

## A Study to Examine the Digital Divide Factors: Jammu and Kashmir Perspective

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**Abstract** - Digital divide refers to a substantial asymmetry between two or more populations in the distribution and effective use of information and communication resources. Despite the boom in the availability of access to communication resources since the beginning of the 1990s, the divide is deepening and the differences in the usage of communication resources between countries and regions intensifying. Even though the rural areas have benefitted to some extent from the boom in access to communication resources, the regional divide is more pronounced within the developing countries. Factors influencing digital divide vary from region to region. In an attempt to find the factors responsible for the digital divide in Jammu and Kashmir region, a pilot survey was conducted. This paper reports on the results of this pilot study. The study was conducted by floating questionnaires and by interviewing people of rural as well as urban areas. Questions were related to internet access, its usage, problems faced in its use etc. On analysis of data, many other observations other than the digital divide factors have been reported. It was found during the study that the government is providing facilities for internet access but awareness of these initiatives is still lacking. People residing in rural areas are hesitant to use internet due to lack of English language proficiency. This paper is a result of the pilot survey to examine the factors responsible for the regional digital divide and will help in suggesting methods to bridge this divide.

**Index Terms** - ICT, Digital Divide, Internet, Community Information Centers, Common Service Centers

### 1. INTRODUCTION

The world we live in has been changing rapidly with the emergence of the ubiquitous society bringing forward extraordinary benefits and opportunities together with new challenges. The ability to create and utilize information plays a significant role in the economic and social structure of our lives. Greater awareness of the importance of information in defining our future has compelled nations across the world to commit themselves to the progressive development of ICT

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industries. On the other hand, ICT development has also deepened the problem of serious digital divide between developed and developing countries. The digital revolution has facilitated a fast transition from the industrial economy to the IT network-based information economy, causing the resulting digital divide to deepen economic disparities or polarization in wealth<sup>[1]</sup>. The digital divide affects many nations of the developing world. The term encompasses inadequate funding, a lack of necessary computer and Internet skills, and a lack of English-language proficiency that hinder expansion and use of digital information resources<sup>[2]</sup>. The rest of the paper is structured as follows: A brief introduction of Digital Divide, formulation of hypothesis, methodology of data collection, a brief introduction to the questionnaire, data analysis and finally the conclusion of the paper is presented.

### 2. DIGITAL DIVIDE

Information and Communication Technologies (ICTs) can be both a unifying and a divisive force. Its divisive aspect is known as the "digital divide", which relates to the difference between those who have digital access to knowledge and those who either lack it or don't use it effectively. The digital divide can be defined as the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regards both to their opportunities to access ICTs and to their use of the Internet for a wide variety of activities. As the Internet has rapidly grown to underlie almost every aspect of the global economy, the term "digital divide" has often been referred to Internet access<sup>[3]</sup>. It is a divide that affects and reinforces fundamental economic and social divides between and within countries and is threatening to further exacerbate these inequalities. Those who are "connected" are in for a greater advantage in terms of competing on a global basis, increased share in the market, increased knowledge, increased productivity and higher growth. Those who are not will be condemned to diminished knowledge, low GDP, increased unemployment and deepening marginalization. Developing countries and non-privileged groups have difficulty in "connecting" and difficulty in using Information Technology (IT) effectively because of anyone or more of the following: illiteracy, poverty, low level of skills, high cost of access, and even, poor mastering of the English language [4].

#### 2.1 Digital Divide Notions

The digital divide is a problem of multiple dimensions. Kling<sup>[5]</sup> (1998) sees the divide from (1) a technical aspect referring to availability of the infrastructure, the hardware and the software of ICTs, and (2) the social aspect referring to the

skills required to manipulate technical resources. Norris<sup>[6]</sup> (2001) describes (1) a global divide revealing different capabilities between the industrialized and developing nations; (2) a social divide referring to inequalities within a given population; and (3) a democratic divide allowing for different levels of civic participation by means of ITCs. And Keniston<sup>[7]</sup> (2003) distinguishes four social divisions: (1) those who are rich and powerful and those who are not; (2) those who speak English and those who do not; (3) those who live in technically well-established regions and those who do not; and (4) those who are technically savvy and those who are not.

