICT as a commodity or product to be used to earn revenue and foreign currency through export and selling in the domestic market just like any other manufacturing goods. For example, manufacturing of hardware and software for computers and related appliances; providing offshore software development and offshore computing services to MNCs. However, Sein and Ahmad(2001) suggested, there is always limitation in taking ICT as a commodity because it is not possible for every country to become a producer of ICT or developer of software. Nonetheless, export of IT related services and software have contributed to large chunk of India's share in service sector(around 25% in 2011).

There is a general assumption that lack of reliable and timely information is the biggest hurdle in the process of development. The inadequate development of system to collect, organize and process information essential for making and implementing decisions in developing countries is the major obstacle to effective development planning in developing countries (Madon,1999).In this sense, ICT is seen as bridging the information gap. Most of the programmes, discussed in the fourth section, started by the government and non government organization, are oriented to deliver the relevant and timely information to poor, marginalized and down trodden section of the society.

The ICT is also considered as a driver of the economy (OECD,1989) in the sense that it can help enhance the working of market and reduce the transaction and coordination cost within and across organizations. The application of ICT can enable improvements in productivity and quality in a number of sectors relevant to developing countries such as agriculture, manufacturing, infrastructure, public administration, and services such as finance, trade, distribution, marketing, education, and health. The ICT can help modernize low technology industries such as textile, and can also be used to develop socially relevant applications such as national distribution systems for power, food, and fertilizers (Bhatnagar& Schware,2000).

In fact, ICT has become a 'critical infrastructure for competing in an information intensive global economy. It has been noted that the application of ICT in sectors like health care, employment, and public information (Kaul, et al, 1989), community resources management have positive impact on rural communities in developing countries. Thus, the ICT could be directed at a specific project. However, the variations in the results of ICTs emanate from the way they are used in socio-technical networks.

The effect of ICT, like any other technology, could be seen at different stages of their diffusion and adaptation in the society. Studies on relationship between technology and society suggest that new technology makes its impact on society through three stages (Malone and Rockart, 1991). These are: first order effect, second order effect, and third order effect.

The first order effect: In the first phase the new technology simply becomes substitute for the old technology. For example, the introduction of communication technologies will result in people using the new technology to call people instead of old forms such as writing letters. The development on the first stage is generally focused on increasing the number of telephone, mobile, internet connection, computer usage, number of TV sets etc. While primary order effect does not necessarily indicate development, it is essential for higher order effect to take place.

The second order effect is an increase in the phenomenon enabled by the technology. For instance, the frequency of communication increases. The frequency of communication increases not only within the group but also across the groups. For instance, more communication between teachers and students, employer and employee, buyer and seller, doctor and patient, political leaders and electorate, government and people becomes possible through ICTs. However, more communication means more transparency and more accountability but also more chances of conflict and cooperation.

The third order effect of ICT results in the generation of ICT related business and societal change. For instance, information technology enabled services, software development, services, BPO, and many related occupations and emergence of virtual organization. Such effects will also bring change in the outlook and thinking of people and a new social order in the society.

However, the transition from 'first order' effects of ICT (i.e. the simple substitution of old technology by new) to 'second order' effects (i.e. the increase in the use of this technology) and then on to 'third order effects' (i.e. the emergence of new societal structures and change) will not occur automatically. Effective public policy would be needed to guide and control this process so that the full developmental potential of ICT can be exploited (Sein and Haridranath, 2004:20). The current policy of government is focused on the "first order" effect, that is, to increase the numbers of ICTs connection. This could be the reason that government policy is oriented to increase the tele-density, number of Internet

connection, broadband connection, uses of computers in schools, hospitals, and in delivery of rural development services. The starting of e-governance and opening of cyber kiosks are intended to bring the second order effects of ICT. Starting of educational and training institutions for ICTs (IIT and many other institutions and departments in various universities and colleges) are intended to bring the third order effects, i.e. creation of IT related employment and business opportunities

