

To Study The Impact of Information and Communication Technology Tools on Society of Hilly and Rural Area of Bhore Taluka, District- Pune, Maharashtra

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Abstract— This paper deals with the implications of Information and Communication Technology Tools on Society of Hilly and Rural area of Bhore Taluka of district Pune, Maharashtra, India. With the advent of Information and Communication Technology and its Tools, it has become possible for common man to connect, communicate and access global information. Information and Communication Technology provides better, faster and robust communication and has capability to connect the rural community with main stream of universe. Geographical boundary of this study is Bhore taluka (Tahsil) of Pune district of Maharashtra, India. Investigator has adopted survey based methodology to conduct the study and the questionnaire technique was used for data collection. The study revealed that the awareness of ICT and its Tools among the hilly and rural population of Bhore Tahsil is now growing and has positive impact on their livelihood especially on Education sector.

Keywords-ICT; CSC; BLIS

I. INTRODUCTION

Information and communication Technology (ICT) is the combination of three magic revolutionary words, 'Information', 'Communication' and 'Technology'. 'Information' is disseminating and promoted using 'Communication' and transmitted through 'Technology'. Information refers to the knowledge obtained from reading, investigation, study or research. We need information to make decisions and to predict the future. Information is knowledge and helps us to fulfill our daily needs and tasks.

ICT, ICT Tools (the Internet, Mobile Phones, Computer) and ICT enabled Services plays a significant role not only in dissemination of Information but also in Rural Development, poverty reduction, improving employment generation, advanced techno based agriculture, entrepreneurial activity, marketing opportunities, accessed to better education and training, health challenges and medical information, women's empowerment and good governance, resolving mechanism for different community issues, e-commerce, job opportunities, etc in rural area.

II. OBJECTIVES OF THE STUDY

1. To obtain information about various forms of ICT and its Tools.
2. To study awareness of ICT among the peoples in hilly and rural area of Bhore Tahsil.
3. To investigate existing usages of technology or ICT based tools in hilly and rural area.
4. To find out different Hurdles or obstacles to use and implement ICT based technology in hilly and rural area.

III. REVIEW OF LITERATURE

The review of past investigations in particular study area gives guidelines to the investigator in that area and can help the researcher to formulate a sound research design and appropriate tools for the successful completion of the study. The

Information and Communication Technology consists of hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information in the form of voice, data, text and images [1].

Manish Kumar et al were made a study to identify the information source of rural poor in U S. Nagar district of Uttaranchal and stated that "India is on the way to become a super power in the information technology". The main aim of this paper was to discuss the information sources of rural poor regarding development issues [2].

The main source to access information is from Block Level Information Systems (BLIS) and it is highly useful in the development process. This article focuses on the sources, uses and services which may be offered by the BLIS to the rural population [3].

New information technologies can provide enormous possibilities in agriculture and Rural Development sector. Moreover the use of these technologies needs to be planned very accurately at the village level [4].

ICT can reduce poverty by improving poor people's access to education, health, government and financial services. ICT can empower the poor by expanding the use of government services [5].

The Modern ICT facilities can contribute to resolving the problems of a rural society of India and the major obstacle which has prevented rural areas from benefiting fully from the great potential of ICT is the low penetration of telecommunication services. The rural community and individuals need to be empowered by enhancing their capacity to access, select and use information for development efforts, whether they relate to literacy, food, health and family welfare, population growth, environment, trade employment, etc [6].

ICT opens huge opportunities and possibilities to access information source and ICT based services for rural India and other developing countries. The modern technologies being developed and can help to crossing barriers present in providing information resources at a low cost and make applications feasible and profitable [7].

ICTs can reduce poverty by improving poor people's access to education, health, government and financial services. In India, combine or individuals efforts made by the Government and some non Government organisation or private organisation to established ICT projects in rural area to provide services to the rural people but these ICT projects are not successful implemented in grass root level due to variations in geographical area or have not been successful in reaching to every one of the society [8].

Another study was carried out in Madhya Pradesh by Sharma in 2007 to find out information needs and sharing pattern among rural women with the principal objective is to find information needs of the rural women community of Gwalior districts of Madhya Pradesh and to find out the nature, sources and purpose of information, which they required and analyzing the time and money spent for gathering most reliable sources of information. Analysis of data reveals that 93.7% women are getting information through television and 35.17 percent of the women under study are consulting religious leaders for their information needs. Moreover 81.37 percent respondents share information with their family members and all women are familiar with telephone while only 33.79 percent women used Tele phone facility, and 2.75 percent rural women are familiar with internet [9].

The economic and social benefit of mobile telephony will be highest in rural areas, which currently have limited or less telephony services the induction of mobile phones does have a positive impact on sustainable poverty alleviation [10].

Mobile connectivity has tremendous potential to transform rural India. The Mobile connectivity can improve rural productivity, reduce dependence and can ensure that rural schemes actually meet to their planed benefits and thus sustainable growth for our country is possible [11].

Mobiles are being used by the farmers to increase productivity in agriculture and to leverage the full potential of information dissemination enabled by mobile telephony will require significant improvements in supporting infrastructure and capacity building amongst farmers to enable them to use the information they access effectively [12].

ICT have empowered rural people and transformed livelihoods in agriculture by filling information gaps, raising awareness, building skills and extending social networks [13].

Another study was conducted by Leisa Armstrong and N. Gandhi in 2012 in Ratnagiri district of rural villages of Maharashtra, India to investigate the factors influencing the use of ICT Tools by the farmers. To carry out the study investigator used a questionnaire and interviews techniques to collect the data. 100 respondents were selected randomly from the farmers from one Tehsil Ratnagiri district and key stakeholders government officials and agricultural industry workers. Two different questionnaires were provided to farmers and key stakeholders and found that rural farmers of Ratnagiri district still not been adopted ICT fully and there is a massive opportunity to enhance the broadcasting of agricultural related information that farmers receives from government officers, fellow farmers and relatives. Most of the farmers were used TV and mobile phone to collect agricultural related information. Moreover the factors constraining the dissemination of ICT in Ratnagiri District such as the gap between the currently used technology and the technology preference and also the factors such as gender and land ownership did not significantly affect the use of ICT tools and also effective use of technology is a necessary prerequisite for the successful use of ICT by the farmers [14].