## 2.2 Digital Divide: Indian Preview

India, a union of states, is the second most populous nation in the Asian region behind China. The country has achieved impressive progress in the field of science and technology and is emerging as one of the strongest economies in the developing world. Information and communication technologies have brought significant changes in development of the Indian society through information dissemination. In India, the benefits of IT are beginning to be seen and the impact of these benefits is creating a great change. It is also true that the use of digital technologies in the world has not only improved people's day-to-day life but it has also divided the world into information rich and information poor, *i.e.* the information haves and have-nots. The unequal access to information and communication technologies has led to a massive divide digitally. Although India has been one of the emerging super powers in IT, the benefits have been remarkably slow, particularly in rural and remote areas. Besides socio-economic factors, geographic, educational and attitudinal factors have been some of the challenges for the government when introducing IT-oriented programs. Although underserved communities in India are gaining access to computers and the Internet, their benefits are limited because of the factors namely, Political Instability, Infrastructural barriers, Literacy and skill barriers, Economic barriers, Content barriers, Linguistic Diversity<sup>[8-9]</sup>. One formidable obstacle to ICT diffusion is language. There is a self-perpetuating cultural hegemony associated with ICTs (Keniston, 2002). By the year 2000, only 20% of all Web sites in the world were in languages other than English, and most of these were in Japanese, German, French, Spanish, Portuguese, and Chinese. But in the larger regions of Africa, India, and south Asia, less than ten percent of people are English-literate while the rest, more than two billion, speak languages that are sparsely represented on the Web. Because of the language barrier the majority of people in these regions have little use for computers. Those who do not use computers have little means to drive market demands for computer applications in their language<sup>[8]</sup>

## 3. HYPOTHESIS

On the basis of above review of literature following hypothesis was framed for the study:

Following are the factors responsible for the regional Digital Divide:

- i) Internet Access
- ii) Unawareness of the ICT programmes and the advances in technology
- iii) Linguistic Diversity
- iv) Internet Cost

## 4. METHODOLOGY FOR DATA COLLECTION

The objective of the pilot study was to elicit through questionnaires and interviews the major barriers to the use of internet. Convenient sampling was used to collect data for the pilot study, some people were chosen from rural areas and some from the urban areas of Jammu. Interviews and questionnaires and were used as tools to extract the required data. The survey included questions on telephone service, household income, race, age, educational attainment, geographic region, language preferred to read and write computer ownership; access to technical resources, interest in obtaining access, and attitudes toward technology. Location of internet access and reasons for using the Internet information needs and the way in which people use information were also studied.

## 5. GENERATION OF SCALE ITEMS

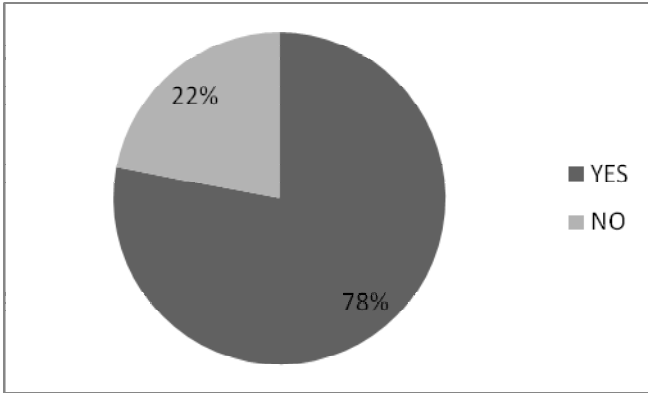
The questionnaire was designed after intensive literature review. Questions were based on the problems studied in the literature<sup>[1-7]</sup> such as availability of resources (telephone, computer, internet etc) at home and office, internet access after school/office, awareness of e-services, availability of internet access points such as Community Information Centers (CICs) and Cyber Cafés, knowledge of e-services, problems faced in using the internet etc. The questionnaire consisted of 35 questions out of which 11 were of demographic profile and in the rest of questions the respondents were requested to select the response that best indicated their answer on each statement, using a five point Likert scale where 1=Strongly Agree, 2=Agree, 3=Indifferent, 4=DisAgree, 5=Strongly Disagree. Sample Size for the Pilot study was conveniently taken as fifty. The questionnaire is shown in the appendix.