However, in order to have a significant effect of ICTs on the poor and marginalized sections of the society, three sequential issues namely concerning to access, contents and ability and motivation to utilize have to be addressed simultaneously. It has been noted that the early phases of diffusion of ICTs are likely to be accompanied by an increase in inequality, and thereby relative poverty and discrimination. As many studies have shown that initial adopters are overwhelmingly rich and powerful section of the society, and early adaptation gives them a head start in this high return game. It is generally speculated that this initial widening of gap will be reversed as the poorer people leapfrog technological stages and catch up with early adopters. However, this seems to remain, as Saith argued (2008:149), only optimistic speculation because, technologies and rich would not be stationary in the interim, to allow this catching up occur. Therefore, it seems more plausible to argue that the pace and sustained nature of technological advances in ICT are more likely to widen the gaps in the foreseeable future that could have a deleterious impact on the poor sections of the society.

Bridging of the gap and enabling the poor sections of the society to reap the full benefits of ICT require massive investment in social and economic infrastructure, institutional development and other enabling measures to facilitate the poor to access ICT on broad and sustained basis. One evaluative study on ICT argued that “to be able to reap the benefit from investment in IT developing countries have to build up a mature stock of physical infrastructure, which enhanced and amplified the effects of IT (Pohjola, 2001:26). The potential of ICT has to be exploited within the framework of ongoing strategies of rural development and social justice. Mere delivery of information will not serve the purpose.

It is ICTs' support to learning and decision-making and related actions that constitute their intrinsic contribution to development (Heeks, 1999). The ICT has promoted the view that knowledge for development while still being produced by the advanced countries can be made more cheaply more rapidly available to communities and individuals in developing

countries. This approach in fact has supported the old argument that underdevelopment is a function of knowledge deficiency and shifts the responsibility for getting the right knowledge on to objects of development- agriculture, health, education, environment, energy, transportation, manufacturing, marketing etc. The World Bank in its reports underlined the role of ICT in providing the timely knowledge:

Information technology dramatically increases the amount and timeliness of information available to economic agents and the productivity of processes to organize, process, communicate, store and retrieve information--- and this has major implications for developing countries, as producers and users of this technology( Hanna,1994:1).

In fact many ICT based project started in India are based on this information deficiency model . For instance, the *e-sagu* programme in Andhra Pradesh was started precisely on the premise that 'lack of appropriate scientific information' is a cause of agrarian distress and farmers' suicide. Reddy and Ankaiah (2005) reported:

The majority of the farming community is not getting upper bound yield, despite successful research on new agricultural practices, crop cultivators, crop cultivation and pest control techniques. The term upper bound yield refers to the yield that could be obtained using proper cultivation methods subject to advances in agricultural technology at that time. The upper bound yields may change with progress in agricultural research. One of the reason is that appropriate and timely scientific advice about farming is not reaching to farmers (Reddy and Ankaiah,2005)

Many ICT-based programmes initiated by government, non-government and private sectors have been started in India to bridge this faulty perception of information gap to empower people from weaker and marginalized sections of the society. In the following section a critical review of some ICT based programmes has been done to underline the conceptual and theoretical gap in understanding the variations in the outcome of ICT intervention.

#### **4.0 Critical Review of ICT based Programmes:**

Deployment of ICT in rural India has been viewed as a process characterized by promises , opportunities, ironies and complexities. There is unanimity among scholars that the rapid diffusion of ICT into historically exploited and marginalized communities has been beneficial in many ways. There is emphasis on integration of ICT into poverty reduction,

regeneration and creation of livelihood for poor, developing local entrepreneurship and in designing of programme for social inclusion. In recent years large number of government and non- government sponsored agencies have started a slew of ICT based programmes to provide social, and economic opportunities to vulnerable and marginalized sections of the Indian society (Bhatnagar and Schware,2000).

Village Knowledge Centre was initiated by the M.S. Swaminathan Research Foundation in rural India (Pondicherry)to provide timely and relevant information to local people. However, the evaluative study of the programme revealed that most of information services<sup>5</sup> provided by VKC are of interest and relevance mainly to landowners, not to the rural poor who are overwhelmingly landless whether as agricultural laborers, or impoverished groups and artisans. Among many types of information, like, weather forecasting, copies of documents and statements from local official records, results and mark sheets of 10<sup>th</sup> and 12<sup>th</sup> standard etc have helped to improve the quality of life. For instance as it was claimed that immediate availability of 10<sup>th</sup> and 12<sup>th</sup>Marksheets allows students to apply for admission to different places for further study and this also saved several weeks of anxiety for the students and their parents . However, this information, which improved the quality of life rather superficially in the short run, did not manage to change the numbers on the score sheets or the number of boys and girls from poor households who got to school, let alone to class 10 and 12.