Jayade, K. G et al. (2014) [12] published an article entitled as "Study of Information Communication Technology in Agriculture in Vidarbha Region of Maharashtra State of India." In this paper the authors discussed ICT facilities used by the organisations such as government organisations, NGOs, Private Organisations in Vidarbha region of Maharashtra State of India and concluded that ICT is advanced tools to disseminate the modern agricultural knowledge to the farmers and it plays an important role for the development of economy by enhancing the effectiveness of agricultural market, productivity and competitiveness in Vidarbha region of Maharashtra state.

IV. UNIVERSE OF THE STUDY

Geographical boundary of this study is Bhore taluka (Tahsil). Bhore is a sub district (Tahsil or Taluka) in the Pune district of Maharashtra state, India. (Taluka is a subunit of the district). Bhore Taluka is very hilly and rural region and is towards the west of Pune, having Latitude 18.0691768 and Longitude 73.8512081 and has an area 910 square miles. It has an average elevation of 588 meters (1929 feet). The entire Taluka is surrounded by the huge and biggest mountain ranges of Sahyadri in Maharashtra. Most of the area is covered with forest and it receives heavy rainfall. It has 195 villages and as per 2011 census Bhore Tahsil had a population of 1, 86,116 of this about 18,453 people are living in the urban (towns and cities) area and about 1, 67,663 are living in villages (rural areas). Literates are 134,756 of which males are 74,999 and Females are 59,757. There are 51,360 Illiterates. [15] Agriculture is the main occupation of majority of the peoples and main crops are rice, Jawari and vegetables.

V. METHODOLOGY

The survey method was used to conduct the study and questionnaire technique was used for data collection for fulfilling the objectives of the study. There are five separate questionnaires were prepared in both Marathi and English language and circulated to total 250 respondents of five different category of the respondents such as Teacher, Student, Businessmen, Government employees and Farmer. Total 250 questionnaires were distributed randomly with equal proportion of the respondents among the five categories such as Teacher, Student, Businessmen, Government employees and Farmer in such way that each category has 50 respondents.

Respondents were selected on the basis of Simple random sampling method to ensure representative picture from rural and hilly Bhore Tahsil. The data collected through questionnaires was organised and tabulated using simple statistical method, tables and percentage. The table and graphs were generated using MS-EXCEL 2007.

VI. SCOPE AND LIMITATION

The scope of the present study is limited to hilly and rural population of Bhore Tahsil of Pune district, Maharashtra. The study was involving only five different strata's of the society namely Teacher, Student, Businessmen, Government Employee and Farmer therefore it is not projectable to the entire population of the region. Furthermore the data collected was based on a small number of respondents (N=250) i.e. 50 respondents of each of the Five category. Hence the result of the study cannot apply to all the tahsils of Pune District of Maharashtra state.

VII. DATA ANALYSIS

TABLE 1 GENDER WISE CLASSIFICATION OF FIVE DIFFERENT GROUPS OF RESPONDENTS

Gender	Business men	Teacher	Student	Gov. Emp.	Farmer
Male	44 (88%)	37 (74%)	35 (70%)	37 (74%)	50 (100%)
Female	06 (12%)	13 (26%)	15 (30%)	13 (26%)	0 (0%)
Total	50 (100%)	50 (100%)	50 (100%)	50 (100%)	50 (100%)

Table 1 shows the gender wise classification of the Respondents. In the category of Businessmen 44 (88%) respondents are Male and 6 (12%) are Female whereas in Teacher category 37 (74%) respondents are Male and 13 (26%) are Female. Furthermore in Student category of the respondents 35 (70%) are Male and 15 (30%) are Female. In the Category of Government Employee 37 (74%) of the respondents are Male and 13 (26%) are Female whereas In Farmer category all respondents are Male 50 (100%).

TABLE 2 AGE WISE CLASSIFICATION OF FIVE DIFFERENT GROUPS OF RESPONDENT

Age Group	Businessmen	Teacher	Student	Gov. Emp.	Farmer
below 20	0%	0%	80%	0%	0%
20-30	10%	2%	20%	36%	2%
30-40	56%	34%	0%	36%	30%
40-50	26%	60%	0%	24%	48%
50-60	8%	4%	0%	4%	20%
Total	100%	100%	100%	100%	100%

It is apparent from Table 2 is that highest 56% of the Businessmen respondents of are of age group 30-40 and 60% of the Teacher respondents of age group 40-50. While 80% of the Student Respondents are below 20 age group and 36 % of the Government Employee respondents are from age group 20-30 and 30-40. Furthermore 48% of Farmer respondents are of Age Group 40-50.

TABLE 3 AWARENESS OF ICT, ICT TOOLS AND ICT POLICIES AMONG THE RESPONDENTS

Respondents categories	ICT	ICT Tools	National ICT policy	State ICT policy
Businessmen	41 (82%)	42 (84%)	10 (20%)	11 (22%)
Teacher	48 (96%)	47 (94%)	27 (54%)	27 (54%)
Student	48 (96%)	19 (38%)	21 (42%)	47 (94%)
Gov. Emp.	44 (88%)	42 (84%)	10 (20%)	11 (22%)
Farmer	37 (74%)	33 (66%)	12 (24%)	13 (26%)

It reveal from the Table 3 is that the highest, 48 (96%) of the Teacher and Students group of Respondents has greater awareness of ICT followed by Government Employee 44 (88%) and Businessmen 41 (82%), Farmer 37 (74%).

