

BRIDGING MOUNTAINOUS DIVIDE THROUGH DIGITAL TECHNOLOGY: A STUDY OF HIMACHAL PRADESH

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Abstract

Digital technology is impersonating as an essential part in transforming the attitude and panorama of society towards women. In the hilly state, like Himachal Pradesh, the women have less access to digital technology due to geographical disadvantages. resulting in economic dependence and lack of market intelligence. Women are the backbone of the national rural economy. They play an important role in household and agriculture activities. So, there is a need to empower them with knowledge and capacity building programmes. The provision of training women towards the digital technological sphere can encourage them to attain socio-economic mobility as training promotes skill development while intensifying the capacity of women to earn a livelihood. Therefore, the present study was conducted to examine the mountainous divide, digital astuteness, and capacity building of rural women in Himachal Pradesh. The present paper is an attempt to evaluate the effects of mountainous divide and constraints to digital technology in Himachal Pradesh. The study reveals that mountainous divide hinder access to New Technology, Internet, latest Information, job Opportunity, establishing and running business, infrastructure development for digitization, women empowerment and benefits of programmes and schemes. But majority of women believed that the spread of digital technology can help them a lot.

Keywords: *Digital Divide, Digital Technology, Mountainous Divide, Rural Women.*

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I. Introduction

Mountainous regions are characterised by differentiated climatic situations and topographic variables which makes their ecosystem complex and fragile in nature. These regions are plentiful in biodiversity, flora & fauna, and other relevant resources which are required for economic development. In the contemporary world, half of the world's population is dependent on mountains as they provide fresh water for various uses including industrial and domestic purposes. Thus, mountains serve as the prestigious hydro pillar of the world. Apart from the natural benefits generated by such regions, there are several problems associated with them including harshness of the climate, inaccessibility of areas, issues related to transportation and rural regions, which diverts these areas from the path leading to economic progress. People living in these regions usually lack access to basic resources including education and health which degrades the quality of human capital. Social, political and economic impoverishment of people living in such difficult terrains further deteriorate the circumstances. (FAO, 2011). A considerable size of population living in the states of Indian Himalayan Region States has restricted access to basic facilities such as electricity, drinking water, internet connectivity, roads, education, and sanitation. Problems further worsen when these are coupled with issues related to unemployment (specifically in the non-farm-based sector) in the region. Many inhabitants strive to raise their wages and state of life as they have limited access to the markets which force them to be dependent on subsistence farming and forest resources (NITI Aayog, 2018). With the adoption of inclusive and equitable economic growth policies, different approaches have been adopted to cascade the benefits of

economic development to all sections of the society living in the hilly regions. Hilly regions constantly struggle with the various issues related to underdevelopment (Kar, 2007).

Information and Communication Technologies (ICTs) can be both a unifying and a divisive force. Its divisive character is known as the “digital divide”, which marks the distinction between those who have digital access to knowledge and those who either lack it or don’t use it adequately. The digital divide is demarcated as the gap between individuals, households, businesses, and geographic zones at different socio-economic levels with regards to their opportunities to access ICTs and their usage of the Internet for an extensive variety of activities. (Dubey, Jyoti, & Devanand, 2011). Modern society has seen an exceptional change in the functioning of several services which includes a change in service delivery, increasing jobs, learning opportunities, improved knowledge, and skills as this modern era is being characterised by a digital revolution, Information and Communication Technology (ICT). (Council for Social Development., 2018). Digital technology has played an influential role in modifying the attitude and viewpoint of society towards women. With the rise in the usability of internet, and the availability of mobile phones has enabled women in procuring information related to real incidents occurring in the world and acquiring skills to tackle situations. Geographical characteristics affect access to digital technology. The plains have more access than hilly areas. In the hilly state, like Himachal Pradesh, the women have less access to digital technology due to locational disadvantages, resulting in economic dependence and lack of market intelligence. Therefore, the present study was conducted to examine the mountainous divide, digital astuteness, and capacity building of rural women in Himachal Pradesh. The present paper is an attempt to evaluate the effects of mountainous divide and constraints to digital technology in Himachal Pradesh.

2. Objective

The present paper aims at evaluating the effect of mountainous divide. It also evaluates the benefits and role of digital divide in bridging the mountainous divide.