E-chaupal was started by ITC to provide market information and support to farmers. *Drishtee* programme was started by a private firm in the year 2000 in North India. The *Drishtee* centre known as *Soochanalays* are run by local youth( known as *Soochaks*) were opened in many parts of North India. TARAhaat.com was started by development alternative group in Budelkhand, UP. Rural E-Sewa Project was started in Andhra Pradesh. Sustainable Access in Rural India (SARI) was started in 2001 in Maduari, Tamil Nadu to provide services such as e-governance, computer education, consultation for agriculture and veterinary problems, web browsing and video conferencing. Honeybee Network is another ICT based initiative started by Anil Gupta. It works like a “Knowledge Centre” by pooling the solutions developed by people across the world in different

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<sup>5</sup> VKS provided information on ecological ways of growing local crops and protecting them from diseases, daily market prices for these crops in different markets in the project area, costs and availability of agricultural inputs , for example, seeds, pesticides, fertilizers, directory of insurance plans for both crop and families, directory of veterinarians , cattle and animal husbandry programme.

sectors. *Gyandoot*, an internet based government to Citizen (G2C) service delivery portal in Dhar district of M.P. was started in January,2000.Its aim was to enhance participation by citizens and government in community affairs through creative uses of ICT and also ensure equal access to emerging technologies for the oppressed and exploited segments of the Society(Rajora,2002:66-67). Gyandoot Kiosks offered a broad range of facilities and services, such as gathering and dissemination of agricultural prices, online registration of applications, online redressal of public grievances, rural email, village auction sites, online matrimonial sites, information regarding government programmes, career counseling for students and the facility to put questions to experts etc.

Disaster Management Plan of Maharashtra has integrated ICT to minimize the adverse effect of natural disasters. This project includes a disaster management centre located at the Yaswantrao Chavan Academy of Development Administration, computerized control rooms across the state, a VSAT and VHF based communications network and area specific, geographical Information System based, disaster management Plan.

In all these programmes, the basic logic of bringing the poor, dalits and marginal sections of society in the emerging rural network society is that it would help enhance their participation in the democratic processes on the one hand, and provide access to expanding social and economic opportunities (Sharma,2003). ICTs from their inception have been seen as an emancipating technology, particularly for the disadvantaged and marginalized women (Ng and Mitter,2005). For instance, while conceiving the TARAhaat project, given that illiteracy is especially high among women and dalits, these vulnerable groups were recognized as 'part of the core audience for the TARAhaat website and for this development of a non-text based medium was believed to be an imperative for the success of project.

The scholars have noted that all these IT related services from Gujarat telecentre and Gyandoot Kiosks to the nationwide e-chaupals appears to have facilitated the delivery of market information that has helped farmers by reducing the power of intermediaries in the commodity chain. In evaluating the success of e-chaupals, Upton and Fuller (2003) concluded that its effective methods of price discovery, honest trading and information sharing helped farmers escape the exploitation by the intermediaries, while Prahalad (2004) noted that online access to the latest crop prices enabled famers to avoid the exploitation by local purchasing monopolies and increase income. Balaji et al (2004) too found that Pondicherry's village knowledge centre helped access to grain prices that mainly benefitted

farmers. However, it was also found that such ICT services have benefitted mainly the big and prosperous farmers, they have not open new economic opportunities to marginalized group (Sreekumar,2007).