Moreover 47 (94%) of the Teacher respondents are aware with ICT Tools followed by Government Employees and

Businessmen 42 (84%). Whereas only 32 (64%) Farmer and 19 (38%) Student’s respondents have awareness about ICT Tools.

Furthermore the awareness of State and National ICT policies of the Government is grater in Teacher (National and State- 54%) and Student (National- 42%, State- 94%) respondents as compared to other category of the respondents.

TABLE 4 MEDIUM OF COMMUNICATION USED BY FIVE DIFFERENT CATEGORIES OF RESPONDENTS TO GATHER BASIC INFORMATION

Medium of communication	Business men	Teacher	Student	Gov. Emp.	Farmer
Through friends	12 (24%)	24 (48%)	30 (60%)	22 (44%)	30 (60%)
Through News Paper	45 (90%)	40 (80%)	37 (74%)	36 (72%)	45 (90%)
Through Internet	30 (60%)	22 (44%)	27 (34%)	34 (68%)	18 (36%)
Through Mobile	39 (78%)	31 (62%)	22 (44%)	36 (72%)	32 (64%)

Table 4 shows that the Majority of the respondents of all categories gather information through traditional ICT Tool or print media such as News Paper and followed by through the modern ICTs such as Mobile in their day to day activity.

It is revealed from Table the highest 39 (78%) of the Businessmen respondents gathered basic information through Mobile and followed by through Internet 30 (60%). Moreover 31 (62%) of the **Teacher respondents** were gathered basic information through Mobile and 22 (44 %) through Internet whereas 30 (60%) of **Student Respondents** gather basic information through Friends and 22 (44%) through Mobile while 17 (34%) through the Internet

Whereas the highest 36 (72%) of the Government Employee respondents of the gather information through Mobile and through the News paper and then 34 (68%) through the Internet while 45 (90%) Farmer respondents gather the basic information through the Newspaper followed by through Mobile Phones 32 (64%).

TABLE 5 ICT BASED TOOLS USED BY BUSINESSMEN VS AGE GROUP

ICT Tools Vs Age Group	Age Group		Percentage	
	20-40	40-60	20-40	40-60
Smart Phone	31	16	94%	94%
Internet	29	9	88%	53%
Computer	27	8	82%	47%
Storage devices	21	3	64%	18%
TV	19	12	58%	71%
News Paper	17	11	52%	65%
Social Media	14	5	42%	29%
Radio	10	7	30%	41%
LCD Projector	2	0	6%	0%
Others	1	0	3%	0%

Out of 50 selected Businessmen respondents, 33 (66%) are of the age group 20 to 40 whereas 17 (34%) are of the age group 40-60.

It is apparent from Table 5 is that the Mobile Phone and the Internet is the most useable ICT Tools in both the age group 20-40 and 40-60 of the Businessmen respondents and has equal percentage (94%) to use Smart Phone in Business whereas 88% of the 20-40 and 53% of the 40-60 age group of respondents used ICT Tool such as the Internet. Moreover 82% of the 20-40 and 47% of the 40-60 age group respondents use Computer in business while 64% of the 20-40 age and only 18% of 40-60 age group of the respondents uses Storage Devices.

Further More 42% of the 20-40 age and 29% of the 40-60 age group of respondents uses Social Media in business whereas the use of Traditional ICT Tool such as News Paper, TV and Radio in age group 40-60 of the respondents is more as compared to early age group of respondents.

TABLE 6 USAGE OF ICT TOOLS IN BUSINESS VS AGE GROUP

Usage of ICT Tools Vs Age Group	Age Group		Percentage	
	20-40	40-60	20-40	40-60
Use of ICT Tools saves time and cost	33	17	100%	100%
Use of ICT Tools is important for your day to day business	31	14	94%	82%
Use ICT tools in day to day business	27	13	82%	76%
Use software for your business	23	8	70%	47%
Use of ICT tools for Business advertisement & Marketing	21	5	64%	29%

It is apparent from Table 6 is that Almost both the age group 20-40 (100%) and 40-60 (100%) of the respondents stated that use of ICT and its Tools saves time and cost while 94% of the 20-40 age and 82% of the 40-60 age group of the respondents told that use of ICT Tools is very important in day to day business. Furthermore 82% of the 20-40 and 76% of the 40-60 age groups of the respondents use ICT Tools in Business daily.

However 70% of the 20-40 and 47% of the 40-60 age groups of the respondents uses Software in Business. Moreover 64% of the 20-40 age and only 29% of the 40-60 age group of the respondents use ICT Tools for advertising or marketing of products.

TABLE 7 AWARENESS OF E-COMMERCE AMONG THE BUSINESSMEN RESPONDENTS

Awareness of e-commerce	No. of Businessmen
Yes	29 (58%)
No	21 (42%)
Total	50 (100%)

It is apparent from Table 7 is that 29 (58%) of the Businessmen respondents have awareness of e-Commerce whereas 21 (42%) of the respondents does not have awareness of e-Commerce.

TABLE 8 ICT TOOLS AND BUSINESS VS AGE GROUP

ICT Tools and Business Vs Age Group	Age Group		Percentage	
	20-40	40-60	20-40	40-60
Use of ICT and its Tools in your business increases Quality of services	30	15	91%	88%
Use facility online line banking or mobile banking	21	7	64%	41%
Accept bank cards (Credit/Debit) for billing	13	3	39%	18%
Accept online order from Customers	7	2	21%	12%

It is apparent from Table 8 is that 91% of the 20-40 and 88% of the 40-60 age group of the Businessmen respondents told that use of ICT and its Tools in business increases quality of services and developing good relationship with customers.

Moreover to use facility of online Banking or Mobile banking through ICT Tools like Computer, Internet, Mobile or Smart Phone 20-40 age group (64%) is leading by 19% from 40-60 age groups of the respondents (41%) Whereas only 39% of the 20-40 and 18% of the 40-60 age group of the respondents accept credit or Debit cards for billing. Furthermore only 21% of the 20-40 and 12% of the 40-60 age groups of Businessmen respondents accept and process online orders from customers.

