Bridging the Divide: Opportunities and Challenges

INTRODUCTION

"Progress is impossible without change, and those who cannot change their minds cannot change anything."

George Bernard Shaw

We live in a world of similarities and contrasts; in a world which prides itself on its diversity but prefers uniformity. This is evident in social responses to different phenomena existing in society. While on the one hand each social group is a complete entity, there are sections of this group who are left on the sidelines and viewed differently from the rest of the group. These sections lag far behind the rest of their group in their progress. This is owing to a multitude of factors, predominant amongst them being lack of access to resources and infrastructure. With the onset of the Information Technology revolution, this has become one of the key areas of debate in society. The ever increasing permeation of Information and Communication Technologies (ICTs) in all walks of life and business makes it an appropriate vehicle for bringing about social and economic growth by achieving a democratization of knowledge and culture. With the onset of the internet and liberalization, almost all sectors are now turning towards ICT as a means for getting information and escalating competition and consumerism. Be it business, education, media, manufacture, agriculture or entertainment, the use of new technologies is what sets entrepreneurs apart.

Governments across the world have recognized this as a means to streamline public dealings and making government functioning more accountable, transparent and effective. There is a conscious effort to minimize the manpower in government organizations and an attempt to make everything digitized and readily available. Precision, simplicity, cost effectiveness; outreach, networking capacity and efficiency make the use of ICTs an inevitable tool of all modern day activities.

This paper seeks to examine the status of ICT use in India and outline some of the factors responsible for the division of the society into groups enjoying various degrees of digital participation. It analyses some of the problems which are associated with the digital divide and makes some suggestions to address them. It concludes with a review of a few of the initiatives being carried out by various entities in India to solve this problem.

Franklin D. Roosevelt said - ***"The test of our progress is not whether we add to the abundance of those who have much. It is whether we provide enough to those who have little."***

A. What is Access?

Access being one of the key elements of digital participation, it becomes pertinent to first understand its meaning and significance. A cursory perusal of the dictionary gives us to understand that access means a whole range of things in different contexts. The most basic meaning is to approach, enter, exit, communicate with or make use of something.

The question of access is one which has been dealt with time and again in the history of the development of human civilization- albeit in different contexts - access to goods, services, persons, trade, property, justice, places, literature, arts, amenities, knowledge and so on. The meaning and degrees of access vary in each context and hence it is important to first understand what we mean by the notion of access.

Access in the context of development essentially means access to resources. Resources can be broadly categorized into – physical, human, digital and social.

In the context of access to knowledge and more specifically in the context of the use of Information and Communication Technologies (ICTs) in accessing knowledge, these can further be understood as follows:

a) Physical resources means access to a computer and telecommunication connections;

b) human resources means having the requisite level and type of literacy to handle such technology effectively;

c) digital resources refers to the availability of material on line and Social resources refers to the community, institutional; and

d) societal structures which support ICT access.

It is only if all these four ingredients are present, that a complete digital community can exist.

Digital Divide refers to the fact that certain sections of society are left behind in the rapid race for development due to their inability to utilize modern means of information and communication technologies for accessing knowledge in the new age economy. This may be due to a variety of factors such as lack of skills, resources, infrastructure and so on. The NTIA[1] (2001) defines the digital divide as the disparities in access to telephones, personal computers and the Internet across certain demographic groups.

[1] National Telecommunications and Information Administration (NTIA), United States of America

What is important for defining digital participation in the use of these technologies is not the mere availability of computers or internet connections for persons, but whether these are being used by them to engage in meaningful social, economic, cultural and political practices.

It is imperative to the study of the notion of the Digital Divide that we take different aspects of society into consideration, such as income, gender, education, employment, ethnicity and so on. The idea of access is very broad today, from initially signifying only access to a computer, it has come to include a whole range of things – connection to the World Wide Web. The internet encompasses a whole range of unlimited information; most of this is unmonitored as to authenticity and reliability. Access for our purpose refers to only that which is authentic, reliable, believable and relevant. In the context of access to technology, it should also be easily available, affordable and user friendly.

It is this question of access which has divided the society into various groups- those who have and those who don't. A careful examination would show further that there are fissures in the group of the Haves itself. The level of accessibility is not equal for all persons within a group.

Important factors which contribute to the digital divide are income, gender, ethnicity, education, empowerment, language, employment and disability.