### **Conclusion:**

The ICTs have been seen as a panacea for issues related to development and social justice in developing countries like India. In pursuance of this belief the Government of India and other agencies started several programmes to bridge the 'digital divide' emanating from uneven access to ICTs in the society. Most of the studies evaluating these programmes have attributed failure to the design of project or the lack of responses from the users and very little attention has been paid to the structural barriers which have crippling effects on the ability of poor and marginalized classes to use ICT for their benefits. In all these programmes the basic emphasis was on how to bridge the information gap without developing proper mechanism for how information is going to be converted into knowledge and how it is going to help learning and adaptation. The contents of Information available online and the manner they are communicated to users are very important to assess their role in improvement of people's life. The studies on the current pattern of use of Internet show that the contents available do not seem to serve the interests of the rural poor of the society (Saith, 2008:123). The major claim of ICTs providing the possibilities of job search, market information, tele-medicine, distance learning, problems solving, networking, and access to governmental services has to be questioned on the ground of limited role of ICTs and their embeddedness in the socio-technical system. The digital literacy that is assumed to promise through expansion of ICT could accrue the intended benefit only with the operational and informational skills and also strategic skills about how to use the information to achieve one's goal. The access to ICT could not become a substitute for physical infrastructure and trained manpower.

In order to facilitate the use of ICTs for transformative effect-second and third order effects- there is a need for development of intermediary institutions to act as access bridges and benefit conduits. The ICT-based information can act as a stimulus only within the framework of social mobilization of the poor and it can be seen only as a powerful tool in augmenting capacities of functioning educational and health infrastructure and not as a substitute for these facilities. Unless the proper infrastructure and the political mechanism are evolved mere access to information will

not bring equality and justice to the people; Rather the 'information society' based on network organization will enable the most powerful social groups to use the new potential of ICT to enhance their interconnectivity, consolidate their group identities, and strengthen their capacity to act more virulently against any forces challenging their hegemony in the society. Information technologies are not going to eliminate the possibility of massive concentration of material resources. In the Indian context where there is a widespread social and digital exclusion, the rise of the network society may reinforce further the political and social exclusion in the society. Therefore, there is need to address the issue of digital inequality, not merely bridging the digital divide.

### References:

- Arunachalam,S. 2002“Reaching the unreached: How can we use information and communication technologies to empower the rural poor in the developing world through enhanced access to relevant information?”,*Journal of Information Science*, 28(6):513-522
- Balaji,V.K. G., Rajmohan,R. &Senthilku, Maran,2004 “Towards a knowledge system for sustainable food security: the information village experiment in Pondicherry” in K.Kensiton and D. Kumar(eds.) *IT experience in India: Bridging the digital divide*,(pp.37-47). Delhi: Sage.
- Barrantes,R. 2007 “Analysis of ICT demand in regional dialogue on the information society”, in H.Galperin& J. Mariscal(eds) *Digital Poverty : Latin American and Caribbean Perspectives*(PP29-54), Ottawa: IDRC
- Bawden,D. 2001 “Information and digital literacies: A review of concepts”, *Journal of Documentation*,57(2):218-59
- Beck, Ulrich, 1992 *Risk Society: Towards a New Modernity*(translated by Mark Ritter) London: Sage Publication
- Bell, Daniel , 1976 *Coming of Post Industrial Society*, New York: Harper Torchbooks.
- Benton Foundation, in Association with the National Urban League. 1998, “Losing ground bit by bit: Low income communities in the Information age” HTML file:  
<URL:<http://www.benton.org/library/lowincome/home.html>>