## 6. DATA ANALYSIS

The pilot survey was conducted to study the factors responsible for the digital divide in Jammu and Kashmir. Other observations made during data analysis include division in the usage of ICTs along the line of Gender, education and age. The details about the various digital divide factors studied in the literature were found to be:

### 6.1 INTERNET ACCESS

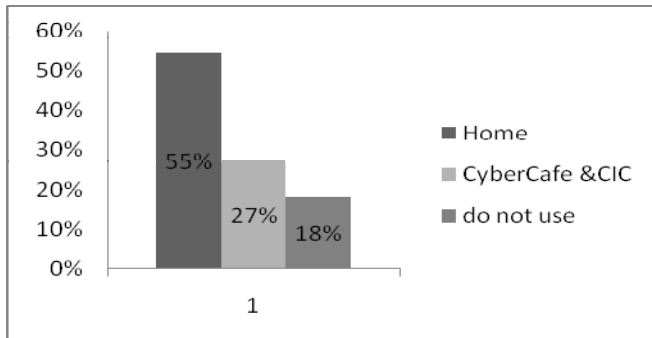
Workplace (office, school, college etc) was found to be the most common place for internet access. Most offices and schools provide internet (broadband) access; therefore people indulge in internet activities at work, only 22% of the respondents did not have internet facility at work.



**Figure1: Availability of Internet Connection at Workplace**

It was calculated that the respondents who did not have internet provision at work either used internet at home or visited a cyber café. Out of these respondents, 55% had internet connection at home, 27% visited cyber café, and 18% respondents had never used internet. Respondents who had never used the internet quoted that there was no need for them to use it .i.e. they were not aware of the activities they could be engaged with on the internet.

The mean value for the Access Factor as a digital dividend has arrived at 1.59, indicating it to be another factor responsible for the digital divide ( $t = 1.076, p > .05$ ).



**Figure2: Internet usage Options for those without internet access at work place**

**6.2 AWARENESS OF GOVT.INITIATIVES**

The role of e-Government generally refers to the delivery and administration of Government products and services over an IT infrastructure, such as the provision of information electronically using Internet portals, online tax assessment and electronic voting. The J&K state government is disseminating information online via various websites such as jkpsc.com, jmc.nic.in, jandk.bsnl.co.in etc. Banks also have their own websites to deliver information and services. Government has also opened up Community Information Centers (CICs) and common Service Centers (CSCs) to provide internet access to the people.

**6.2.1 Community Information Centers (CICs)**

The Government of J&K has opened up 135 Community Information Centers (CICs) in various locations for internet access at nominal rates. The CICs provide some basic services that include internet browsing, e-mail, printing, data entry, word processing and training for the local populace on the fundamentals of computers. Some or all of these services are provided by all CICs. In addition, a large number of CICs offer several services with a G2C orientation. Services offered by CICs may be classified into five main categories, namely:

1. IT education and training
2. E-mail and internet access
3. Information dissemination
4. Citizen-centric applications
5. Entertainment and news [10]

**6.2.2 Common Service Centers/ Khidmat Centers (CSCs)**

Common Service Centers/ Khidmat Centers are centers opened by Jammu & Kashmir bank to avail all basic banking services offered it. They help the bank to deliver core banking services to the people at their door-step while bringing more and more public spaces within the fold of formal financial channels. Besides, these centers create employment at grass-root level and throw opportunities for youth, particularly from rural areas [11]. Calculations show that only 32% of the respondents were aware of these facilities and only 10% had visited them. It is now clear that government is taking initiatives to provide internet access to people, indicating that awareness of the government initiatives is a major obstacle towards bridging the digital divide. Government must frame policies to make people aware of such initiatives, so that these efforts show good results. The fundamental problem of extending access to all in a society and all geographic areas still remains. There is a need to open more of such centers to increase the access rate.

The mean value for the awareness parameter has arrived at 2.86 on the five point scale, which reflects that awareness is causing digital divide. The hypothesis also stands accepted as there is no difference in expected and observed value ( $t = 1.206, p > .05$ ).

**6.3 Cost**

Significant changes have taken place in the telecommunications policy and market in India in the last few years. Favorable government policies and lower costs have created a platform for rapid growth. This boom in the telecommunication industry has lead to a drop in the communication costs. Telephone and internet today are affordable, yet the mean value for cost as a digital dividend has arrived at 2.70. The hypothesis again stands accepted as there is no difference in expected and observed value ( $t = .559, p > .05$ ).