TABLE 9 NO. OF ALL CATEGORY RESPONDENTS KNOW ABOUT MAHA-E-SEVA AND SANGRAM KENDRA

Respondents	e-Governance Services	Know	No. of Businessmen	%
Business	Maha-e-Seva	Yes	35	70%
		No	15	30%
		Total	50	100%
	SANGRAM	Yes	22	44%
		No	28	56%
Total		50	100%	
Teacher	Maha-e-Seva	Yes	43	86%
		No	07	14%
		Total	50	100%
	SANGRAM	Yes	36	72%
		No	14	28%
Total		50	100%	
Student	Maha-e-Seva	Yes	23	46%
		No	27	54%
		Total	50	100%
	SANGRAM	Yes	29	58%
		No	21	42%
Total		50	100%	
Government Employee	Maha-e-Seva	Yes	40	80%
		No	10	20%
		Total	50	100%
	SANGRAM	Yes	28	56%

		No	22	44%
		Total	50	100%
Farmer	Maha-e-Seva	Yes	32	64%
		No	18	36%
		Total	50	100%
	SANGRAM	Yes	27	54%
		No	23	46%
		Total	50	100%

It is apparent from Table 9 is that 35 (70%) of the Businessmen, 43 (86%) of the Teacher, 23 (46%) of the Student, 40 (80%) of the Government Employees, 32 (64%) of the Farmer Respondents know about Maha-e-Seva Kendra.

Whereas 15 (30%) of the Businessmen, 07 (14%) of the Teacher, 27 (54%) of the Student, 10 (20%) of the Government Employees, 18 (36%) of the Farmer Respondents are do not Know about it or they were not approach to Maha-e-Seva Kendra.

Moreover 22 (44%) of the Businessmen, 36 (72%) of the Teacher, 29 (58%) of the Student, 28 (56%) of the Government Employees and 27 (54%) of the Farmer respondents know about SANGRAM Kendra whereas 28 (56%) of the Businessmen 28 (56%), 14 (28%) of the Teacher, 21 (42%) of the Student, 22 (44%) of the Government Employees and 23 (46%) of the Farmer Respondents does not know about it or they were not approach to SANGRAM Kendra.

TABLE 10 HURDLES OR OBSTACLES FACED BY BUSINESSMEN DURING THE USE OF ICT BASED TOOLS

ICT Hurdles or obstacles during the use of ICT based Tools	No. of Businessmen Respondents	Percentage
Urban-rural digital divide	29	58%
Frequent Electricity Cut	28	56%
Not getting Proper connectivity	26	52%
Lack of ICTs skills	22	44%
Costly connectivity	19	38%
Poor telecomm. infrastructure	15	30%
Costly equipment	7	14%
Lack of basic education	6	12%
Out dated equipment	3	6%

It is apparent from Table 10 is that 29 (58%) of the Businessmen respondents told that they faced hurdles of urban-rural digital divide followed by 28 (56%) were faced hurdles of Frequent electricity cut. Moreover 26 (52%) of the respondents were faced hurdles of connectivity of Internet and Mobile range.

Furthermore 22 (44%) and 19 (38%) of the respondents were faced hurdles of Lack of ICT skills and Costly connectivity of the Internet respectively while 15 (30%) of the respondents faced hurdles of Poor Telecommunications Infrastructure. While 07 (14%), 6 (12%) and 03 (06%) of the respondents facing hurdles of Costly Equipment, Lack of basic education and Outdated Equipments respectively during the use of ICT based Tools.

TABLE 11 ICT TOOLS USED BY TEACHERS IN TEACHING Vs AGE GROUP

ICT tools used by Teacher Respondents Vs Age Group	20-40	40-60	20-40 (In %)	40-60 (In %)
Computer	17	24	94%	75%
Storage devices	13	22	72%	69%
Radio	12	19	67%	59%
News Paper	12	21	67%	66%
LCD Projector	10	21	56%	66%
Smart Phone	8	17	44%	53%
TV	8	11	44%	34%
Internet	6	12	33%	38%
Social Media	4	7	22%	22%
None	1	0	6%	0%
Others	1	4	6%	13%

Out of 50 selected Teacher respondents, 18 (36%) were of age group 20-40 and 32 (64%) were of age group 40-60.

It is seen from Table 11 is that 94% of the 20-40 and 75% of the 40-60 age group of Teachers respondents usages ICT Tool Computer in teaching while 72% of the respondents from 20-40 and 69% of the 40-60 age group used various Storage devices. Moreover the percentage of both the age group of the respondents is nearly equal to use of traditional ICTs such as Radio, News Paper in teaching.

On the other hand to use of Mobile or Smart phone in teaching 40-60 age groups of the respondents (53%) are leading by 9% from 20-40 age groups of the Teacher respondents. The use of the Internet in Teaching is very less in both the age group of the respondents.

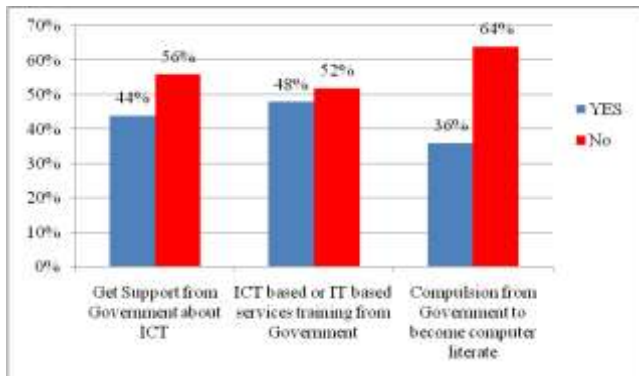
TABLE 12 USE OF ICT AND ITS TOOLS IN HILLY AND RURAL AREA

Use of ICT and its Tools	No. of Teacher Respondents who say Yes	Percentage
supported extensively in modernization	50	100%
development of Hilly and rural area	50	100%
helpful in development of social awareness	50	100%
an impact on social development	50	100%
affected social values and culture	39	78%