- Berghman, J. 1995 "Social Exclusion in Europe: Policy Context and analytical Framework", in G. Roon (Ed.) *Beyond the Threshold: the measurement and analysis of social exclusion*, Bristol: The Polity Press.
- Bhalla, A and Lapeyre, F. 1997 " Social Exclusion: Towards an analytical and operational Framework", *Development and Change*, 28:423-33
- Bhatnagar,S. and Schware, R. 2000 *Information and Communication Technology in rural development: Case studies from India*. Washington DC: World Bank Institute.
- Bijker, W.E. and Law, John (Eds.) 1992 *Shaping technology/Building society: Studies in socio technical change*, London: MIT Press.
- Bruno,G.Esposito,E. and Genovese, Andrea, 2011 " A Critical Anaylsis of Current Indexes for Digital Divide Measurement", *The Information Society*,27:16-28.
- Burchardt,R. ,Le Grand,J. and Piachaud,D. 1999 "Social Exclusion in Britain1991-1995", *Social Policy and Administration*,33(3):227-44
- Castells, M. 1996 *Rise of the Network Society: The Information Age: Economy, Society and Culture*. Blackwell Publishers
- Cleaver, Harry 1998, " The Zapatista Effect: The Internet and the Rise of an Alternative Political Fabric", *Journal of International Affairs*,51(2):621-40
- Campbell, D. 2001 "Can the digital divide be contained?", *International Labour Review*,140(2):119-41
- Dutta, C. and Das, A.K. 2004 "Strengthening Rural Information Infrastructure Through e-Choupals", In: *Proceedings of 21<sup>st</sup> IASLIC National Seminar*, Kolkata: IASLIC.
- DiMaggio, P. J., Hargittai, E., Neuman, R. & Robinson, J. 2001,"Social implications of the Internet", *Annual Review of Sociology*, 27: 307–336.
- Espinoza, V. 1999, "Social Networks among the Poor; Inequality and Integration in a Latin American City" in B. Wellman(Ed). *Networks in the Global Village* (PP.147-84), Boulder, Co: West view Press.
- Flor, A.G.2001 ICT and Poverty: The indisputable link", Paper presented at the Third Asia Development Forum on Regional Economic Cooperation in Asia and the Pacific (available at

<http://www.fsp.usp.br/accessibilidade/ICTandPoverty-the-indisputablelink2001.pdf>

- Fuchs, C.2009 “The role of income inequality in a multivariate cross national analysis of the digital divide”, *Social Science Computer Review*,27(1):41-58
- Giddens,A. 1998 *The Third Ways: the Renewal of Social Democracy*. Cambridge: Polity
- Gurstein, M. 2003, ‘Effective use: a community informatics strategy beyond the digital divide’, *FirstMonday*8(12)[Onlineavailableat:[http://www.firstmonday.dk/issues/issue8\\_12/gurstei/](http://www.firstmonday.dk/issues/issue8_12/gurstei/)]
- Haan, Arjan 1997 “Poverty and Social Exclusion: Comparison of Debates on Deprivation”, *Working Paper No.2* Poverty Research Unit, Sussex University, Brigham.
- Hargittai,E. 2003 “Informed Web surfing: The social context of user sophistication” in P. Howard and S. Jones(eds) *Society online: the Internet in context*(257-74), Beverly Hills CA.: Sage.
- Hargittai,E. 2008 “The Digital reproduction of inequality” ,in D. Grusky (ed) *Social Stratification*(PP.936-944),Westview Press: Boulder
- Heeks,R. 1999 *Information and Communication Technologies, Poverty and development*, Paper No.5 Working paper Series of Institute for Development, Institute for Development Policy and Management(IDPM), University of Manchester, Manchester,UK.
- Heeks, R. 2000 “iDevelopment not e-Development”, *Journal of International Development*, 14:1-11
- Howard, P.N. , Rainie, L and Jones, S., 2001 “ Days and Night on the internet: the impact of a diffusing technology” , *American Behavioral Scientists*,45(3):383-404.
- INSINC 1997 *The Net Result: Social Inclusion in an Information Society*. London: IBM UK
- James, J. 2008 Digital preparedness versus the digital divide: A confusion of means and ends”, *Journal of the American Society for Information Science and Technology*,59(5):785-91
- Jayaram, Anup 2004, “Fixed Lines-changing lanes”, *Businessworld*, May 3,2004 (available at [www.businessworldindia.com/may0304/coverstory05.asp](http://www.businessworldindia.com/may0304/coverstory05.asp))