Some other general reasons for existing digital divides in India and other developing countries are the lack of awareness of what the technology could offer, insufficient telecommunication infrastructure and internet connectivity, high costs of access and lack of adequate legal/regulatory frameworks, shortage of requisite human capacity, lack of local content and a culture open to change.

A society can only evolve and progress completely if all sections of the society are taken into account while bringing in developmental initiatives. This sentiment has been expressed rather well by Oliver Wendell Holmes, who said, "the world is not so much where we stand, as in what direction we are moving."

This paper now proceeds to examine the various factors responsible for the existence and widening of the Digital Divide in India.

B. Factors responsible for the Digital Divide

1. THE INCOME DIVIDE

People in a society are not similarly placed in terms of wealth and resources. The general trend is that the powerful section is usually more affluent and well able to afford all comforts. The yardstick for measuring strength has varied over centuries. Today strength is indicated by economic and not physical might. Those who have the money can purchase a computer for their home and office use. Children belonging to these families are exposed to the use of computers right from their childhood and are able to use it for their education and work. This puts them at an advantage as opposed to their less well off contemporaries. These children also go to schools which are well able to afford computers for teaching in school. On the other hand, persons from low income households cannot afford to buy a computer for home use, they send their children to schools which charge less fees. These schools are not able to afford computers to teach all children since their revenue is not enough to cover the cost of running the school, let alone invest in ICT infrastructure. Hence this continues to be a vicious cycle and it is only after school at the time of work that persons first get exposed to ICT.

2. THE GENDER DIVIDE

While addressing the question of the gender divide, it is first important to understand the meaning of gender bias. Gender is defined by the American Heritage Dictionary as "classification of sex." According to this same source, bias is defined as "preference or inclination that inhibits impartiality; prejudice" (American Heritage Dictionary, 1983). Thus gender bias is separation of gender in a way which prefers one sex over the other. Gender bias in technology refers to preference for or favouring of one sex over the other in computer use and/or access, software use and/or manufacturing, and Internet use and content. As can be seen, gender bias in technology is a multifaceted and complex issue.

Contrary to common belief, the gender patterns of internet use do not go hand in hand with the progress and level of penetration of internet in a country nor its development in infrastructure. This is affected by a variety of factors such as socio-economic and socio-cultural factors, politics, education and skills, employment and income, media and content, privacy and security and mode of access and so on.

There are several reasons for the prevalence of gender bias in the digital divide in India as in other sectors. The male population of the country far exceeds the female population- this explains the lower representation of the female sex in all walks of life. Another factor accounting for this is that it has been conventional practice in India for parents to pay more attention to the

education of a male child than a female one. Hence if a family in the village has one son and one daughter, the parents will probably concentrate on giving good education to the son and ensure (if at all) the minimum education possible for the girl child, within their economic means. Often, even if education is being provided free of cost by the Government, villagers might prefer to send their daughters to work rather than to school.

A lower rate of literacy among females is another important factor contributing to the gender divide in technology. There are several problems faced by females such as: lack of adequate skills and opportunity for learning, lack of work opportunity, lack of encouragement at home, lack of adequate facility with the English language which will make it difficult to access the material on n the net and lack of role models to inspire them in their learning.

The solution for this lies in the hands of parents and teachers who are responsible for shaping the lives of their daughters. Girls should be encouraged right from school to use computers. Parents should buy software and games (like computer games) which are also of interest to girls. Most of the video games are centred around the interests of boys like war, sports, etc.

Women are still restricted from participating in the progress of India's economy by the lack of adequate support for education in ICT. The World Economic Forum in its 2007 report on the Gender-Gap Index reviewed 128 countries and placed India at around the bottom of the global pyramid in terms of gender inequality. The report assessed countries on the basis of their division of resources and opportunities among their male and female populations, and in doing so considered the proportion of resources and opportunities made available to women on educational, economic, political and health parities. India was placed at the 114th position followed, among others, by Yemen, Chad, Pakistan and Saudi Arabia. China, the Philippines, Sri Lanka and Botswana were all at a higher position as compared to India. In terms of economic participation and opportunity, India fared even worse than the previous year – it is now ranked at the 122nd position, while its overall rank slipped from 102nd to 114th in the last year. It is disturbing to note the increasing marginalisation of women which has taken place over the past few years. The report showed further that India scored an overall 59.4 percent on gender equality, it only managed an abysmal 39.8 percent on economic participation and opportunity. In terms of wage equality, India was ranked 59th, with 67 percent gender equality; it was shocking to note that despite India's high tech boom, for professional and technical workers, it came in at 97th (down in the 27th percentile). While India had a 36 percent female participation in the overall labour force, for professional and technical workers the figure was an abysmal 21 percent!