Table 12 shows the percentage of respondents who says 'Yes'. It revealed from the Table 12 is that almost all the Teacher Respondents 50 (100%) told that ICT and its Tools has supported for extensively modernization; and can be effectively used for development of Hilly and Rural area; helpful increasing social awareness; an impact on social development whereas 39 (78%) of the respondents told that ICT and its

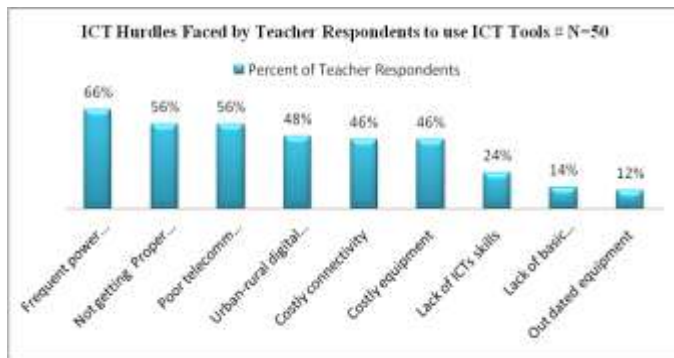
Tools has affected social values and culture in rural and hilly area of Bhor Tahsil.

Figure 1. Government supports towards ICT and Teacher



It seen from Fig. 1 that 56% of the Teacher respondents told that they do not get support from the Government about successful implementation of ICT in schools whereas only 48% of the respondents getting ICT based or IT based services training from Government. Moreover 36% of the respondents told that they have compulsion to become Computer literate.

Figure 2. Hurdles Faced by Teacher Respondents to use ICT Tools



It is apparent from Fig. 2 is that 66% of the Teacher respondents faced hurdles of Frequent Power Problems, 56% were faced hurdles of not getting proper connectivity of Internet and Mobile Range and Poor Telecommunication infrastructure, Moreover 48% are facing urban-rural digital divide. 46% were faced hurdles of costly equipment and costly connectivity whereas 24% and 12% were faced hurdles of Lack of ICT education and out dated equipment respectively.

Out of 50 selected Student respondents, 40 (80%) respondents were of age group 10 to 20 and 10 (20%) were of age group 20 to 30.

It is seen from Table 13 is that, 88% of the 10-20 and 80% of the 20-30 age group of the student respondents faced major Obstacles which prevent ICT Education in their School such as Lack of sufficient computer followed by 45% of the 10-20 and 40% of the 20-30 age group of the students told that less Time to be allocated for ICT subject in a day. Although 18% of the 10-20 age group of the Student told that, they do not have an expert ICT teacher in School.

TABLE 14 ICT BASED TOOLS USED BY STUDENTS VS AGE GROUP

ICT based Tools used by Students Vs Age group	Age Group		Percentage	
	10-20	20-30	10-20	20-30
Computer	37	10	93%	100%
News Paper	30	8	75%	80%
TV	27	10	68%	100%
Storage devices	25	9	63%	90%
Internet	21	9	53%	90%
Radio	18	6	45%	60%
Smart Phone	17	7	43%	70%
LCD Projector	12	3	30%	30%
Social Media	8	8	20%	80%
Others	2	2	5%	20%
None	0	0	0%	0%

It is apparent from Table 14 is that, almost 100% respondents of both the age group used ICT Tool Mobile or Smart Phone in their study. 80% of the 20-30 and 75% of the 10-20 age groups of the students told that they used computer. Moreover all the students of 20-30 age group (100%) and 68% from 10-20 age group used Internet. Furthermore 68% of the 20-30 age and 20% of the 10-20 age group of the student used storage devices such as educational CD, DVD, etc.

Figure 3. Hurdles Faced by Student Respondents during the use of ICT based Tools in Hilly and Rural Area

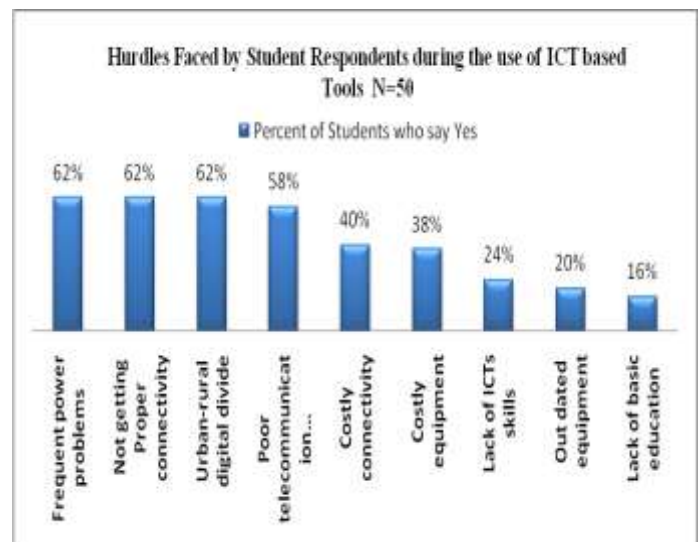


TABLE 13 MAJOR OBSTACLES FACED BY STUDENT RESPONDENTS IN SCHOOL THAT PREVENT ICT EDUCATION VS AGE GROUP

Major obstacle in school that prevent ICT Education effectively	Age Group		Percentage	
	10-20	20-30	10-20	20-30
Lack of sufficient computers	35	8	88%	80%
Lack of time	18	4	45%	40%
Lack of expert teachers	7	0	18%	0%
Lack of interest	0	1	0%	10%

It is seen from Fig. 3 is that 66% of the Student respondents faced hurdles of Frequent Power, whereas 62% faced hurdles of not getting proper connectivity of Internet and Mobile Range and urban- rural digital divide.