- Jensen, R. 2007 The digital divide: Information(technologies), Market performance , and welfare in the South Indian Fisheries sector”, *The Quarterly Journal of Economics*,121(3):879-924.
- Kaul,M, Patel, N, and Shams, K.1989 “New Information Technology application for local development in Asian and Pacific countries”, *Information Technology for Development*, 4(1):1-10
- Kenny,C. 2002 Information and communication technologies for direct poverty alleviation: Cost and benefits ‘, *Development Policy Review*, 20(2):141-157
- Kirkman, G. 1999 Its more than just being connected: A discussion of some issues of information technology and international development”, Paper presented at the Development E-commerce Workshop (available at <http://cyber.law.harvard.edu/itg/libpubs/beingconnected.pdf>)
- Kling,R. 2000 “ Learning about information technologies and social change: The contribution of social informatics”, *The Information Society*,16(3):217-232.
- Kraemer,K. and Dedrick,J 1996 ‘IT and Economic Development: International Competitiveness’, in W.H. Dutton(ed) *Information and Communication Technology: Vision and realities*(PP.319-333), Oxford : Oxford University Press.
- Kroker, A. and Weinstein,M. 1994 *Datatrash: The Theory of Virtual Class*. New York: St Martin.
- Kvasny,L.2006, “Cultural(Re)production of Digital Inequality in US Community Technology Initiative”, *Information, Communication & Society*,9(2):160-181
- Latour, B.1991 “Technology is society Made Durable” in J.Law(Ed.) *A Sociology of Monsters*( PP. 103-31) London: Rutledge
- Lawson-Mark,R. 2001 *The digital Divide: Standing at the Intersections of Race and Technology*, Durham: Carolina Academic Press
- Lind, E.A. Kanfer, R. & Earley, P.C. 1990 “Voice, Control, and procedural Justice”, *Journal of Personality and Social Psychology*, 59:952-959
- Lupo, D. and Erlich,Z. 2001 Computer literacy and application via distance e-learning”, *Computers and Education*, 36(4):333-45

- Lynette Kvasny,2006, "Cultural (Re)production of digital inequality in a US community technology initiative", *Information, Communication & Society*, 9:02,160-181
- Lyon, David,2001*Surveillance Society: monitoring everyday life*, Buckingham: Open University Press
- Mackenzie, Donald and Wajcman, Judy 1999 *The social shaping of technology*. Buckingham : Open University Press.
- Madon,S 1999 "International NGOs: Networking , Information flows and learning", *Journal of Strategic Information Systems*, 8(3):251-261.
- Malone, T.W. and Rockwart, J. F 1991 "Computers, networks and the Corporation," *Scientific American*, 263:128-136.
- Marker,P. Mc Namara, K. & Wallace, L. 2002, *The Significance of Information and communication technologies for reducing poverty*. London: DFID( available at <https://www.dfid.gov.uk/documents/publications/ictpoverty.pdf>)
- Martin, C 1996 French Review article: the debate in France Over "Social Exclusion", *Social Policy & Administration*,30:382-392
- Marx,Karl, *The Poverty of Philosophy,1847*quoted in D. McLellan,1971 Thought of Karl Marx.London:Macmillan,P.38.
- McLuhan,Marshall,2001,(1964) *Understanding Media The extension of Man*,New York:Routledge
- Mele, C. 1999 "Cyberspace and Disadvantaged Communities: The internet as a Tool for Collective Action", in M.A. Smith and P. Kollock(eds) *Communities in Cyberspace*(PP.264-89),London: Routledge.
- Matzart, Uwe and Sadowski, Bert 2012 "Does the 'do it yourself approach' Reduce Digital inequality? Evidence of self Learning of Digital Skills", *The Information Society*,28:1-12
- National Telecommunication and Information Administration (NTIA),1999 *Falling through the Net : Defining the digital divide*. Washington DC., US Department of Commerce available at <http://www.ntia.doc.gov/ntiahome/fttn99.contents.html>.
- Ng, C. and Mitter, S.(eds.) 2005, *Gender and the Digital Economy: Perspectives from the Developing World*. New Delhi: Sage.
- Norris, P. 2001, *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide*, Cambridge University Press, Cambridge.