**6.4 Language**

Language is the primary vector for communication. Less than 5 percent of people can either read or write English (Census 2001). Only a small, rich, successful and English speaking minority in India is ‘connected’. Lack of English language proficiency has created a ‘computer fear’. On discussing issues relating to use of e-services, most respondents mentioned language issues. In spite of the availability of all the information online, people visit government office to seek information. The lack of software and instructions in minority languages also presents a huge barrier to ICT adoption. The mean value for language as a dividend influencing the digital divide has arrived at 2.22. The hypothesis also stands accepted as there is no difference in expected and observed value (t 1.532, p > .05).

**6.4 Descriptive Statistics**

Mean Score of Access, Awareness, Cost and Language			
	N	Mean	Std. Deviation
ACCESS	50	1.5892	.58610
AWARENESS	50	2.8552	.92766
COST	50	2.7000	1.26572
LANGUAGE	50	2.2196	1.01376

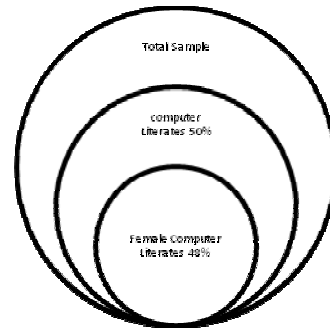
**Figure3: Shows the Factors Responsible For The Digital Divide**

**7. OTHER OBSERVATIONS:**

Some other observations that were made during the pilot survey are discussed below:

**1. Qualification** has a major contribution in the usage of internet. It was observed that most users of e-services (such as e-billing, e-shopping, e-ticketing etc) were professionals or technically educated. They believe online activities save time and are also hassle free. Other respondents mostly indulged in entertainment activities such as chatting, downloading music, surfing etc. They were hesitant to use services that required monetary transactions due to lack of trust.

**2. Gender** has no significant contribution to the digital divide. There is no gendered difference in the usage of computers. On data analysis, it was noticed that the 50 families questioned, consisted of a total of 227 people, of these 114 i.e. 50.2% had knowledge of computers, 50 out of 114 were females accounting to 48.9% of the computer literates.



**Figure3 : Female computer users**

**3. Activities** done online differ by age and also by profession. People of different age groups indulge in different activities online. Most Common online activities include Emailing, chatting, music/movie download, games and social network, matrimony and search engines. E-Services that included monetary transactions are used mainly by professionals. Activities also differ from region to region.

The following table shows the ranking of internet activities in rural and urban areas.

Area Wise Preference of Internet Service		
Internet Service	Urban Area	Rural Area
Email	1	2
Chat	4	5
Music/Movie Download	5	3
Games	6	4
Shopping	8	8
Information Seeking	2	1
Social network	3	6
Matrimony	7	7

**Figure 4: Shows the Ranking of Internet Services**

**8. DISCUSSION AND CONCLUSION:**

The digital divide is a multifaceted problem. This paper reports on the factors responsible for the digital divide, according to a pilot survey conducted in J&K. Much of the digital divide effort is focused on extending telecommunication infrastructure and supplying terminals to users. However, illiteracy and a lack of communication and IT skills are major components of the digital divide and must be considered and addressed alongside efforts to expand the physical network. The factors found in the study are found to be similar to those in the literature review. Many initiatives have been taken to provide internet access; costs have also been cut-down to make ICTs affordable. Attempts have been made to make the web language free, yet the digital divide remains. We need to develop models of collaboration among researchers, social scientists, technologists, etc. so that local requirements are met in a technology innovation.

## LIMITATIONS AND FUTURE SCOPE

It is necessary to recognize the limitations of the current study. One limitation is the small sample size. To examine the digital divide factors accurately, a larger sample is desirable. Another limitation is the convenient sampling method used. Future research needs to focus on larger cross section of internet users by employing more diversified samples.

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## APPENDIX A-LIST OF FIGURES

Fig1 shows the percentage wise availability of Internet Connection at Workplace and confirms that internet is mostly used at workplace.

Fig2 shows Internet usage Options (home, CIC, cybercafé) for those without internet access at work place.

Fig3 shows the female computer users accounting to 49% of the computer literates in the sample.