3. THE ETHNIC DIVIDE

Indian society is comprised of myriad castes and communities. The socio-economic and political standing of these groups is varied. Lesser developed groups like the Dalits unfortunately lag far behind their contemporaries on the road to development. This is because of a multitude of factors. To begin with their economic capacity does not permit them to have access to personal computers. In fact many parents are hard put to secure minimum education for their children and often have to send them to work to earn a livelihood.

Another important factor is the lack of adequate telecommunication facilities in villages to enable internet use. It is not sufficient merely to have a computer, but one must have an internet connection to go with it. Many far flung villages still have very limited telephone facilities and broadband or other connections are available only to a very limited extent and even then only to a handful of people. In the event of any fault in connection, it takes days and sometimes even months before it gets repaired.

One of the reasons accounting for the relatively low representation of such groups amongst internet users are that they are mostly in rural areas and are farmers or handicraftsmen. Their work is mostly field work and does not involve sitting in front of a computer. However what is not emphasized is that use of ICT can really benefit farmers. They can have instant access to markets, products, weather and scientific information and connect with farmers and tradesmen in other places, thereby reducing their dependence on and exploitation by middle men.

The importance of ICT in agriculture can be gauged from the satisfaction enjoyed by the farmers of Punjab. They use computers for reasons varying from researching the weather forecast patterns to simulating crop diversities to now exploring the option of “online mandi” to sell their produce and increasing their profit margins by reducing the margins of the middlemen.

4. EDUCATION OR LITERACY DIVIDE

Educational attainment is a key factor affecting the internet the world over. A general trend is that the higher the level of education of a person, the more the likelihood of him/her using the internet. However trends have been changing over the past few years and even persons with just high school diplomas freely use computers. For instance, a large number of persons working in Call Centres and BPOs are merely school or college graduates. Children these days start using the internet right from their childhood. One can see a child of four or five playing with video games quite naturally. As opposed to this elderly people are still vary of computers and are often unable to use computers. This is due to lack of adequate training and initiation into technology use.

However this is only as far as the population in cities goes. It is estimated that about 79 per cent of India's population lives in villages with limited basic infrastructure. Over 60 per cent of the population is considered literate, but with literacy being defined as the ability to read and write simple words in any language, acquired with or without formal schooling.

In the context of ICT use, the medium of education is also very important in placing a person on either side of a divide. It is estimated that there are about seven thousand languages being spoken in the world. The medium of the internet is predominantly English. It follows that lots of people in India who have been educated in a regional medium language such as Hindi will still not be able to access all the information on the internet.

4.1 Advantages of ICT for Education

4.1.1. ICT opens up a window to the world. There is instant access to up to date on line material in any part of the world. One is not dependent anymore on the limited material available in out of print books which are there in one's school or neighbourhood library. Further since there are only a few copies of a book it cannot be used by all persons at the same time. This is not the case with on line material. It never gets exhausted and one can get access to current views, opinions and information within minutes of looking for it.

4.1.2. ICT opens up a whole new range of subjects which can be studied and taught in institutions since access to materials is made easier.

4.1.3. ICT facilitates a healthy dialogue and exchange of information between students of different countries.

4.1.4. The use of adaptive technologies like screen readers enables persons with disabilities like blind persons to access information independently and not be restricted to the limited material which is available in Braille. They are freed from the necessity of having to wait for someone to find the relevant material and read it out to them. This also makes it possible for blind students to be integrated into the mainstream schooling system.

4.1.5. Adoption of ICTs for the purpose of teaching- new pedagogic interventions can be made by using technology to impart knowledge to students

4.1.6. E-Learning is a valuable tool of distance learning. In a country like India, where many areas are not easily accessible or where educational resources in terms of institutions and skilled manpower are a constraint, e-learning can be used to take education to the rural masses. Usually, in such places those children whose

parents can afford to send them to bigger cities for their studies go outside and study, while children coming from poorer backgrounds are left out of the education system altogether.