3. Sampling and Methodology

The present study was conducted in three districts, namely, Chamba, Kinnaur and Lahaul & Spiti, in Himachal Pradesh. The study has covered six blocks (two from each district). The present study is based on primary data collected from the sample respondents. For the collection of relevant first-hand data in the present study multistage sampling and purposive sampling method was adopted. At the first stage three districts were selected, at the second stage 6 blocks were selected from the selected districts, at the third stage 24 Gram Panchayats were selected from the selected blocks and at the fourth stage, 480 respondents were selected. A well-designed interview schedule has been administered to the sample respondents. Data have also been collected with the help of personal observation made during the field visit.

4. Tools and Techniques

The analysis and interpretation of tabulated data have been carried out with the help of mathematical methods, statistical tools and graphical methods. This test has been applied to study whether significant differences exist in the distribution of opinion of respondents for the different statements.

Formula:
$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where,

χ^2 = Chi-square

O = Observed frequencies;

E = Expected frequencies

The calculated value of chi-square has been compared with the table value at the desired level of significance with the maximum cut-off point being 5 per cent.

5. Results and Discussions

The mountainous divide resulted in many problems. Due to it, the people of hilly areas are deprived of many facilities and the benefits of development. Digitalization is one such facility that does not reach the rural people who live in hilly areas, because of tough terrain.

5.1. Effects of Mountainous Divide

The opinion of respondents has been collected on the different statements about the effect of the mountainous divide. The collected data have been presented in Table 1.

The analysis of the opinion of sample respondents about the statement that mountainous divide hinders access to the latest information reveals that out of total respondents, majority of respondents in all the districts supported the statement to a large extent (57.08 per cent in overall). The application of the χ^2 test reveals that the calculated value (4.150) is a little less than the tabular value (9.488) at a significance level of 5 per cent. Therefore, it can be concluded that in the majority of cases mountainous divide hinders access to the latest information.

About the statement that the mountainous divide hinders access to a job opportunity, the data show that 55.63 per cent of respondents reported that it happens to a large extent and 41.25 per cent accepted it to some extent. District-wise data also reflects the same fact. The calculated value of the χ^2 test is a little bit less than the tabular value. It denotes that there is a negligible significant distinction in the opinion of sample respondents.

Concerning establishing and running the business, data show that out of total respondents 42.92 per cent stated that mountainous divide hinders establishing and running the business to a large extent, 44.38 per cent opined that it hinders to some extent and 12.71 per cent of respondents felt that mountainous divide didn't hinder the access to establishing and running business. The application of the χ^2 test reveals that the calculated value (21.200) is more than the tabular value (9.488). It means that there is a significant variation in the opinion of sample respondents. Therefore, it can be said that the mountainous divide hinders establishing and running a business either to some extent or to large extent.

With regard to the statement that the mountainous divide hinders infrastructure development for digitalization, data show 60.84 per cent accepted it to a large extent and 34.58 per cent to some extent. The application of the χ^2 test reveals that the calculated value (19.761) is more than the tabular value, which means that there is a notable deviation in the opinion of sample respondents. Therefore, it can be said that the mountainous divide hinders infrastructure development for digitalization in the hilly area of Himachal Pradesh.

Table 1: Opinion about the Effects of Mountainous Divide

District	Not at all	To some extent	To a large extent	Total	χ^2
1. Mountainous Divide Hinder Access to New Technology					
Chamba	7 (4.38)	63 (39.38)	90 (56.25)	160 (100)	$\chi^2 = 7.055,$ $\chi^2_{crit.} =$ 9.488, $p > .05$
Kinnaur	19 (11.88)	58 (36.25)	83 (51.88)	160 (100)	
Lahaul & Spiti	17 (10.63)	65 (40.63)	78 (48.75)	160 (100)	
Total	43 (8.96)	186 (38.75)	251 (52.29)	480 (100)	
2. Mountainous Divide Hinder Access to Internet					
Chamba	0 (0.00)	58 (36.25)	102 (63.75)	160 (100)	$\chi^2 = 6.457,$ $\chi^2_{crit.} =$ 9.488, $p > .05$
Kinnaur	5 (3.13)	53 (33.13)	102 (63.75)	160 (100)	
Lahaul & Spiti	6 (3.75)	49 (30.63)	105 (65.63)	160 (100)	