Moreover 58% were facing hurdles of Poor Telecommunication infrastructure. However 40% and 38% of the respondents faced hurdles of costly connectivity and costly equipment respectively whereas 24% and 20% of the respondents faced obstacle of Lack of ICT skills and out dated equipment respectively.

TABLE 15 ICT BASED TOOLS USED BY GOVERNMENT EMPLOYEES Vs AGE GROUP

ICT Tools used by Government Employees Vs Age Group	Age Group		Percentage	
	20-40	40-60	20-40	40-60
Computer	36	14	100%	100%
Internet	31	10	86%	71%
Smart Phone	25	4	69%	29%
Storage devices	25	8	69%	57%
News Paper	16	5	44%	36%
Social Media	15	3	42%	21%
TV	10	4	28%	29%
Radio	7	0	19%	0%
LCD Projector	4	1	11%	7%

Out of 50 selected respondents of the Government Employee 36 (72%) are of the age group 20 to 40 whereas 14 (28%) are of the age group 40-60.

It is apparent from Table 15 is that all the Government respondents 100% of both age groups are equally used ICT Tools Computer daily office operations while to use Internet 20-40 age group (86%) is leading by 15% from the 40-60 age group of the respondents. However 69% of the 20-40 and 29% of the 40-60 age groups were used Smart Phone. Moreover 69% of the 20-40e and 57% of the 40-60 age groups were used storage devices to store, analyze and process data.

Figure 4. Use of ICT and its Tools in Government Office



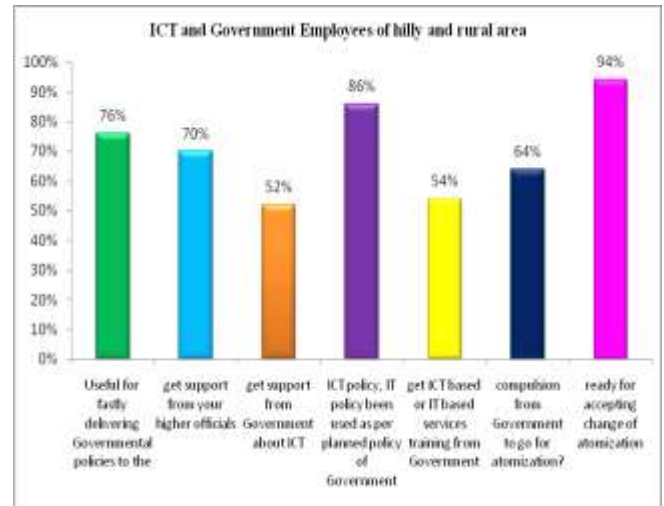
It is apparent from Fig. 4 is that all the Government Employee respondents (100%) stated that usages of ICT in Government offices which increases speed of delivery of the services to the citizens while 92% were told that it improved

Problem Resolution Mechanism of citizens as well as reduces the paper work.

While 96% of the respondents said that ICT based Tools are very useful for fastly searching the data as well as fast document handling whereas 94% sated that the use of ICT based Tools in offices were increased quality of services provided to the citizens and also increased clarity and transparency in governmental process.

However 90% and 88% of the respondents told that the usages of ICT based Tools helps in stress reduction.

Figure 5. ICT and Government Employees of hilly and rural area



It can be seen from Fig. 5 is that 94% of the Government Employee Respondents were ready to go for atomization while 86% were stated that they used ICT or IT policy as per planned policy of the Government. However 76% of the respondents told that ICT and its Tools are very useful for fastly delivering Government policies to the peoples of hilly and rural area whereas 70% of the respondents said that they get support from higher offices, 52% said that they are getting support from the Government about ICT.

Moreover 64% of the respondents stated that they have compulsion from Government to go for atomization while 54% of the respondents were getting ICT based or IT based services training from Government.

Table 16 Hurdles Faced by Government Employees during the use of ICT based Tools

Government Employees faced Hurdles or obstacles during the use of ICT Tools	No. of Government Employees	Percentage
Not getting Proper connectivity	36	72%
Poor telecommunication infrastructure	36	72%
Urban-rural digital divide	35	70%
Frequent power problems	32	64%
Lack of ICTs skills	28	56%
Costly equipment	23	46%
Costly connectivity	22	44%
Out dated equipment	15	30%
Lack of basic education	15	30%

It is apparent from Table 16 is that 72% of the Government Employee respondents faced hurdles of the Internet Connectivity; Mobile range and poor telecommunication infrastructure.

Moreover 70% of the respondents faced urban- rural digital divide, 64% were faced hurdles of Frequent Power Problems while 56% of the respondents faced hurdles of lack of ICT Skills.

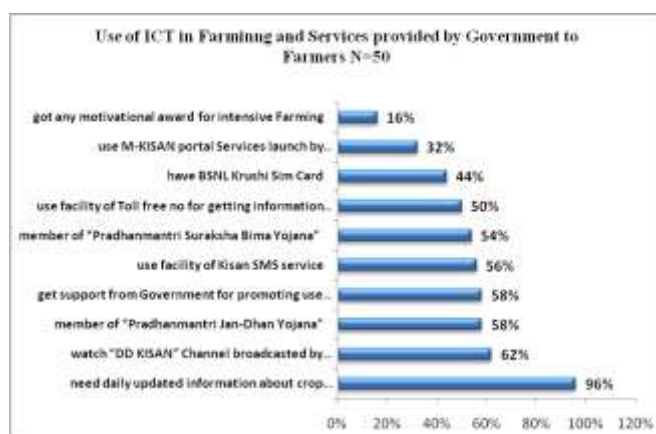
TABLE 17 ICT TOOLS USED BY FARMERS FOR ACCESSING FARMING INFORMATION VS AGE GROUP

ICT Tools Vs Age Group of Farmers	Age Group		Percentage	
	20-40	40-60	20-40	40-60
TV	15	29	94%	85%
News Paper	15	28	94%	82%
Internet	12	11	75%	32%
Smart Phone	10	18	63%	53%
Computer	7	11	44%	32%
Radio	7	12	44%	35%
Storage devices	5	9	31%	26%
Social Media	4	10	25%	29%
LCD Projector	0	0	0%	0%
Others	0	0	0%	0%

Out of 50 selected Farmer respondents, 14 (28%) are of the age group 20 to 40 whereas 36 (72%) are of the age group 40-60. It is apparent from Table 17 is that 94% of the Farmer respondents of the age 20 to 40 and 85% respondents of the age group 40 to 60 used broadcasting technology such as T.V. for accessing information related with their farming activity.