4.1.7. Learning groups can be formed over the internet and this facilitates an easy and competitive learning environment. Students can borrow from experiences and practices around the world. This serves to improve the quality of our education.

4.2. Problems

4.2.1. Although the use of computers has become one of the accepted features of modern day education, it is interesting to note that there are still many schools which don't have more than one or two computers for the use of the entire school. This can hardly be considered as a requisite number since this means all the children will not get equal opportunity to hone their computer skills on a regular basis and the permission to use will become need based. In a world where the use of ICT is increasingly becoming the order of the day, it hardly bodes well for the children in these schools.

4.2.2. Schools in rural areas are still relatively unaware of the use of computers in imparting education and largely follow the blackboard and books system of teaching.

4.2.3. Kofi A. Annan, the former Secretary General of the United Nations commented in the 'Foreword' of UNCTAD's E-commerce and Development Report'2003[2], "we are still grappling with the painful reality that those who stand to benefit the most from the advances of the ICT revolution are also those who have the least access to the technology behind it". The World Summit on Information Society (WSIS) documentation comments that the 'information society' or the so-called 'knowledge society' is more advanced in industrialized countries and the third world are 'catching up'.

For instance, blind persons can work on computers by using screen readers. There are two which are available in the world today- JAWS and WINDOWS EYES. The cost of a private licensed copy of JAWS is fifty thousand rupees – far beyond affordable means of an average Indian family. In a country like India where millions of disabled people are below the poverty line and cannot even purchase a walking-cane, such a costly alternative is pointless.

Another problem is that there is not requisite manpower and training available to train all blind persons in the use of this technology. Apart from this, even were people with visual

[2] Downloadable from http://www.unctad.org/ecommerce

disabilities able to successfully complete their education using adaptive technologies, when they go out to work they do not have these systems in place. Either they have to purchase their own licensed copy of JAWS or the employer has to and more often than not, the latter doesn't.

The situation viz provision of accessible material for blind children in schools is only slightly better. Students get material on audio cassettes etc, but invariably the time taken to produce accessible versions is so long that the material invariably goes out of syllabus. The only solution to this can be if publishers are made legally bound to give an electronic copy of the book to agencies or individuals who are print disabled at the same cost as the printed version.

5. DISABILITY DIVIDE

According to the World Health Organisation (WHO), ten percent of the world population is disabled. There are 600 million disabled persons in the world and according to the UNDP about eighty percent of the disabled population lives in developing countries. As per World Bank estimates, twenty percent of the world's poorest people are disabled. (source: http://www.un.org/disabilities/convention/facts.shtml)). In India, as per the 2001 census, out of the 21,906,769 people with disabilities, 12,605,635 are males and 9,301,134 are females. (source: http://www.censusindia.gov.in/Census_Data_2001/).
There are ten million disabled persons in Britain and 3.9 million disabled persons in Australia.

Considering these figures, it is surprising to note that though disabled persons comprise such a large part of the population of the world and of our country in particular, very little is done to make technology accessible for them and improve their quality of life.

Existing laws play a crucial role in governing accessibility for such groups. Blind persons can read books on a computer by converting them into electronic format. However the fair use provision in our Copyright Act 1957 restricts the number, manner and purpose of reproduction quite severely. For instance, the teaching exception allows reproduction only of "published works" and permits only a limited number of copies and restricts the purpose to educational use only. The Act does not expressly provide for distance education. Another important medium of communication is the radio. However section 31 of the Act restricts reproduction for the purpose of broadcast only to Indian works. This means that persons who are dependent upon the radio for information

have practically no exposure to works and knowledge goods produced by foreign authors.

6. Law

"Human Rights refer not just to personal civil and political rights, but to collective economic, social and cultural ones too" – New Internationalist.

Art 26(1) of the Universal Declaration of Human Rights states that everyone has a right to education…..and higher education shall be equally accessible to all on the basis of merit.

In today's technology age, participation in society mandates the use of and familiarity with ICT, which is increasingly becoming the backbone of all economic, social, cultural and governmental enterprises.