- OECD,1989 *Information Technology and new Growth opportunities*. Information, Computer and Communication Policy Series, ICCP NO.19, Paris: OECD
- Oppenheim, C. 1998 *An inclusive Society: Strategies for tackling Poverty*, London: Institute for Public Policy Research.
- Orlikowski, W and Iacano, C.S. 2001 "Research Commentary :Desperately seeking IT in IT research- A call to theorizing the IT artifact", *Information System Research*,12:121-134
- Patterson, R. & Wilson, E. 2002, 'New IT and social inequality: resetting the research and policy agenda', *The Information Society*,16:77–86.
- Pohjola, M. 2001 "Information Technology and Economic Growth: Introduction and Conclusions" in Pohjola, M.(ed). *Information Technology, Productivity and Economic Growth: international Evidence and Implication for Economic Development* (PP.1-30). Oxford: Oxford University Press
- Postman, N. 1979 *Teaching as a conserving Activity*, New York: Delacorte.
- Power, Michael 1997 *Audit Society: Ritual of verification*, London: Oxford University Press
- Prahalad, C.K. 2004 *The Fortune of the Bottom of the Pyramid: Eradicating Poverty through Profit*. Upper Saddle River, NJ: Princeton Hall.
- Rajora, R. 2002 *Bridging the Digital Divide: Gyandoot Model for Community Networks*, New Delhi: Tata McGraw Hill.
- Reddy, P. Krishna and Ankaiah, R. 2005 "A framework of Information technology-based agriculture information dissemination systems to improve crop productivity", *Current Science*, 88:1905-13.
- Saith, Ashwani, 2008 "ICTs and Poverty Alleviation: Hope or Hype" in Ashwani Saith, M. Vijayabhaskar, V. Gayathri (eds). *ICTs and Indian Social Change, Diffusion Poverty and Governance*. New Delhi: Sage.
- Sassen, Saskia 2002, "Towards Sociology of Information Technology", *Current Sociology*, 50(3):365-388.
- Sein, Maung K. and Harindranath, G. 2004 "Conceptualizing the ICT Artifact: Towards Understanding the Role of ICT in National Development", *The Information Society*, 20:15-24.
- Sein, M.K and Ahmad, I 2001 "A Framework to study the impact of information and communication technologies on developing countries:

- the case of cellular phone in Bangladesh “ in *Proceedings of the BIT World International Conference, Cairo, Egypt,4-6,June.*
- Selwyn, Neil, 2002 “ Establishing an Inclusive Society? Technology, Social Exclusion and UK Government Policy Making”, *Journal of Social Policy*, 31:1-20
- Sharma,U. 2003 *Women Empowerment through Information Technologies*, New Delhi: Author Press.
- Singh, J. 1999, *Leapfrogging development? The Political economy of telecommunications restructuring*, Albany, New York: New York University Press.
- Sreekumar, T.T. 2007 “Cyber Kiosks and Dilemmas of Social inclusion in India”, *Media, Culture and Society*, 29:869-9
- Thorat, S.& Newman, Katherine S. 2005 Caste and Economic Discrimination: Causes, Consequences and Remedies, *Economic and Political Weekly*, Oct,13,200
- Toffler, Alvin 1989 *The Third Wave*, London: Bantam Books
- Torero,M. & Von Barun,J.2006 *Information and Communication Technologies for Development and Poverty reduction: The potential of telecommunications*. Washington.D.C.: John Hopkins University Press.
- Torkzadeh,G.J., Chang,C.J. and Demirhan,D. 2006 “A contingency Model of computer and Internet self efficacy”, *Information and Management*,43(40:541-50.
- Tyler, Tom R. 2000, “Social Justice: Outcome and Procedure”, *International Journal of Psychology*,35(2):117-125
- Upton,D.M. and Fuller,V.A. 2004, “The ICT e-chaupal Initiative”, *Harvard Business School Case study*, Ng -604-016
- Van Dijk,I&Hacker,K 2003 “The digital divide as a complex and dynamic phenomenon”, *The information society*, 19(4):315-326
- Van Dijk,J. 2005 *The deepening divide*. London: Sage
- Warschauer, Mark, 2002 “ Reconceptualizing the Digital Divide” ,*First Monday*, 7(7), 1, July.
- Warschauer,Mark, 2004 *Technology and Social Inclusion: Rethinking the Digital Divide*, MIT Press Cambridge, M.A.

Will, M.1999 "Bridging the digital divide", *Adult Learning*, December,PP.10-11.

Zillien,N. and Hargittai,E. 2009 "Digital distinction: Status specific types of Internet Usage", *Social Science Quarterly*,90(2):274-91.

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