Moreover 94% of 20-40 age and 82% of the 40-60 age group of the respondents used print media or traditional ICT Tool News Papers whereas 75% of the 20-40 and 32% of the age group 40-60 of the respondents used the Internet. Furthermore 63% of the age 20-40 and 53% of the age group 40-60 of the respondents used the Mobile Phones or Smart Phones. Whereas 44% of the age group 20-40 and 32% and 35% of the age group 40-60 of the respondents used Computer and Radio respectively where as the use of ICT Tools like social media and storage devices is less.

Figure 6. Use of ICT in Farming and Services provided by Government to



It is apparent from Fig. 6 is that 96% of the Farmer respondents sated that they needs daily updated information about crop production whereas 62% were watching DD Kisan Channel broadcasting by the Government of India. Moreover 58% of the Farmers of hilly and rural area were become a members of Pradhanmantri Jan-Dhan Yojana while 58% of the respondents told that they are getting support from the local Government Agriculture official to use and promoting ICTs in Agriculture. 54% of the Farmers become a member of Member of "Pradhanmantri Suraksha Bima Yojana".

Moreover only 56% of the respondents use facility of Kisan SMS service while 50% of the respondents uses facility of Toll free number for getting information about fertilizers, seeds availability and insecticides, etc whereas 44% of the respondents have a BSNL Krushi Card.

TABLE 18 SOURCE TO GET INFORMATION ABOUT NEW FARMING TECHNIQUES, METHODS OR MARKET TRENDS

Source to get information about new farming techniques, methods or market trends	No. of Farmers	%
Through News Paper	38	76%
Through T.V.	37	74%
Through Agri Exhibitions	32	64%
Through Other Farmers	31	62%
Through Mobile	27	54%
Through Government Agriculture Office	22	44%
Through Internet	20	40%
Through Kisan Call Centers	14	28%
Through Radio	12	24%
Through Social Media	10	20%
Through Computer	6	12%

It is revealed from Table 18 is that 76% of Farmer respondents are used News Papers and T.V. to obtaining information about new farming techniques, methods and current market trends Followed by Agricultural exhibitions (64%) whereas 62% of the respondents rely on their colleagues Farmers moreover 54% of the respondents getting information through Mobile Phones.

TABLE 19 SOURCE TO GET ACCURATE WEATHER INFORMATION BY FARMER RESPONDENTS

Source to get accurate weather information	No. of Farmers	%
Through T.V.	44	88%
Through News Paper	30	60%
Through Mobile	19	38%
Through Internet	19	38%
Through Kisan Call Centers	15	30%
Through Radio	13	26%
Through Government Agriculture Office	13	26%
Through Other Farmers	8	16%
Through Social Media	3	6%
Through Computer	2	4%
None	1	2%

It is apparent from Table 19 is that 44 (88%) of the Farmer respondents obtained accurate weather information through

T.V. while 30 (60%) respondents through News Paper whereas 19 (38%) of the respondents obtaining accurate weather information through Mobile Phones and the Internet whereas only 2% of the Farmer respondents stated that they do not need to access accurate weather information.

smart and digital villages while providing good infrastructure and digital communication platform; reducing poverty; bridging the digital divide; increase social awareness; helps overall development of the society.

The Print Media or Traditional ICT such as News Paper is the major source of hilly and rural communities of Bhor Taluka to obtain Information.

Smart Phone is most usable ICT Tool and followed by the Internet among the Businesspersons of rural and hilly area to perform business activities. The usage of Internet among 20-40 age groups of the Businessmen is high. It is strongly needed to increase the awareness of e-commerce among the Businessmen community. There is less awareness and use of digital transaction and e-Commerce among rural Businessmen community. Businessmen Communities of hilly and rural regions of Bhor Tahsil are now adopting ICT and its Tools for their Business. Small Businesses are also on the way of adoption digital transaction n Process in their Business.

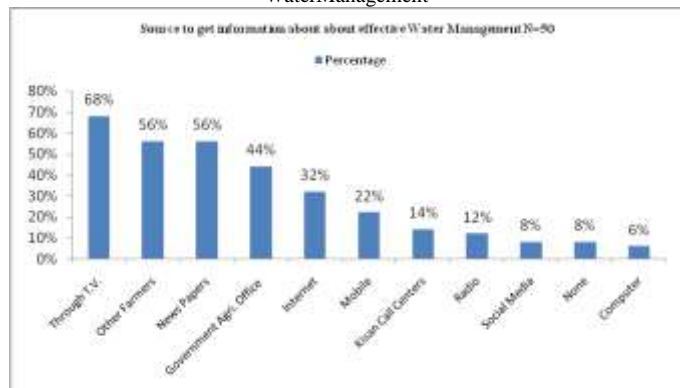
Almost all the 20 to 40 age group of Teachers used Computer in teaching with large extent and followed by storage devices such as educational CDs, DVDs, etc and then traditional ICTs such as Radio, News Paper. The use of the Internet is very less in teaching.

Study also showed that near about 50% Teachers do not getting ICT based or IT based services training from Government so it highly need to increase training schedules in hilly and rural area and the Government should provide more attention to computer literacy or e-literacy literacy of the Teacher. Most of the Teacher respondents got grater benefit from ICT and its Tools such as Increased Knowledge and Capacity followed by Effective Teaching-learning and evaluation, Increased Student Performance and then improved teaching conditions and environment as well as Good and effective use of information. ICT Tools are useful in teaching, learning and evaluation as well as Personal work which also saves Time and cost. Almost all the Teacher respondents are comfortably and effectively use ICT Tools and methods in teaching so that it improves educational environment in the schools and provides quality and easy education to the students and easily doing own personal work.