The right to information, to access knowledge and the freedom to express oneself are all protected under our Constitution. A series of case laws over the past few decades have time and again reiterated that the freedoms granted under articles 19 (freedom of speech and expression) and 21 (right to life and liberty) are comprehensive and encompass all aspects of knowledge, from the right to access any information to the right to publish one's views (provided that it is not subject to any of the restrictions enumerated under section 19 (2)).

Although the express provisions of our constitution do not make mention of the right to freedom of information, courts have, through a series of judicial decisions held that the right to information is implicit in the right to freedom of speech and expression. In the case of State of UP v. Raj Narain1 , the court acknowledged that the right to freedom of information was implicit in the right to freedom of speech and expression and stated that the "people of the country have the right to know every public act, everything that is done in a public way, by their public functionaries".

A series of legislations such as the Right to Information Act 2005, Patents (Amendment) Act 2005, Broadband Policy 2004, Communication Convergence Bill 2001, Information Technology Act 2000, New Telecom Policy 1999, Copyright Act 1957, Indian Wireless Act 1933, etc give effect to these rights. On the international level, access to knowledge has become one of the key focus points for all nations. Increasingly attention is being given to ensuring minimum access to socially disadvantaged groups such as disabled persons.

In May 2008, the APEC countries signed The Bangkok Declaration, which was created to add a social perspective to the APEC agenda. The declaration emphasizes the need for reliable infrastructure and service

and states that “Ensuring universally accessibly ICT infrastructure and services to bridge the digital divide is crucial to our future social and economic prosperity”. The declaration also urged economies to “continue their efforts to expand the reach of networks with the ambitious goal of achieving universal access to broadband by 2015”.

Some important provisions with respect to internet access for disabled persons can also be found in the UN Convention on the Rights of Persons with Disabilities. The relevant provisions are given below:

Article 4.1 in its enumeration of “General obligations” viz. the accessibility of internet, inter alia, enlists the following duties:-
“(f) To undertake or promote research and development of universally designed goods, services, equipment and facilities, as defined in article 2 of the present Convention, which should require the minimum possible adaptation and the least cost to meet the specific needs of a person with disabilities, to promote their availability and use, and to promote universal design in the development of standards and guidelines;
“(g) To undertake or promote research and development of, and to promote the availability and use of new technologies, including information and communications technologies, mobility aids, devices and assistive technologies, suitable for persons with disabilities, giving priority to technologies at an affordable cost;
“(h) To provide accessible information to persons with disabilities about mobility aids, devices and assistive technologies, including new technologies, as well as other forms of assistance, support services and facilities.”

Article 9.2 deals with “Accessibility” and requires member States to take “appropriate measures” to:-
“(g) Promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;
“(h) Promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.”

C. Suggestions to tackle the divide

1. Education is one of the key factors governing the extent of the digital divide and one which can be tackled easily at the grass root level itself. . The Government and private schools should have a compulsory computer training programme for all teachers as a prerequisite to joining school and insist on including technology as a fundamental tool for imparting education.

2. Schools should be encouraged to purchase at least the minimum number of computers which will be required for providing training to all children on a regular basis. Government may announce grants for this purpose and could even offer incentives to institutions and organizations providing training or employment to disabled persons. These incentives could be of any type such as tax concessions etc.

3. E Learning should be recognized as an invaluable mode of information dissemination and be encouraged.
4. Government should mandate the use of technology to promote inclusive education. Schools should be encouraged to buy assistive aids and adaptive technologies to provide education to disabled children

5. Open source initiatives in technology should be actively pursued, so as to make technology more affordable, available and customised to the needs of our country.

6. Government should launch initiatives to encourage participation of women and socially and economically disadvantaged persons in the use of technology. It should ensure that all girls get education in schools and are exposed to the use of computers.

7. The Legislature should reform copyright laws to conform to international standards. This will facilitate cross border exchange of resources. One of our biggest problems today is that electronic libraries in other countries like USA are reluctant to provide books to us unless we make suitable amendments to our copyright laws. One of the methods which will render books more accessible to print disabled persons is by mandating the publisher to provide an electronic version of the printed book to any blind or visually or print disabled person with the same ease and at the same cost as the printed book.

D. Some Digital Divide initiatives in India

This last part of my paper enumerates some of the initiatives being undertaken in our country to solve the problem of the Digital Divide.