Total	11 (2.29)	160 (33.33)	309 (64.38)	480 (100)	
3. Mountainous Divide Hinder Access to Latest Information					
Chamba	3 (1.88)	58 (36.25)	99 (61.88)	160 (100)	$\chi^2 = 4.150,$ $\chi^2_{crit.} = 9.488,$ $p > .05$
Kinnaur	5 (3.13)	63 (39.38)	92 (57.50)	160 (100)	
Lahaul & Spiti	7 (4.38)	70 (43.75)	83 (51.88)	160 (100)	
Total	15 (3.13)	191 (39.79)	274 (57.08)	480 (100)	
4. Mountainous Divide Hinder Access to Job Opportunity					
Chamba	4 (2.50)	74 (46.25)	82 (51.25)	160 (100)	$\chi^2 = 9.319,$ $\chi^2_{crit.} = 9.488,$ $p > .05$
Kinnaur	6 (3.75)	73 (45.63)	81 (50.63)	160 (100)	
Lahaul & Spiti	5 (3.13)	51 (31.88)	104 (65.00)	160 (100)	
Total	15 (3.13)	198 (41.25)	267 (55.63)	480 (100)	
5. Mountainous Divide Hinder Establishing and running business					
Chamba	10 (6.25)	75 (46.88)	75 (46.88)	160 (100)	$\chi^2 = 21.200,$ $\chi^2_{crit.} = 9.488,$ $p < .05$
Kinnaur	17 (10.63)	65 (40.63)	78 (48.75)	160 (100)	
Lahaul & Spiti	34 (21.25)	73 (45.63)	53 (33.13)	160 (100)	
Total	61 (12.71)	213 (44.38)	206 (42.92)	480 (100)	
6. Mountainous Divide Hinder Infrastructure development for digitization					
Chamba	4 (2.50)	63 (39.38)	93 (58.13)	160 (100)	$\chi^2 = 19.761,$ $\chi^2_{crit.} = 9.488,$ $p < .05$
Kinnaur	13 (8.13)	64 (40.00)	83 (51.88)	160 (100)	
Lahaul & Spiti	5 (3.13)	39 (24.38)	116 (72.50)	160 (100)	
Total	22 (4.58)	166 (34.58)	292 (60.83)	480 (100)	
7. Mountainous Divide Hinder Women empowerment					
Chamba	1 (0.63)	50 (31.25)	109 (68.13)	160 (100)	$\chi^2 = 16.961,$ $\chi^2_{crit.} = 9.488,$ $p < .05$
Kinnaur	5 (3.13)	59 (36.88)	96 (60.00)	160 (100)	
Lahaul & Spiti	0 (0.00)	35 (21.88)	125 (78.13)	160 (100)	
Total	6 (1.25)	144 (30.00)	330 (68.75)	480 (100)	
8. Mountainous Divide Hinder Benefits of programmes and					

schemes					$\chi^2 = 14.685,$ $\chi^2_{crit.} = 9.488,$ $p < .05$
Chamba	4 (2.50)	49 (30.63)	107 (66.88)	160 (100)	
Kinnaur	5 (3.13)	59 (36.88)	96 (60.00)	160 (100)	
Lahaul & Spiti	0 (0.00)	35 (21.88)	125 (78.13)	160 (100)	
Total	9 (1.88)	143 (29.79)	328 (68.33)	480 (100)	

Source: Same as in Table 4.1

Note: i) Figures in parenthesis represents percentage. ii) χ^2 denotes chi-square and $\chi^2_{crit.}$ denotes critical value or tabular value of chi-square.

About women empowerment, data reveals that the majority of respondents in all the districts (68.13 per cent in Chamba, 60.00 per cent in Kinnaur and 78.13 per cent in Lahaul & Spiti district) opined that the mountainous divide hinders women empowerment in the hilly areas to a large extent. The calculated value (16.96) of the χ^2 test is more than the tabular value. It shows that there is a vital difference in respondent's opinion. Hence it can be concluded mountainous divide hinders women empowerment.

About the benefits of programmes and schemes, the figures reveal almost the same facts as in the case of the previous statement. It depicts that the majority of respondents opined that the mountainous divide hinders the benefits of government programmes and schemes. The application of the χ^2 test reveals that the calculated value is more than the tabular value. It indicates that there is a significant difference in the opinion of respondents. Hence, it can be concluded that the mountainous divide hinders the benefits of government programmes and schemes to a large extent.

5.2. Role of Digital Technology in Bridging different Divides

In hilly areas there exist a lot of divides, such as social, economic, information and educational divides. The opinion of the respondent has been collected on the role of digital technology in bridging these divides and presented in Table 3.

Table 3 depicts that majority of respondents believed that digital technology can help in bridging the social divide to a large extent. Out of the total respondents, 63.75 per cent of respondents believed that digital technology can help in bridging the social divide to a great extent while 33.54 per cent of respondents opined that digital technology can help in bridging the social divide to some extent. The χ^2 test shows that the calculated value (6.646) is less than the tabular value. It shows that there is no significant difference in the opinion of respondents. It indicates the majority of respondents believed that digital technology can help in bridging the social divide.