Near about 70% Schools in hilly and rural area does not have sufficient computers as compared to student ratio, and also insufficient Time to allocate ICT subject. 20-30 age Group of the Students of hilly and rural area are expert to uses latest ICT based Technology such as Smart Phone, Internet, Computer and Storage Devices and majorly usages ICT Tools Smart Phone followed by Computer, Internet, TV and Radio in their study. 90% Student respondents of hilly and rural area were faced major hurdles or obstacles of Frequent Power Problems, not getting Proper connectivity, Urban- rural digital divide followed by Poor Telecommunications Infrastructure and costly equipments during the use of ICT based Tools.

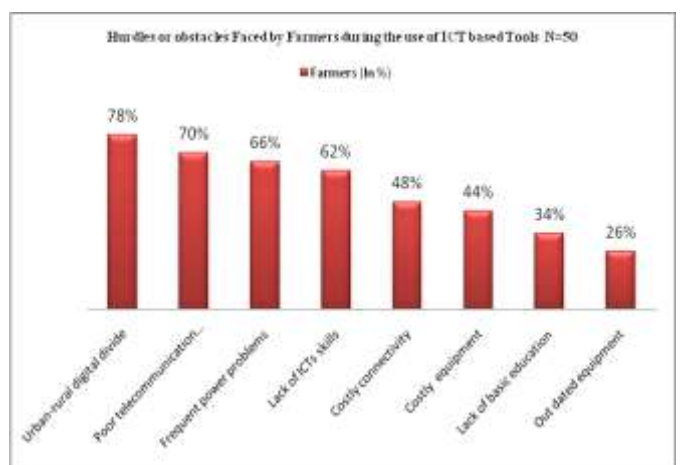
The Government officials of hilly and rural area of Bhor Tahsil given first preference to Computer and followed by the Internet, Smart Phone and then Storage Devices to perform daily official work. However the respondents of age groups 40-60 are not used Smart phone widely as compared to the age group 20-40 because they may have some operational problems or they cannot comfort with Smart Phone. The use of ICT

Figure 7. Sources of Farmer Respondents to get information about effective WaterManagement



It is apparent from Fig. 7 is that 68% of the Farmer respondents obtained information about water management through T.V. followed by colleagues Farmers and News papers (56%) then by 44% of the respondents through Government Agricultural office 44% .

Figure 8. Hurdles or obstacles Faced by Farmers during the use of ICT based Tools



It is revealed from Fig. 8 is that 78% of the Farmer respondents faced hurdles of urban- rural digital divide while 70% of the respondents were faced hurdles of poor telecommunication infrastructure

Moreover 66% of the Farmers were faced hurdles of frequent power problems, 62% faced hurdles of Lack of ICT Skills. Furthermore 48% and 44% of Farmer respondents faced obstacles of costly connectivity and costly equipments respectively whereas hurdles like lack of basic education, outdated equipments are less faced by Farmer respondents.

VIII. FINDINGS AND CONCLUSIONS

ICT is a super high way to reaching the unreached rural communities of Bhor Tahsil. ICT can play vital role to make

based Tools in the Government offices of hilly and rural area helps to increase work efficiency of Government officials to deliver mandated services to the citizens fastly, paperless office, increased clarity and transparency, increases digital literacy, etc.

Moreover the major hurdles or obstacles faced by Government Employee respondents of hilly and rural area is not getting proper connectivity of the Internet, poor telecommunication infrastructure and then urban- rural digital divide followed by frequent power problems, Lack of ICT skills during the use of ICT based Tools.

The investigator found that most of the Farmers of rural and hilly area of Bhor Tahsil needs information related to the farming and to fulfill their needs of information they used traditional ICT Tools such as TV and News Paper with greater extent followed by the Internet and Smart Phones for accessing information. The use of the Internet and Mobile phones among the Farmer Community of hilly and rural area of Bhor tahsil is now slowly increases.

It is concluded from the Study is that all the farmers needs daily updated information about crop production. Near about 50% Farmers are remaining to become a member of Pradhanmantri Jan-Dhan Yojana; 50% do not use facility of Toll free number and SMS services. The Government of India and the Government Maharashtra has to be taken many initiatives for adaptation and diffusion of ICTs in Agricultural development and to increase the livelihood of Kisan in rural areas but in hilly and remote area of Bhor Tehsil the awareness of these initiatives among the farmer communities is very less.

The majority of the Farmers of Rural and hilly area rely on Traditional ICTs such as News Paper, T.V and followed by Agri Exhibitions and colleagues Farmers to get information about new farming techniques, methods and current market trends whereas the use of Mobile Phones, Internet is less to get related information.

The major sources of Farmer Respondents in hilly and rural area to obtained accurate weather information are T.V. followed by News Papers and then Mobile and the Internet. The other sources like Kisan call center, government Agriculture offices, Computer, etc used by farmer community is very less.

It is concluded that T.V., Colleagues Farmers and News Papers are the major sources to obtained information about water management of the Farmer communities in hilly and rural area of Bhor Tahsil. It is seen that Very Few Farmer respondents obtaining information through modern ICTs like Internet, Mobile Phones and Social Media. During the study investigator found that the there is less awareness about water management among the Farmer respondents in the study area. The major hurdles or obstacles faced by Farmer Communities of hilly and rural area is Urban-Rural Digital Divide and poor telecommunication infrastructure followed by frequent power problems and then Lack of ICT skills during the use of ICT based Tools.

Finally the study revealed that the awareness of ICT and its Tools among the hilly and rural population of Bhor Tahsil is now growing and has positive impact on their livelihood and has remarkable impact on Education sector.

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