1. **iShakti** - The iShakti initiative is a part of the larger Shakti project to help Indian women's self-help groups to develop their business skills and create income generating opportunities by selling Hindustan Lever products. iShakti involves the setting up of kiosks across rural areas, which are run by Shakti entrepreneurs. Via these kiosks, villagers can access a portal that provides information designed for a rural audience and covers areas such as agriculture, business, education, vocational training, health, hygiene, community best practices, e-governance, personal care, and entertainment. The kiosk also allows people to send queries to local experts and get a response in 24 hours. As rural telephone connections are not very reliable, iShakti uses robust synchronisation methods to deliver content to an

autonomous village based PC. iShakti started with 8 villages and has now spread to over tens of thousands of villages, its model being easy to replicate and transfer across regions as well.

2. **Storybank project** - This project is helping people in the village of Budikote in Karnataka to record and share their experiences by using mobile devices to make videos, record sounds, take photographs and edit all this material into short films. The application not only allows users to create videos but also allows them to send the videos to other devices, computers and websites making it easy for them to share their stories with others. The project also involved placing a touch screen in a covered public area, where villagers could touch the screen and use a knob to look at the different stories and choose the one to view. This digital library is giving the people of this isolated village a way to share and create a lasting record of their stories, shared experiences and history.

3. **India Technology Tools for Teaching & Training (Project T4- dot-EDU) -** India is a nexus of innovative activity in the area of ICT development for the region and in the world. dot-EDU, via Project T4, is outlining educational interventions to combat the low levels of educational quality and equity in India, especially among girls and other vulnerable populations. The project focuses on developing a multi-channel approach to overcoming some of the obstacles to education that exist. It is designed to complement and support the Government of India's objectives for universal education by 2003.The dot-EDU will partner with the Government to introduce ICTs into the educational mix, including elements of interactive radio instruction, computer based instruction, video instruction, and hybrids of these technologies.

4. **IBM's initiatives -** IBM has declared that it is committed to helping India bridge the digital divide and become a nation of innovators. As a part of its initiatives, it has imparted training on open standards based technologies to over 80,000 students, launched a Great Mind challenge designed to improve the software development skills of Indian students and started a Young Explorer program to take IT education to underprivileged schools. It has also launched a Reinventing Education program as part of which it focuses on improving the quality of teaching and learning for children in the 6-10 age group. IBM continues to invest in growing its India operations and work with the government on e-governance and other projects to bridge the digital divide; strengthen a services science curriculum with Indian universities and continue with the Reinventing education and the Kidsmart programs.

5. **India's first accessible website** - The Ali Yavar Jung National Institute for the Hearing Handicapped (AYJNIHH), which comes under the Union ministry for social justice and empowerment, launched India's first accessible website in May 2008 - http://ayjnihh.nic.in/ .The website has been built in accordance with W3C's web content accessibility guidelines and aims to break barriers for people with disabilities and provide them with easier access to information.

6. **Wireless in Local Loop -** The Wireless in Local Loop (WiLL) technology is increasingly being used across rural India to bridge the digital divide. Farmers in Tamil Nadu's Nellikuppam district, are using internet connections and kiosks based on a WiLL system to check their accounts with a local sugar mill and also market prices of fertilizer and pesticides. In central Madhya Pradesh state, the WiLL system is being used by the state government to help farmers access land records, check on agricultural prices and also make complaints, in a prime example of e-governance.

7. **C-DAC Initiatives** - In 2004, C-DAC launched a new project to develop software suites based on the open-source Linux operating system and designed to help community initiatives to produce and disseminate free and open-source software systems to break language barriers and bridge the digital divide. C-DAC is also involved in enabling people in India and other countries in South Asia to use computers while working in their own languages. C-DAC has created special packages such as the Indian Language Standard Codes, the Language Interface Card, the Indian Language Word Processor and the Indian Language Interface to Mobiles.

   While this is not an exhaustive list of the initiatives being undertaken in India for eliminating existing digital divides, it gives us a fair idea of the needs of our country and tactics to address the issue. It is heartening to note that large Corporates like IBM are sensitive to the needs of disadvantaged sections of society and spreading awareness by launching initiatives to remedy the unequal situation. However to ensure a speedy and effective remedy for the problem of the digital divide, what is required is the collaboration of governmental and social forces with private players to harness all resources which can be used to combat this problem.