With regard to the economic divide, the majority of respondents believed that digital technology can help in bridging the economic divide to a large extent. The calculated value of the χ^2 test, which more than the tabular value, show that there is no significant difference in the opinion of sample respondents. Hence, it can be concluded that digital technology can help in bridging the economic divide to a large extent.

Table 3: Role Digital Technology in Bridging Different Divides

Helps in	District	Not at all	To some extent	To a large extent	Total	
Bridging Social divide	Chamba	4 (2.50)	58 (36.25)	98 (61.25)	160 (100)	$\chi^2 = 6.646,$ $\chi^2_{crit} = 9.488,$ $p > .05$
	Kinnaur	3 (1.88)	50 (31.25)	107 (66.88)	160 (100)	
	Lahaul & Spiti	6 (3.75)	53 (33.13)	101 (63.13)	160 (100)	
	Total	13 (2.71)	161 (33.54)	306 (63.75)	480 (100)	
Bridging Economic divide	Chamba	4 (2.50)	58 (36.25)	98 (61.25)	160 (100)	$\chi^2 = .452,$ $\chi^2_{crit} = 9.488,$ $p > .05$
	Kinnaur	5 (3.13)	55 (34.38)	100 (62.50)	160 (100)	
	Lahaul & Spiti	5 (3.13)	53 (33.13)	102 (63.75)	160 (100)	
	Total	14 (2.92)	166 (34.58)	300 (62.50)	480 (100)	
Bridging Information divide	Chamba	3 (1.88)	58 (36.25)	99 (61.88)	160 (100)	$\chi^2 = .332,$ $\chi^2_{crit} = 9.488,$ $p > .05$
	Kinnaur	3 (1.88)	57 (35.63)	100 (62.50)	160 (100)	
	Lahaul & Spiti	2 (1.25)	56 (35.00)	102 (63.75)	160 (100)	
	Total	8 (1.67)	171 (35.63)	301 (62.71)	480 (100)	
Bridging Mountainous Divide	Chamba	6 (3.75)	56 (35.00)	98 (61.25)	160 (100)	$\chi^2 = 3.058,$ $\chi^2_{crit} = 9.488,$ $p > .05$
	Kinnaur	7 (4.38)	50 (31.25)	103 (64.38)	160 (100)	
	Lahaul & Spiti	4 (2.50)	52 (32.50)	104 (65.00)	160 (100)	

	Total	17 (3.54)	158 (32.92)	305 (63.54)	480 (100)
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Source: Same as in Table 4.1.

Note: i) Figures in parenthesis represents percentage. ii) χ^2 denotes chi-square and χ^2_{crt} . denotes critical value or tabular value of chi-square.

Concerning the role of digital technology in bridging the information divide, data also reflect the same responses. The majority of respondents (62.71 per cent) accepted that digital technology can help in bridging the information divide to a large extent. The calculated value (.332) of the χ^2 test is lower than the tabular value. It indicates that there is no significant difference of opinion.

Data regarding bridging the mountainous divide shows that the majority of respondents in all the districts (61.25 per cent in Chamba, 64.38 per cent in Kinnaur and 65.00 per cent in Lahaul & Spiti district) accept that digital technology can help in bridging the mountainous divide to a large extent. The application of the χ^2 test shows that the calculated value is less than the tabular value. It reflects that there is no significant difference in the opinion of sample respondents.

After analysing the opinion of sample respondents, it can be concluded that digital technology can play an important role in the lives of rural women. It can bridge social, economic, information and mountainous divide, due to which people of a hilly area, especially, women, face lot of problems and deprived of various facilities.

6. Conclusions

Women are the backbone of the national rural economy. They play an important role in household and agriculture activities. So, there is a need to empower them with knowledge and capacity building programmes. Training women in digital technology can help them achieve socio-economic mobility as such training encourages skill development while enhancing the capacity

of women to earn a livelihood. The study reveals that mountainous divide hinder access to New Technology, Internet, latest Information, job Opportunity, establishing and running business, infrastructure development for digitization, women empowerment and benefits of programmes and schemes. But majority of women believed that the spread of digital technology can help them a lot. They found agree with the benefits of digital technology. Majority of rural women think that digital technology not only bridge the economic, social and informational divide but it also bridges the mountainous divide as well. Thus, it can be said that with the help of digital technology we can minimize the gap between plains and hilly areas to a great extent. also, the women being deprived of many facilities can be empowered with the help of capacity building activities in digital technology. Digital technology is playing a crucial role in transforming the attitude and outlook of society towards women.

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