## APPENDIX B-LIST OF TABLES

Table 1 shows the descriptive statistics i.e. the mean score of the digital divide factors (Access, Awareness, Cost and Language).

Table 2 shows the area wise (Rural/Urban) ranking of Internet Services.

## APPENDIX C-QUESTIONNAIRE USED IN THE PILOT SURVEY

The Questionnaire used for the pilot survey is given below:

**QUESTIONNAIRE**

Dear Sir/Madam,

This survey would help us in knowing the reasons for lack of usage of computers in Jammu and Kashmir. Your response together with our assessment will enable us to develop methods for ease in use of computers. I need not stress that frankness will be of great value in this regard. There is no need to disclose your identity. If any points are not covered in this, kindly add the same towards the end. Each question has five options: SA-Strongly Agree, A-Agree, I-Indifferent, D-Disagree, SD-Strongly Disagree. Please mark your answers accordingly.

1. Name(Optional): \_\_\_\_\_
2. Place \_\_\_\_\_
3. Age \_\_\_\_\_
4. Sex:  M  F
5. Qualification  Below Metric  Above Metric  Graduate  
 Postgraduate  Any Other
6. Computer Education  Yes  No
7. Profession \_\_\_\_\_
8. Religion  Hindu  Muslim  Sikh  Christian  Other
9. Monthly Income in rupees  
 Below Rs 5000  
 Below Rs 10,000  
 below Rs 20,000  
 below Rs 30,000  
 below Rs 40,000  
 above Rs 40,000
10. No. of Family members  2  3  4  More than 4
11. How many people in your family have knowledge about  
Computers \_\_\_\_\_ out of which how many are girls \_\_\_\_\_

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12. Which language do you prefer to read/write?  
 English  Hindi  Urdu  Other \_\_\_\_\_

13. Do you own a telephone?  No  Fixed line  Mobile  Both

14. Do you own a computer?  No  Desktop  Laptop  Both

15. Do you own an Internet Connection?  
 No  DSL  BROADBAND  USB  WIRELESS

16. Do you use  
 a) Computer  Yes  No  
 b) Internet  Yes  No

17. How often do use internet?  Daily  Weekly  Twice a Week  Monthly  Never

18. Does your school /office provide Internet Access?  Yes  No

19. Where do you avail internet after school/office  
 At home  Friend/relatives home  Community Information Center  Cybercafé

20. Is there any cyber café in your town?  Yes  No  Don't Know  
 If yes, have you ever visited it  Yes  No

21. You are aware that Govt. provides Internet facility in Community Information Centers at nominal rates  SA  A  I  D  SD

22. You often use computer after school/office hours  SA  A  I  D  SD

23. You use computer for  
 a) Word Processing & Spreadsheets  SA  A  I  D  SD  
 b) Presentations  SA  A  I  D  SD  
 c) Games  SA  A  I  D  SD  
 d) Music & Movies  SA  A  I  D  SD

e) Internet  SA  A  I  D  SD

f) Academics  SA  A  I  D  SD

g) Data storage  SA  A  I  D  SD

h) Business Applications  SA  A  I  D  SD

i) Other Activities(please Specify) \_\_\_\_\_

24. You use internet for  
 a) Job Search  SA  A  I  D  SD  
 b) Email & Chatting  SA  A  I  D  SD  
 c) Banking  SA  A  I  D  SD  
 d) Music & Video Download  SA  A  I  D  SD  
 e) Submitting Bills  SA  A  I  D  SD  
 f) Matrimony  SA  A  I  D  SD  
 g) Academics & Research  SA  A  I  D  SD  
 h) Surfing  SA  A  I  D  SD  
 i) Other activities(Please Specify) \_\_\_\_\_

25. The information available online is trustworthy  SA  A  I  D  SD

26. You prefer using e-services than visiting the service provider  
 SA  A  I  D  SD Please Reason \_\_\_\_\_

27. You would prefer to use computers and internet if available in the language of your choice language  SA  A  I  D  SD

28. If Govt.Websites are multilingual(I.e. choice of preferred language),they will be useful to all; leading to an increase in no of users  SA  A  I  D  SD

29. You are aware of the availability of MSOFFICE in Hindi  SA  A  I  D  SD

30. You are aware of the availability of MSOFFICE in Urdu  SA  A  I  D  SD